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1970-1972 Catalog of The University of Iowa

University of Iowa

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The University of Iowa Bulletin
The University of Iowa

For the first time, The University of Iowa has instituted a biennial Catalog publication policy. This edition is to serve during the two-year period, August 1, 1970, through August 1, 1972.

The University Catalog is available for examination in all Iowa high schools, offices of the County Superintendents of Schools, the public libraries, and in each of the junior and community colleges in the state. Copies are also available for examination at the major state government offices in Des Moines and in each office on the University campus in Iowa City.

Copies of the Catalog may be ordered from the Office of Admissions and Registrar at $1 per copy. If the Catalog is to be mailed, a zip code must be included in the address. 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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August 1, 1970

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### 1970

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SUMMER SESSION

Registration for summer session
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
University holiday; offices closed

1970
June 15, Monday
June 16, Tuesday
July 3, Friday
August 7, Friday
August 10, Monday
September 4, Friday
September 7, Monday

1971
June 14, Monday
June 15, Tuesday
July 5, Monday
August 8, Friday
August 9, Monday
September 3, Friday
September 6, Monday

FIRST SEMESTER

Beginning of registration, 1 p.m.
Opening of classes, 7:30 a.m.
Homecoming; classes suspended except for classes meeting on Saturdays only
Beginning of Thanksgiving recess, 10 p.m.
University holiday; offices closed

Resumption of classes, 7:30 a.m.
Beginning of holiday recess, 12:20 p.m.
University holiday; offices closed

University holiday; offices closed
Resumption of classes, 7:30 a.m.
Close of first semester classes
Beginning of Examination Week, 7:30 a.m.
Close of Examination Week

1970-71
September 9, Wednesday
September 14, Monday
October 17, Saturday
November 24, Tuesday
November 26, 27
Thursday, Friday
November 30, Monday
December 19, Saturday
December 24, 25
Thursday, Friday
January 1, Friday
January 4, Monday
January 13, Wednesday
January 15, Friday
January 22, Friday

1971-72
September 8, Wednesday
September 13, Monday
October 30, Saturday
November 23, Tuesday
November 25, 26
Thursday, Friday
November 29, Monday
December 18, Saturday
December 23, 24
Thursday, Friday
December 31, Friday
January 3, Monday
January 12, Wednesday
January 14, Friday
January 21, Friday

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 classes only 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

1970-71
January 25, Monday
January 27, Wednesday
February 25, Thursday
March 26, Friday
March 27, Saturday
April 5, Monday
May 17, Monday
May 19, Wednesday
May 26, Wednesday
May 28, Friday
May 31, Monday

1971-72
January 24, Monday
January 26, Wednesday
February 25, Friday
March 24, Friday
March 25, Saturday
April 3, Monday
May 15, Monday
May 17, Wednesday
May 24, Wednesday
May 26, Friday
May 29, Monday

SUMMER SESSION

Registration for summer session, 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
University holiday; offices closed

1972
June 12, Monday
June 13, Tuesday
July 4, Tuesday
August 4, Friday
August 7, Monday
September 1, Friday
September 4, Friday
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The Presidential Message

For the Advancement of the Individual

An education is defined differently, and correctly, by different people. Thus, in a university we must take multiple approaches to education, to meet the needs and utilize the talents of students and faculty members in great variety.

An education today must be a generalist as well as a specialist. He must be able to put his share of knowledge into a meaningful, worthwhile whole—to maintain perspective, to approach the broader issues of life with a determination to understand them, and to have an effect upon them. Hence the essential purpose of the university classroom is to help the student learn to analyze.

At The University of Iowa, course sequences are being continually de-emphasized in order to lessen concern with content. This not only strengthens the student's ability to cope with changes in his field, but it will eventually enable him to change as necessary from one field to another, for with the expansion of the lifespan each of us is likely to have more than one career. We are a mobile people. We shift, not only from place to place, but from activity to activity. Our education should prepare us for that mobility, so we will not be rapidly outdated. By stressing analysis and one's responsibilities in society, the student is prepared for a life of continuing education, flexibility, and relevance.

At a residential university where group living adds an important dimension to education, constant interaction is inevitable. The University of Iowa is a small university as state universities go these days, yet it is one of the most concerned about growing too large, and in the process losing the qualities of a limited-size learning center. Residence hall and other group living are important aspects of education. To afford opportunity to pursue different interests outside the classroom, more than 200 student organizations engage the attention of Iowa students in activities ranging from political to cultural to professional.

The University of Iowa is a heterogeneous, cosmopolitan community, drawing people from all over Iowa, the nation and indeed, the world. We are proud of this fact for this diversity is essential to a vital university, and it increases the exposure of all of us to new and varied ideas. With their help, the University seeks ever to be an example of a free and open society without regard to race, economic status, or place of original residence. In a time in which we are all concerned about the human environment, the University is in the enviable position of having a stimulating program of music, letters, art, dance, and theater. No comparable community is so well endowed in the arts, with so many opportunities to be active patron.

The University is concerned with humane growth, recognizing that it is the quality rather than the quantity of life to which we must address our concern. Thus the University of Iowa is committed to the advancement of the individual in the contemporary world, so that he may understand it better and relate to it more surely, and that he may affect its own and his world's affairs in positive and more lasting ways.

A STATEMENT

BY

PRESIDENT WILLARD L. BOYD
The administrative center of The University of Iowa, "Old Capitol" symbolizes the University's heritage as one of the nation's leading institutions of higher learning.

Built in 1840 as the capitol of Iowa Territory, the structure witnessed Iowa's formal admission to statehood December 28, 1846, and the chartering of the University just two months later, on February 23, 1847.

The University opened in March, 1855. It had no building of its own until 1857, when it acquired Old Capitol following transfer of the seat of state government to Des Moines.

The University now comprises ten colleges with a total enrollment of approximately 20,300 students, on a 1,900-acre campus which spans the Iowa River valley in the rolling, wooded farmland of east-central Iowa. The campus merges with the business center of Iowa City, a community of 48,000 inhabitants near Cedar Rapids, Iowa's second largest city.

The University of Iowa is a major university not primarily because of its size—it is the second smallest of the Big Ten universities, and far smaller than the nation's largest—but because of its eminence as a center of learning.

It 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 pioneered the development of a university-based medical center in the Midwest, and of health science disciplines, most notably speech pathology and orthopaedic surgery. It was the first state university in the nation to establish an interfaith School of Religion. It was an innovator in accepting creative work—paintings, sculpture, 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 astrophysical 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.

The College of Liberal Arts enrolls more than two-thirds of the University's undergraduate population, including all entering freshmen except those who declare engineering majors. Within the College of Liberal Arts there are Schools of Art, Journalism, Letters, Library Science, Music, Religion, and Social Work.

Entering freshmen who declare engineering majors begin their studies in the College of Engineering. Others complete preprofessional work in liberal arts to qualify for admission to the Colleges of Business Administration, Dentistry, Education, Law, Medicine, Nursing, and Pharmacy.

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

THE STUDENT BODY

Four-fifths of The University of Iowa's undergraduate students are Iowa residents. The student body represents all Iowa counties, all other states, and more than forty foreign countries. One-third come from rural areas, one-fourth from suburban areas.

Male and female students are in nearly equal numbers among the University's undergraduate population. Slightly more than half of the University's undergraduate students had B averages or above in high school. Ninety per cent ranked in the upper half of their high school classes, 30 per cent in the upper tenth.

Half of all University of Iowa students have part-time jobs; one-fourth have education loans. One of every ten undergraduates and one of four freshmen have scholarships.

Slightly more than 60 per cent of the University's graduate students are enrolled in the College of Liberal Arts; a little less than half are Iowa residents. Of the nonresidents, a little less than half are midwesterners; 13 per cent are foreign students.

While pursuing degree work in more than 110 major fields, Iowa students also pursue co-curricular interests in more than 300 recognized campus organizations and activities, ranging from
participation in student government and politics to the enjoyment of performances by celebrated stage and concert artists.

THE FACULTY

The University faculty numbers slightly more than 1,000 full-time members. Many among them are nationally and internationally recognized as leading scholars in their fields of interest. Most are engaged to some extent in research which contributes directly or indirectly to their effectiveness as teachers.

Additionally, the University faculty numbers approximately 1,400 part-time members, including graduate assistants. All graduate assistants have master’s degrees, at least; some have doctorates. 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 teamed with and supervised by senior faculty members.

Through elected representatives on the Faculty Senate, Faculty Council, and all University-wide committees, the faculty has a strong voice in the determination of University goals and policies.

EDUCATIONAL GOALS

The University seeks to maintain a healthy balance between undergraduate and graduate-professional teaching, and between teaching and research.

At all levels and in all parts, the University aims to develop students who are broadly educated and well cultured, equally prepared for careers, citizenship, and personal fulfillment. It gives emphasis to basic knowledge and viewpoints, toward developing the student’s versatility, adaptability, and capacity for independent learning.

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

Colleges

Business Administration—American Association of Collegiate Schools of Business
Dentistry—American Dental Association
Engineering—Engineers Council for Professional Development
Law—American Bar Association and Association of American Law Schools

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

Nursing—National League for Nursing
Pharmacy—American Council on Pharmaceutical Education

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

Schools

Journalism—American Council on Education for Journalism
Music—National Association of Schools of Music
Social Work—Council on Social Work Education

Departments

Chemistry—American Chemical Society
Dental Hygiene—American Dental Association, Council on Dental Education
Physical Therapy—American Medical Association in collaboration with the American Physical Therapy Association

Psychology—American Psychological Association
Speech Pathology and Audiology—American Speech and Hearing Association

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, and it is associated with these “Big Ten” universities and The University of Chicago in the Committee for Institutional Cooperation (CIC).

SESSIONS

The University academic year comprises two semesters of approximately eighteen weeks each. The academic year normally begins in early September and extends to late May. An eight-week summer session begins in mid-June and is followed by 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 the regulation of 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 principle that nowhere in the University community shall there be a difference in the treatment of persons because of race, creed, color, sex, or national origin, and that all members of the University community shall be afforded equal opportunity and equal access to University facilities. This principle governs admission, housing, and education. It is reflected in policies governing students' extra-curricular activities, and in the employment of faculty and staff members. The University works cooperatively with the Iowa City community in furthering this principle. (For the text of the general policy adopted by the University Committee on Human Rights, see Appendix.)

ADMISSION

Correspondence regarding admission to any college of The University of Iowa should be addressed to the Admissions Office, 1 Jessup Hall, The University of Iowa, Iowa City 52240.

The first letter should request an application for admission, briefly describe the prospective applicant's high school and college background, and outline his plans for further study, including the department or general field in which he expects to major.

All applicants for admission to all colleges of the University must submit formal applications to the Admissions Office and must furnish official transcripts and other supporting materials as specified.

In order to register, a student must be officially admitted by the Office of Admissions.

The requirements for admission to the colleges and programs of the University are stated at the beginning of the Catalog sections and subsections describing those colleges and programs.

FOREIGN STUDENTS

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 is seeking a student or exchange-visitor visa.

The University welcomes exceptionally qualified foreign students into its advanced-degree programs provided they possess the level of English proficiency determined to be necessary to their field of study and provided they are financially capable of meeting educational and living expenses during the tenure of study. English proficiency is measured by the Test of English as a Foreign Language (TOEFL), and financial responsibility is approved through the financial affidavit submitted to the Counselor for Foreign Students in the Office of Student Affairs.

In order to register, a foreign student must be officially admitted by the Examiner and have received from the Examiner all government documents necessary for obtaining a visa.

Prospective foreign students should contact the Examiner, Admissions Office, 7A Jessup Hall, The University of Iowa, Iowa City 52240, for detailed information regarding procedures and requirements.

APPLICATION DEADLINES

Applicants for admission must submit the required applications for admission and the necessary official transcripts and other required documents to the Office of Admissions by the deadline dates listed below for the session for which the student is applying. Foreign students have different deadline dates and should follow them regardless of college.

College of Liberal Arts
June 1—Summer Session
August 25—First Semester
January 15—Second Semester

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

College of Dentistry
February 15—Summer Session only

College of Engineering
June 1—Summer Session
August 25—First Semester
January 15—Second Semester

Graduate College
May 15—Summer Session
August 15—First Semester
January 2—Second Semester

College of Law
May 1—First Semester only

College of Medicine
January 1—First Semester only

College of Nursing
April 15—First Semester
November 15—Second Semester (Applications accepted from registered nurses only)
November 15—Summer Session (Applications accepted from registered nurses and two-year cooperative program students only)

College of Pharmacy
August 25—Fall semester only

Dental Hygiene Program
April 1—First Semester only

Teacher Education Program
July 1—First Semester
November 1—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:
June 1—Summer Session
September 1—First Semester
January 1—Second Semester

AMERICAN COLLEGE TESTS

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

This requirement applies regardless of the entering student’s grade-point average, and even though he may have taken other similar tests for college or university admission.

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

Scholarship—As a criterion for awarding University-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 in all cases for placement and scholarship purposes.

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

Applicants who have completed the tests but did not have their scores reported to the University should request this reporting from their college or college counselors, or from the ACT Program.

TEST OF ENGLISH AS A FOREIGN LANGUAGE

All applicants classified as foreign students are required to submit acceptable scores from the Test of English as a Foreign Language (TOEFL) of the Educational Testing Service, Princeton, New Jersey, before they may be admitted to The University of Iowa for study. If a non-immigrant holds a high school diploma or a university degree from a recognized high school or university in the United States, the United Kingdom, Canada (excluding Quebec), Australia, or New Zealand, the TOEFL regulation may be waived.

GRADUATE AND PROFESSIONAL COLLEGE EXAMINATIONS

Prospective Graduate College applicants should take either 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 (ATGSB). Prospective applicants to the Colleges of Dentistry, Law, or Medicine are required to take admission tests of the respective colleges. For more detailed information, see respective College sections.

APPLICATION FEE

An application fee must accompany applications submitted by prospective students not previously enrolled for full-time study at the University during the regular academic year. Graduate College applicants must submit the fee unless they have earned a degree from The University of Iowa. Application fees are not refundable except to Iowa residents who are denied admission.

ADVANCE PAYMENT

All new students admitted to the Colleges of Business Administration, Engineering, Liberal Arts, Nursing, and Pharmacy are required to make an advance payment of $50 within two weeks of their notification of admission, unless the student has received a scholarship, grant, or award for more than $50 and evidence of this has been filed with the University Business Office.

Students newly admitted to the College of Dentistry must make an advance payment of $50
within two weeks after notification of their adm.
mission. Students newly admitted to the College of Medicine must make an advance payment of $50 by March 1, or two weeks after notification of admission if after March 1. Students newly admitted to the College of Law must make an advance payment of $50 by April 1, or two weeks after notification of admission if after April 1. Advance payments for dentistry, law, and medicine are not refundable except under special circumstances beyond the student's control.

Students newly admitted to the Graduate College, and returning students in all other colleges, are not required to make advance payments unless they apply for housing in University residence halls, in which case a $50 advance payment must accompany the residence hall contract.

Advance payments apply toward the student's University costs. They are refundable if the student officially cancels his admission and/or residence hall contract before June 1 for the fall semester, January 1 for the spring semester, or May 15 for the summer session. The advance payment is otherwise not refundable except under special circumstances beyond the student's control.

MEDICAL EXAMINATION

Students newly admitted to the University shall submit medical examination reports by licensed physicians, on University medical examination report forms. Students who do not submit reports to the University's Student Health Service before the beginning of classes will have their registration canceled. A student whose registration is canceled may be permitted to re-enroll after filing the required medical report and paying a $10 reinstatement fee.

REGISTRATION

All persons who attend University classes are required to register and pay the established tuition and fees. The Office of the Registrar distributes directions for completion of registration in each college approximately one month before the opening of each academic session.

At the opening of each session, the instructor of each class receives from the Office of the Registrar a list of all students properly registered for the class. This list serves as his authority to admit the students to his class.

A graduate student may audit courses with the approval of the instructor and the Dean of the Graduate College. If the student's registration is for audit courses only, he is assessed an audit fee.

RECORDS

All academic records are maintained by the Office of the Registrar and will not be released without written permission from the student. However, grade reports will be mailed to the following at the close of each semester without the written permission of the student:

(a) Parents of all unmarried freshmen and sophomore students under the age of 21.
(b) High school principals of all unmarried freshman and sophomore students under the age of 21 who graduated from that high school and came directly to the University.
(c) Dean of the junior college of any student who transferred directly to the University from that junior college.

TUITION AND FEES

The following is the University's schedule of full-time tuition and fees, per semester, for the 1979-80 academic year (part-time registration is available):

<table>
<thead>
<tr>
<th>College</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal Arts, Engineering, Pharmacy, Nursing, and Business Administration</td>
<td>$210</td>
<td>$235</td>
</tr>
<tr>
<td>Law</td>
<td>$555</td>
<td>$635</td>
</tr>
<tr>
<td>Medicine and Dentistry</td>
<td>$435</td>
<td>$480</td>
</tr>
<tr>
<td>Graduate</td>
<td>$355</td>
<td>$600</td>
</tr>
</tbody>
</table>

This schedule includes surcharges established with a view toward possible future reduction. The surcharges are $34 per semester for both resident and nonresident undergraduate students; $112.50 per semester for both resident and nonresident students in the Colleges of Law, Medicine, and Dentistry, and for resident students in the Graduate College; and $15 per semester for nonresident students in the Graduate College.

The University must reserve the right to limit the number of nonresident students it admits, and to apply scholastic requirements which will maintain a nonresident student group with high scholastic aptitude and promise of enriching student life on the campus. Criteria used by the University to classify students as residents or nonresidents for admission and fee purposes are fully stated in the Appendix.

In addition to the above, special fees are charged for private lessons in music, at the rate of $50 per semester for each course (two lessons a week), $90 per semester for two courses carried simultaneously, and for non-music majors, $25 per semester for one course (one lesson a week).

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

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

PROCEDURE FOR PAYMENT OF STUDENT ACCOUNTS

Tuition and fees, and board, room, and other University residence hall or fraternity-sorority housing expenses are payable on an installment basis, with billing the first of October, November, December, and January for the fall semester, and the first of February, March, April, and May for the spring semester.

Bills are mailed to the student's Iowa City or commuting address. The student is responsible for furnishing a correct address on his registration form. The University strongly encourages payment of student bills by mail. It requires that bills be paid promptly. A $5 penalty is assessed against student accounts not paid by the 12th of the month they are due, and students with accounts overdue on the 20th of the month are reported to the Registrar for cancellation of registration. A student whose registration is canceled shall pay a $10 fee for reinstatement.

If a student cancels his registration, or has it canceled, any refund of University payments will normally be mailed to the student's forwarding address on the next billing date after the date his registration is canceled.

Further information may be obtained from the Cashier's Office, 3 Jessup Hall, Iowa City 52240.

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, "4-51" is the code for the course numbered 51 in the Department of Chemistry (4), titled "Development of Ideas in Chemistry."

Usually, course numbers below 100 designate "Primarily for Undergraduates"; numbers 100 to 199 designate courses "For Undergraduates and Graduates"; and numbers 200 and above designate courses "Primarily for Graduates."

The University reserves the right to alter its course offerings without further notice.

COLLEGE OF BUSINESS ADMINISTRATION

6A Accounting
6B Business Administration
6C Economics
65 Office Management and Business Education

COLLEGE OF DENTISTRY

61 Crown and Bridge Prosthesis
62 Operative Dentistry and Endodontics

63 Dental Technology
64 Denture Prosthesis
65 Oral Pathology
66 Oral Surgery
67 Dental Hygiene
68 Radiology
69 Periodontology
90 Oral Biology
111 Community Dentistry

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
7I Educational Psychology, Measurement, and Statistics
7J Secondary Education
7K Special Education
7V Educational Media

COLLEGE OF ENGINEERING

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

91 COLLEGE OF LAW

COLLEGE OF LIBERAL ARTS

2A Nondepartmental Courses
1A Art Education
1C Art History
1C Art Studio
1C Botany
1C Speech Pathology and Audiology
2A Child Behavior and Development
2A Chinese
2A French
1A Basic Skills Courses
1B Core Courses
1C Geology
1C German
1C Greek
1C History
1C Home Economics
1C Spanish
1C Journalism
1C Latin
2A Library Science
2C Computer Science
2M Mathematics
2S Statistics
2A Military Science and Aerospace Military Studies
2A Music Training
2A Music
2A Philosophy
2A Physical Education for Men
2A Physical Education for Women
2A Physics and Astronomy
2A Political Sciences
2A Psychology
2A Religion
2A Russian Literature and Thought
2A Semiotics
2A Spanish
2A Speech and Dramatic Art
2A Sociology
2A Speech and Communication Studies
2A Japanese
4A French
4A Social Work
4A Geography
4A American Civilization
4A Comparative Literature
50 Hospital and Health Administration
50 Special Science
2A Social Studies
<table>
<thead>
<tr>
<th>College of Medicine</th>
<th>General Information</th>
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</thead>
<tbody>
<tr>
<td>Nondepartmental Courses</td>
<td>71 Pharmacology</td>
</tr>
<tr>
<td>Anatomy</td>
<td>72 Physiology</td>
</tr>
<tr>
<td>Microbiology</td>
<td>73 Psychiatry</td>
</tr>
<tr>
<td>Dermatology and Syphilology</td>
<td>74 Radiology</td>
</tr>
<tr>
<td>Preventive Medicine and Environmental Health</td>
<td>75 General Surgery or Anesthesiology</td>
</tr>
<tr>
<td>Neurology</td>
<td>76 Orthopaedic Surgery</td>
</tr>
<tr>
<td>Nutrition</td>
<td>77 Radiation Research Laboratory</td>
</tr>
<tr>
<td>Obstetrics and Gynecology</td>
<td>78 Internal Medicine</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>79 Urology</td>
</tr>
<tr>
<td>Otolaryngology and Maxillofacial Surgery</td>
<td>80 Medical History</td>
</tr>
<tr>
<td>Pathology</td>
<td>81 Oral Surgery</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>82 Medical Jurisprudence</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>83 Biochemistry</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>84 COLLEGE OF NURSING</td>
</tr>
<tr>
<td>46 COLLEGE OF PHARMACY</td>
<td>85 COLLEGE OF NURSING</td>
</tr>
<tr>
<td>86 COLLEGE OF NURSING</td>
<td>87 COLLEGE OF NURSING</td>
</tr>
</tbody>
</table>
University of Iowa students under 21 and unmarried are required to live in University or University-approved housing. University residence halls and married student apartments are available to all University students. Approved accommodations are also available in fraternity and sorority houses, and in privately-operated off-campus units.

FAIR HOUSING POLICY

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

"It is and shall be the firm policy of the University that householders shall rent to all students on the basis of their individual merits as persons, without exclusion 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 Housing Discrimination Commission is responsible for the observance of this ordinance, and for the initiation of redress for violations of it.

UNIVERSITY RESIDENCE HALLS

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

Single, double, and triple rooms with full or partial board are available in the Grand Avenue Residence Halls (west campus) which include Hilcrest, Quadrangle, South Quadrangle, and Riney Halls 1 and 2, and in the Clinton Street Residence Halls (east campus) which include Burge Hall, Currier Hall, Dunn 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 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 adviser in each living unit. Each unit has its own student governing body, and is represented in 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 student requesting residence hall accommodations are assigned to areas reserved for them in undergraduate halls. Graduate students who cannot be accommodated in these areas are assigned to other available residence hall accommodations. South Quadrangle residence hall is reserved for graduate students, and students over 21 years of age.

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 consent carefully, supply all information requested, and return the completed form to the Office of Admissions with the completed admission application.

Applications for residence hall housing are held in abeyance until the applicant has been admitted to the University. The applicant cannot be assured of an assignment of accommodations if his application is received after March 1 for the fall semester. Students are encouraged to select 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 of students in University housing is made without regard to race, color, national origin, or religion.

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

A University residence hall contract, which binds for the academic year, unless the student cancels his registration or submits a written notice of his cancellation of the residence hall contract to the University Housing Office before the opening of the semester under contract—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 1974-75 academic year is $1,075 for a double or triple room with full board. Rates for the several available room and board options vary according to the accommodations. Rates are subject to change with thirty days notice. In the event of a rate increase, the student
MARRIED STUDENT HOUSING

There are approximately 1,100 University-operated apartments available to married students:

Hawkeye Drive Apartments—192 two-bedroom units; unfurnished except for electric range and refrigerator. Unit rent for $105 per month for the 1970-71 academic year. Rent does not include electricity and telephone.

Hawkeye Court Apartments—$16 one-bedroom units; unfurnished except for electric range and refrigerator; 288 two-bedroom units. Each unit has its own gas furnace and electric water heater. Rates for 1970-71 are $92 for one bedroom, $112 for two bedrooms, unfurnished. Rent does not include gas, electricity, or telephone.

Parkview Apartments—Forty one-bedroom and thirteen efficiency units; all unfurnished except for electric range and refrigerator. Each unit has its own gas heater. Rates for 1970-71 are $87 for one-bedroom units, $70 for efficiency units. Rent does not include gas, electricity, or telephone.

Baracks—Two-bedroom units, available furnished or unfurnished in limited numbers. Tenants provide their own refrigerators. Rates for 1970-71 are $58 unfurnished, $74 furnished. Rent includes all utilities but telephone.

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

Advance payments—$10 for a barracks unit, $25 for others—is required before occupancy.

Graduate teaching assistants who have halftime appointments and enroll for at least 5 semester hours of coursework each semester are eligible for teaching assistants' priorities at student rates in apartments.

Married student apartments are assigned in the order applications are received. Assignments are contingent on the applicants' meeting all University admission requirements.

To remain eligible for married student housing, the student must carry at least 3 semester hours of coursework each semester during the academic year, and at least 3 semester hours during the summer session if occupancy begins in June. However, a student living in married student housing during one academic year may continue to live in married student housing through the summer without attending the summer session provided he intends to attend the University the next academic year.

Current rental rates and further information may be obtained from the University Housing Office, 183 Jessup Hall.

OFF-CAMPUS HOUSING

The University Office of Student Affairs, 111 Jessup Hall, provides a listing service for unmarried undergraduate students under age 21 who want to live in University-approved private housing. The student selects and contracts for private housing directly with the householder. As a service to undergraduate students over 21, graduate students, and married students, currently-available rooms and apartments are posted on a bulletin board on the ground floor of Jessup Hall.

FRACTIONS

Twenty undergraduate and seven professional fraternities operate chapter houses at Iowa. Houses accommodate 33 to 45 men. Undergraduate college fraternities are Acacia, Alpha Epsilon Pi, Alpha Tau Omega, Beta Theta Pi, Delta Chi Delta, Delta Tau Delta, Delta Upsilon, Kappa Sigma, Lambda Chi Alpha, Phi Epsilon Pi, Phi Gamma Delta, Phi Kappas Phi, Phi Kappa Alpha, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Sigma Phi Epsilon, Sigma Pi, and Tau Kappa Epsilon. Two additional fraternities are currently being organized, Theta Xi and Phi Delta Theta colonies.

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

Detailed information may be obtained from the Men's Interfraternity Council, 111 Jessup Hall.

SORORITIES

Each sorority at The University of Iowa maintains a chapter house which provides an atmosphere for sharing a small-group-living experience and promotes lasting friendships, scholarship, leadership, and service.

The sixteen national sororities active at Iowa are Alpha Chi Omega, Alpha Delta Delta, Alpha Xi Delta, Chi Omega, Delta Delta Delta, Delta Gamma, Delta Zeta, Gamma Phi Beta, Kappa Alpha Theta, Kappa Gamma, Pi Beta Phi, Sigma Delta Tau, and Zeta Tau Alpha.

The Panhellenic Office, 183 Jessup Hall, may be contacted for additional information.
The University maintains a variety of service agencies to help students make the most effective use of their educational opportunities at Iowa. These agencies include:

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. Enrollment projections and the development of enrollment policies are also conducted by the staff of the Dean's office. The office is also responsible for commencements and convocation ceremonies, and for publishing the University Catalog.

Admissions

All students planning to enroll in the University must be officially admitted by the Office of Admissions. All inquiries, transcripts, evaluations of transfer credit, and applications for admission into any college of the University should be directed to this office.

Other responsibilities include teacher certification evaluation, 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.

The Office of the Registrar provides assistance to students concerning Selective Service and military service matters, helps student veterans with University application and enrollment procedures, and provides administrative supervision of students under Vocational Rehabilitation.

High School-College Relations

This office, administered as a part of the Office of Admissions, coordinates and implements all scheduled relations with secondary schools and institutions of higher education. These contacts relate both to school and college authorities and faculty as well as different levels of prospective students who have an interest in any of the ten colleges of the University.

Educational Opportunities Program

This office, administered as a part of the Office of Admissions, 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 was originated as the Martin Luther King Scholarship Program for the purpose of increasing educational opportunities for blacks and other minorities.

STUDENT FINANCIAL AIDS

The Office of Student Financial Aid administers a major program of assistance in the form of scholarships, grants, loans, and student employment. For a detailed description of these programs, see the Catalog section, Scholarships and Loans.

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 academic advisors from the areas of their 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, advisors also serve as general consultants to students, and refer those with special problems to the appropriate areas.

UNIVERSITY HOUSING

Student living facilities at The University of Iowa include University residence halls, housing units for married students, fraternity and sorority chapter houses, and approved rooms in private buildings. Complete information on University housing for students is presented under Housing. All inquiries should be addressed to the University Housing Office, 105 Jessup Hall, Iowa City 52240.
EVALUATION AND EXAMINATION SERVICES

Evaluation and Examination Services administers many of The University of Iowa required and optional tests to entering students. The University is also a test center for many national testing programs, including the American College Test, Graduate Record Examination, Admission Test for Graduate Study in Business, Graduate School Foreign Language, Law School Admission Test, and the Test of English as a Foreign Language. Evaluation and Examination Services is responsible for administering these and other tests upon request from colleges.

Many course examinations are duplicated, scored, and analyzed by Evaluation and Examination Services. Faculty members may request assistance in developing and improving their classroom tests by evaluating results of examinations. Assistance is also given to faculty or student groups who have particular project requests, such as teacher or course evaluation.

Some institutional research projects as requested by University administration or initiated by Evaluation and Examination Services are conducted by this office.

OFFICE OF STUDENT AFFAIRS

The Office of Student Affairs is a general counseling agency and clearinghouse of information for students, particularly with reference to extracurricular matters. 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.

Student Affairs staff members work with individuals and with student groups and organizations on campus, including fraternities and sororities and residence hall governing bodies.

Disciplinary counseling is provided students involved in infractions of University rules and regulations.

STUDENT HEALTH SERVICES

All students currently registered at the University (after they have submitted the completed medical examination forms) are eligible for Student Health Services. Consultations during regular office hours are made with no charge calls after office hours are subject to nominal fees.

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

Group-plan student insurance is available on a year-to-year basis at a minimal 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 teaching clinic, the purpose of which is to train dentists. Many students who are registered in the University may apply for dental treatment at the College and they will be accorded the same opportunity for treatment as any other patient.

It should be emphasized that the College of Dentistry is not a part of the University Student Health Service, and as such does not render service under the student health hospitalization fund. Fees are established for all services rendered and these will be charged to the student's monthly University bill. Consequently, a student ID card is required when treatment is rendered.

Further information can be obtained at the information and appointment desk near the main entrance to the College of Dentistry.

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 workshops, and referral to other clinics as needed. Students with known speech or hearing problems are requested to consult the Speech and Hearing Clinic staff before registering, so that the most effective possible help may be given in relation to course programs, living arrangements, special adjustments to particular course requirements, and the scheduling of clinical work.

UNIVERSITY COUNSELING SERVICE

The University Counseling Service assists students in vocational and educational planning, personal and social adjustment, and training in study skills.

Staff members are professionally trained counselors, and in their relationships with students, the confidential nature of counseling is respected. This means that students may feel free to discuss any situations or problems which concern them. The University Counseling Service is not connected with and does not report to any disciplinary or administrative agencies on the campus with reference to professional counseling services for students.

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Appointments may be made by coming to the offices of the University Counseling Service in the southwest wing of the ground floor of East Hall. Although no referral is necessary for a student to secure counseling services, students may be referred by their faculty advisers or other University officials if this is preferred. Any student may make a first appearance to discuss any question or situation, and then a mutual decision is made as to whether the student would like to have other appointments with his counselor. Every effort is made to see the student as soon as possible after he asks for the initial appointment.

STUDENT RELIGIOUS OPPORTUNITIES
Recognizing the religious interests of University students, various faiths and denominations have established campus religious groups and foundations. The campus ministers from these groups are related through the Association of Campus Ministers. This group stimulates and coordinates inter-religious activities, and promotes a religious consciousness and inter-religious understanding.

STUDENT PLACEMENT
Seniors and graduates can avail themselves of the services of the University's Career Counseling and Placement Office, Educational Placement Office, and College of Engineering Placement Bureau. These offices 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.

IOWA MEMORIAL UNION
The Iowa Memorial Union is the center of the University's nonacademic activities. Its facilities include a variety of food services, lounges, meeting rooms, a recreation area featuring bowling and billiards, a television room, art and sculpture display areas, auditoria for lectures and concerts, and in the adjoining Iowa House, 112 guest rooms for parents, University guests, and conference groups. Through the Union Board and its fifty committees, and with the counsel of a professional program staff, students plan and administer all student activities centered in the Union.

INTERCOLLEGIATE ATHLETICS
The University is a member of the Western Conference (the Big Ten), and has intercollegiate athletic programs in football, basketball, track, baseball, swimming, golf, wrestling, tennis, cross country, and gymnastics. Operating policies of the program are determined by the Board in Control of Athletics whose nineteen members include thirteen from the University's teaching and administrative staff, two representing University alumni, one representing the University Staff Council, and three from the student body.

INTRAMURAL AND RECREATIONAL SPORTS
Every interested male student has the opportunity to compete in more than twenty different intramural sports and recreational activities. A wide range of recreational sports activities is provided for women students through the Women's Recreation Association and the Department of Physical Education for Women.

Informal co-recreational sports programs are provided for students, and for staff and faculty members and their spouses and families. Activities include basketball, badminton, darts, table tennis, swimming, handball, paddleball, squash, canoeing, judo, golf, archery, and jogging.
The College of Liberal Arts is the heart and center of the University. Its primary function is to provide a liberal education for the development of well-rounded individuals. Through its curriculum and related activities, the College guides the student in the continued improvement of fundamental intellectual skills, particularly writing, reading, speaking, and quantitative thinking; it guides him toward a mastery of the leading ideas, significant facts, and methods of work in such fields as the sciences, social sciences, language, literature, fine arts, history, and philosophy; it aids him in developing a resourceful and independent mind, and it attempts to provide him with experiences which will help him develop strength of character and a sense of responsibility.

The College enrolls more than two-thirds of the University's undergraduate student body. All entering freshmen, except those with engineering majors, enroll in the College of Liberal Arts to acquire foundations for degree work in one of the College's forty-nine major areas or in one of eight other professional colleges of the University. The College of Liberal Arts also provides a broad range of elective coursework.

DEGREE PROGRAMS

Degrees

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

The College of Liberal Arts awards bachelor's degrees in the following areas:

- American Civilization
- Anthropology
- Art
- Astronomy
- Botany
- Chemistry
- Child Behavior and Development
- Chinese Language and Literature
- Classics
- Dramatic Art
- Economics
- Elementary Education*  
- English
- Linguistics
- Mathematical Sciences
- Medical Technology*
- Microbiology
- Music
- Philosophy
- Physical Education
- Political Science
- Portuguese*
- Psychology
- Recreation Leadership
- Religion
- Russian
- Social Studies
- Social Work
- Sociology
- Spanish
- Speech and Dramatic Art
- Speech and Hearing Science
- Special Education
- Zoology

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

- Chemical Physics
- Comparative Literature
- Computer Science
- Cultural Anthropology and Linguistics
- Library Science
- Museum Training
- Nuclear Science
- Science Education
- Speech Pathology and Audiology
- Administration
- Law Enforcement and Correction
- Statistics
- Urban and Regional Planning

SCHOOLS AND DIVISIONS

Seven schools and two divisions have been established within the College of Liberal Arts to coordinate related programs:

The Division of Fine Arts includes the Schools of Art and Music and the Department of Speech and Dramatic Art. Its programs are designed to meet the varying needs of those with unusual creative talent, those interested in the history of the arts, those who expect to teach, those who are interested in art in industry, and those who are capable of becoming professional artists. It also undertakes to stimulate interest in the fine arts on the campus and throughout the state and region, through conferences, festivals, workshops, and the summer all-state program for talented high school students.

Courses offered in art, music, dramatic art, and film are described in the departmental segments of the Catalog.
In the Art Building will be found the art library, two auditorsia, teaching studios, seminar rooms, an art lending gallery, and the specialized equipment for such technical fields as photography, metalwork, metal casting, printmaking and ceramics.

The new Museum of Art, dedicated in 1969, is located in a building contiguous to the School of Art. The Museum has galleries for traveling exhibits as well as for a permanent collection consisting largely of primitive sculpture, modern American paintings, and of modern French and German paintings presented by Mr. and Mrs. Owen Elliott. The Museum has its own auditorium and a public lounge with a view across the river.

The three main music buildings provide classrooms, studios, practice rooms, a music library, student lounges, and two large rehearsal-concert halls. A new Music Building, scheduled for 1970 completion, will house all School of Music activities in one of the finest facilities of its kind in the nation.

The Dramatic Art Building's University Theatre is one of the best-equipped university-based professional theatres in the nation. Its facilities include scene and costume shops, revolving and wagon stages, and an electronic control system. The experimental Studio Theatre permits great flexibility in the relationship of actors to audience. Rehearsal, makeup, and classroons are provided with both theatres. In addition, there are film and broadcasting studios and extensive editing facilities.

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 affording a variety of course selections which lead to and may include advanced work in one or more areas of specialization.

The School of Journalism, established in 1924, 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.

Because a student working in mass communications must write on subjects involving behavior of human beings as individuals and as members of groups, as well as about government, business, industry, and other social structures, the curriculum requires that students satisfactorily complete a considerable number of courses dealing with these matters.

The student's ability and skill is developed, not only in the classroom, but also through laboratory experience. These laboratories include The Daily Iowan, University newspaper; Radio Newsroom of Stations WSUI and KSUI; Hearsekeys, the senior yearbook; Magazine Laboratory; Photographic Laboratory; Typography Laboratory; Newspaper Production Laboratory; Advertising Workshop, University Relations; and Television News Laboratory.

The School of Letters is a federation of the Departments of Chinese and Oriental Studies, 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 Winthrop Press is also part of the School. The School 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 nonspecialists, 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 degree, Master of Arts in Library Science. It also offers a certificate program for school librarians. Attention is given to preparation for beginning professional positions in various types of libraries including public, school, college, and special libraries. Certain courses in the School may be taken by junior and senior undergraduates. The School utilizes the resources and special facilities of the University Libraries in carrying out its program.

The School of Religion offers undergraduate and advanced degree programs, and provides elective courses for nonseniors. Coursework in the School is intended to help the student gain a knowledge of religion as part of general education including an introduction to the historical role of religion in human culture and to its contemporary expressions in thought and action. Courses offered by the School are also of value to advanced students as refresher studies and opportunities for intensive research in selected fields. 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. The graduate and undergraduate curricula are accredited by the Council on Social Work Education, of which the School is a charter
The Honors Program

The Honors Program is a College-wide plan designed to give exceptionally promising students opportunities to develop their full potentials. Honors students are assigned to special sections in general studies courses. Honors students 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. For further information, write to the Honors Director, College of Liberal Arts.

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 a professional college of the University, for which the bachelor's degree is not an admission requirement, to obtain a bachelor's degree from the College of Liberal Arts upon successful completion of one academic year in the professional college.

THE LIBERAL ARTS ADVISORY OFFICE

The College of Liberal Arts Advisory Office assigns faculty advisers to students enrolled in the College. These advisers help students with registration and in the progressive development of their educational programs. A student who has declared a major is assigned an adviser from his major department. 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 Advisory Office staff is available for conferences with students who have questions or problems on academic matters.

The Liberal Arts Advisory Office also administers the Credit by Examination program, changes of majors, and other academic affairs of the College.

ADMISSION REQUIREMENTS

All students seeking to register for the first time in any college of the University must submit a formal application for admission, and must be officially admitted by the Director of Admissions. This applies to students who have been enrolled.
in other colleges of the University, as well as transfer students. All communications concerning admission should be addressed to the Director of Admissions, The University of Iowa, Iowa City 52240.

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 choice.

Enlisting Freshmen

An applicant seeking admission as an enlisting freshman must have the high school from which he graduated provide a certificate of high school credits, including a complete statement of the applicant's high school record, rank in class, scores on standardized tests, and certification of high school graduation. The applicant must also submit any other evidence required, such as a certificate of health. An applicant may be tentatively admitted after completing his junior year, but his admission will not be final until he has provided the required final transcript and certification of high school graduation.

1. An applicant for admission who is a graduate of an approved Iowa high school, who has the proper subject-matter background, who is in the upper one-half of his graduating class, and who meets specific curriculum requirements, will generally be admitted upon certification of graduation.

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

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

3. A graduate of a nonapproved high school shall submit all data as required above, and in addition shall take examinations which will demonstrate his general competence to do successful college work.

4. An applicant who is not a high school graduate shall submit all data required above, insofar as it exists, and shall take examinations to demonstrate general competence to do college work. This is not evidence of the necessary competence for admission to a given curriculum also will be required.

Undergraduate Students Transferring From Other Colleges

Students from accredited colleges and universities. Transcripts of records are given full value if coming from colleges or universities accredited by the North Central Association of Colleges and Secondary Schools or similar regional associations. For schools not regionally accredited the recommendations contained in the current issue of the Report of Credit Given by Educational Institutions published by the American Association of Collegiate Registrars and Admissions Officers will be followed.

b. A transfer applicant will be expected to have maintained a C average (2.0 based on an A grade being 4 points) for all college work previously attempted and not be under suspension from the last college attended. Students who are not residents of Iowa may be expected to have maintained a 2.25 grade index.

c. A student who is below the above standard may be permitted to take entrance examinations. If the applicant successfully completes the examinations he may be admitted on probation.

d. 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 for an indefinite period, until six months have passed since the last date of attendance. When eligible for consideration the applicant will be considered as in (c) above.

a. A transfer applicant under disciplinary suspension will not be considered for admission until a clearance and a statement of the reason for suspension is 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 in consideration of the application. An applicant granted admission under these circumstances will in each case be admitted on probation and his admission subject to cancellation.

f. A maximum of 60 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. A college may refuse to recognize credit from a nonaccredited college or may admit the applicant on a provisional basis and require him to pass an examination for the validation of some or all of the credit. The validation period shall not be less than one semester and will ordinarily be a full academic year. The college will specify to the student the terms of
the validation process at the time of provisional admission. Each student from a nonaccredited college will be considered on his merits, and his admission or rejection is at the discretion of the admissions officer.

Transfer of credit from standard junior colleges, colleges, and universities. Credit in standard liberal arts courses, properly certified as having been earned in approved junior colleges, colleges, and universities, is transferred on a year-for-year basis. Regardless of whether the credit as expressed in terms of the credit unit employed by the institution certifying it, appears to be less than, equivalent to, or more than that representing a full-year's work in this college, the further time needed to qualify for a degree will be computed on the basis of the time spent in the first institution provided, of course, that the student has completed a normal full program in the institution from which he transfers. All transferred credits will be included in the student's record at this college, though only credit in courses which apply on the curriculum finally undertaken at this University will be accepted to apply on that curriculum; and all specific requirements for the degree desired must be completed, even though this may involve more time than that specified at the time of transfer.

For instance, a student who transfers from an approved college, whose full freshman and sophomore years' work involves 60 semester hours in standard liberal arts courses, will be granted junior standing and required to complete a minimum of 60 semester hours for a bachelor's degree. Similarly, a student who transfers from an approved college, and whose full freshman and sophomore years' work involves 68 semester hours in standard liberal arts courses, will be granted junior standing and will need to complete a minimum of 60 semester hours for a bachelor's degree. However, either of these students may have chosen his courses in such a way during his first two years that he will need to spend more than two years and earn more than 68 semester hours in order to meet the specific degree requirements of the program which he elects at The University of Iowa. Likewise, if he has included in his program at the first institution courses which the College of Liberal Arts does not recognize as applicable toward its degrees, the student will be required at the time of admission to spend an appropriate additional period of time and earn sufficient additional credit to meet the requirements for graduation.

Students who transfer from junior colleges are required to earn a minimum of 60 semester hours in the College of Liberal Arts to qualify for a degree, even though they may have completed excess hours in junior college. This practice is in accordance with standard national policies pertaining to transfer of credit from junior colleges.

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A maximum of 60 semester hours earned through correspondence or extension study can be applied toward an undergraduate degree.

For Iowa State Board of Regents' admission requirements, see Appendix of Catalog.

SCHOLARSHIP REQUIREMENTS

Marking System. The following marking system is used by the faculty:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points for Each Semester Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Superior</td>
</tr>
<tr>
<td>B</td>
<td>Above Average</td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
</tr>
<tr>
<td>D</td>
<td>Below Average—Passing</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawn</td>
</tr>
<tr>
<td>P</td>
<td>Passing</td>
</tr>
</tbody>
</table>

Not used in computing G.P.A.

The cumulative grade-point average is computed as follows: multiply hours of credit in each course by the appropriate grade points; total the grade points earned to date; divide the sum by the number of hours undertaken, excluding courses in which grades of W or P are given. A grade of I is considered as bypassing until otherwise credited, and it must be replaced with a grade on completed work during the next session of the student's registration in order not to revert to a grade of F.

Classification of Students

Freshman Less than 28 semester hours
Sophomore 28 to 39 semester hours
Junior 40 to 60 semester hours
Senior 90 or more semester hours

Quality of Work

1. Scholarship Requirements for Graduation

The general requirements for graduation include the element of quality as well as the quantity of work completed.

a. A student satisfies the College qualitative requirement for graduation by earning a minimum grade-point average of C, or 2.0, in all college work attempted, all college work undertaken at The University of Iowa, and all work attempted in the major field including 2.0 in all U of I major work.

b. Students who do not meet the requirements in (a) but who do have a cumulative grade-point average of at least 1.8 on all college work attempted, on all work attempted at The University of Iowa, and an overall C average in the major including 2.0 in all U of I major work may satisfy the requirement by earning sufficient grade points to equal or exceed a figure obtained by multiplying by two the number of hours required for graduation at time of entrance.
The Basic Program

The curriculum of the College of Liberal Arts requires that before graduation all students meet acceptable standards of performance in the following:

- **Basic skills**
  - Rhetoric (reading, writing, speaking)
  - Physical education
  - Mathematics
  - Core courses (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)

Students must consult the Liberal Arts Advisory Office for detailed information about course requirements for the Bachelor of General Studies (B.G.S.) program of study.

The Freshman Program

The subjects of study included in the program of a freshman student differ according to his accomplishments in the basic skills and foreign language tests. If he is not excused from any of the basic skills or from foreign language, on the basis of test results, his freshman program may be somewhat as follows:

- **Rhetoric 10:1**
  - 4 semester hours
- **Physical Education**
  - Skills 10:21
  - 2 semester hours
  or
  - Physical Education
  - Skills 10:31
  - 2 semester hours
  - German 12:11
  - 3 semester hours
  - (or any language of his choice)
  - Western Civilization 11:31
  - 4 semester hours
  - (or any core courses of his choice other than literature)
  - Elective
  - 3 semester hours

**Total**
- 16 semester hours

If he is excused from all skills courses on the basis of test results, his freshman program may be the following:

- **French 9:1**
  - 4 semester hours
- **Literature Core 11:5 or 11:7**
  - 4 semester hours
- **Life Science 11:21**
  - 4 semester hours
- **Religion 11:52**
  - 4 semester hours

**Total**
- 16 semester hours

The possible variations of the freshman program are many, though the student must include any courses needed to meet his basic skills requirements, and it is well for him to include at least one core course.

Methods by Which Requirements May Be Satisfied

1. **Rhetoric Program**

All students. Must register at their initial
enrollment for rhetoric as assigned on the Admission Statement and continue to enroll each semester until the proficiency tests are passed. Students assigned to 10.3 Rhetoric may attempt the same and speech tests before taking the course, but must enroll for 10.3 until they learn the names of the tests. By satisfactorily passing these tests, a student can earn up to 4 semester-hours of credit.

Transfer students. By submitting at the time of entrance an 8 semester-hour course from another institution, comparable to the rhetoric course at The University of Iowa; or by transferring 6 semester hours of credit in English composition and 2 semester hours of credit in speech from another institution of good standing; or by transferring 8 semester hours in English Composition and either completing 2 semester hours of credit in speech (30.25) at this University or satisfactorily passing the speech test for transfer students. A student who transfers less than 6 semester hours in composition must register for the rhetoric course indicated on his Admission Statement and continue until the requirement is satisfied. A maximum of 8 semester hours of credit in the Rhetoric Program will be counted toward the bachelor's degree.

2. Physical Education Skills
All students. By satisfactorily completing during the freshman year 4 semester hours of physical education skills.

By passing the comprehensive test in physical education skills. This test is given each semester at announced times during the closing weeks of the term. Any student, whether or not he is registered for the course in physical education skills, is eligible to take the test. Up to 4 semester hours of credit with a grade of "P" may be awarded for successful completion of the test.

Freshmen who elect to meet the requirements by examination, but who fail 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.

Veterans. 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. By transferring 40 semester hours of advanced standing.

By transferring 4 semester hours (or the equivalent) of college physical education. By transferring 2 semester hours (or the equivalent) of college physical education, and satisfactorily completing the appropriate 2 semester-hour course at U of I in physical education skills. A maximum of 4 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.

3. Mathematics
By presenting at least two and one-half units of high school mathematics exclusive of such courses as business arithmetic and consumer mathematics.

By satisfactory accomplishment in the placement test in mathematics.

By satisfactorily completing a college-level course in mathematics as defined by the Department of Mathematics.

4. Historical-Cultural, Natural Science, Social Science, and Literature Core Requirements
All students. By satisfactorily completing in each of the four areas one of the 8 semester hour core courses offered in the area, except that students may, with the approval of the department, be excused from the core requirement in the area of the major; or 8 or more semester hours of approved courses* in departments in each area where each course is offered; or one of the comprehensive examinations offered in each area. Literature core courses may not be taken until the Rhetoric Program requirements are satisfied.

Offered for fulfilling core requirements and for college credit are the General Examinations of the College-Level Examination Program. Three tests are included, covering humanities, natural science, and social science. Permission to take the tests (administered by the University examination service) must be secured from the Liberal Arts Advisory Office, 116 Schaeffer Hall. Information regarding specific student eligibility for the tests may be had by contacting the staff office.

Additional options for transfer students. Historical-cultural, natural science, and social science courses: by submitting at the time of entrance from another institution an 8 semester hour core course comparable to the corresponding core course at The University of Iowa; by submitting at the time of entrance, or in combination with courses at The University of Iowa, a total of 8 or more semester hours in each core area from among the following: Historical-Cultural—history, philosophy, religion, and history and appreciation of art, music, or drama.

Natural Sciences—astronomy, microbiology, botany, chemistry, geology, mathematics, physics, physiology, and zoology.

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

Literature—by submitting at the time of entrance the approved courses will be listed in the Schedule of Courses.

*The approved courses will be listed in the Schedule of Courses.
COLLEGE OF LIBERAL ARTS

6 semester hours of college credit in literature from another institution; or by submitting 3 semester hours of college credit in literature from another institution and completing 4 semester hours in a literature course at this University. Students transferring less than 3 semester hours must complete one of the 8 semester hour courses in the literature core area.

5. Foreign Languages

Candidates for the Bachelor of Arts degree are to complete a minimum of 4 semesters of college-level study in any one of the foreign languages taught in the University or in another college or university of recognized standing. Their require-
ment may also be satisfied by:

Completion of four years of high school study in one language.

Completion of a combination of high school and college study in one language which would be the equivalent of four semesters of study at the college level. 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 4 hours added to his gradua-
tion requirements.

Satisfactory performance in an achievement ex-
amination measuring proficiency equivalent to that usually attained in four semesters of college study in one language.

6. Area of Concentration or Major

The head of the department or chairman of the area in which the student wishes to concentrate his studies specifies the requirements in this area. The requirements for the major are stated in con-
nection with the departmental announcements in this Catalog. However, the student should always confer with the head of the department or his appointed representative in outlining plans for a major. Students who have attempted 60 or more semester hours of college 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.

Maximum student load. Eight semesters or four academic years is the time normally re-
quired for the completion of a program leading to the bachelor's degree from the College of Liberal Arts. The normal schedule for the semes-
ter is 18 semester hours. When special circum-
cstances warrant, the student may wish to carry as many as 19 semester hours including all work offered for credit. If he exceeds the maximum of 19 semester hours without the permission of the Advisor Office, he will be required to earn one extra semester hour for graduation for each semester hour of excess credit in his program.

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

To be eligible for any form of graduation hon-
ors, the student must complete the final 60 sem-
ter hours in residence in the College of Liberal Arts at The University of Iowa, at least 45 semes-
ter hours of which must have been completed prior to the student's final registration.

The Office of the Registrar certifies to the Dean of the College the names of students eligible to graduate with distinction. The grade-point averages for graduation with distinction are as follows:

<table>
<thead>
<tr>
<th>Grade-Point Average</th>
<th>Highest Distinction</th>
<th>Highest 2%</th>
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</table>

The grade-point average upon which graduation with distinction is determined includes all work undertaken prior to the opening of the final ses-

sion. Transfer students must also have attained the required grade average on all work under-
taken in the College of Liberal Arts at The Un-
iversity of Iowa. Students who enroll in a pro-

fessional college at The University of Iowa to complete the final 30 semester hours of elective credit to meet degree requirements in the College of Liberal Arts are eligible for the designation "graduation with distinction" as follows:

a. upon the conferring of a bachelor's degree with a grade average as above, and

b. provided that 60 semester hours prior to enrollment in the professional college have been completed in the College of Liberal Arts at The University of Iowa.

The Director of Honors certifies to the Dean of the College the names of graduating students eligible to graduate with honors. To be eligible for graduation with honors the student must be recommended by his major department and be approved by the Honors Council and the Dean of the College.
ADMINISTRATIVE STAFF
Dean: Dewey Bernard Stult.
Associate Dean and Director, Advising Office: Hugh E. Harris.
Assistant Dean: James P. Sandrock.
Director of Honors: Rhodes Dunlap.
Associate Director of Honors: J. Richard Wilmeth.

BASIC SKILLS
The Rhetoric Program
Coordinator, Richard Braddock
Office, English-Philosophy Building
Speech Supervisor, Donovan J. Oches
STAFF
Professor: Richard Braddock.
Associate Professor: William G. Clark.
Assistant Professor: James J. Strader, Margaret B. McEwen.
Instructors: Richard S. Hooman, Louise B. Kelly, Cee Martin, Late H. Muñoz.

10:1 Rhetoric: Main Course
Instruction in reading, writing, and speaking.
4.9 h.

10:9 Rhetoric: Basic Course
Continuation of 10:1.
4.9 h.

10:3 Rhetoric: Accelerated Course
An intensive, one-semester course in reading, writing, and speaking for those who have demonstrated a sufficiently high degree of competence.
4.9 h.

10:4 Rhetoric: Accelerated Writing
An intensive, one-semester course in writing. Open only to new students who, through placement examination or the transfer of credits, satisfy the rhetoric requirement in speaking but not in writing.
2.9 h.

10:5 Rhetoric: Special Instruction in Writing
For students who are requested by the Rhetoric Program to obtain special help to improve their writing. The Rhetoric Program maintains a Writing Laboratory where students may obtain individual help with their writing problems. A Reading Laboratory where students may secure help in improving their reading speed and comprehension, and a Speech Laboratory where students may obtain individual help with their speaking problems. Instruction in all three laboratories is offered on a voluntary, no-credit basis.
2.9 h.

Physical Education Skills
Course Chairman, Donald R. Casady
Office, 125 Fieldhouse
10:21 Physical Education Skills for Men 1 to 2 h.
Scientific foundations of physical education activities and intensive training in sports skills, carry-over sports activities, and physical conditioning. Open only to those who have demonstrated a satisfactory level of proficiency in elementary physical education programs.

10:22 Physical Education Skills for Men 1 to 2 h.
Open only to sophomores who have not satisfied the requirement in Physical Education Skills and who elect to take physical education without credit.

10:24 Physical Education Skills for Men 1 to 2 h.

10:25 Physical Education Skills for Men 1 h.
Open by permission only.

10:26 Physical Education Skills for Men 1 h.
Open by permission only.

Course Chairman, M. Gladys Scott
Office, 114 Women's Gymnasium
10:31 Physical Education Skills for Women 2 h.
Intensive work in selected activities from the areas of sports, dance, recreation, and gymnastics. Emphasis on movement principles.

10:32 Physical Education Skills for Women 2 h.
Continuation of 10:31.

10:33 Physical Education Skills for Women 2 h.
Continuous registration in Women's Gymnasium.

10:34 Physical Education Skills for Women 2 h.
Open by permission only.

10:35 Physical Education Skills for Women 1 h.
Open by permission only.

CORE COURSES
Except where noted, both semesters of a course must be completed if it is to be taken to satisfy the core course requirement of the College of Liberal Arts. Exceptions are made for transfer students who, in consultation with a core course advisor, determine that they may take their core courses as on-semester electives.

Literature
Course Chairman, John Huntley
Office, 304 English-Philosophy Building
The core requirement in literature may be satisfied by taking 11:1, 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.

11:1 The Interpretation of Literature 4 h.
The interpretive strategies available to readers of poetry, narrative, and drama, with special consideration of film as a literary medium.

11:2 Biblical and Classical Literature 4 h.
Selections from Old and New Testament literature, Homer, the Greek dramatists, Plato, Virgil, and others.

11:3 Medieval and Renaissance Literature 4 h.
Selections from Beowulf, Dante, Chaucer, Shakespeare, Milton, and others.

11:4 The Tragic Experience 4 h.
Major representations of the tragic vision of man's experience in narrative prose and drama from classical times to the present.
11:15 The Idea of Comedy 4 s.h.
Varieties of the comic mode in past and present, including satire, burlesque, farce, romance, in prose and verse.

11:16 Narrative Literature 4 s.h.
Selected masterpieces as well as recent developments in both prose and poetry.

11:17 Lyric Poetry 4 s.h.
Poetry from major periods of development as well as contemporary work, with emphasis on the distinctive language and major formal patterns of poetry.

11:18 Dramatic Literature 4 s.h.
Selected plays from Shakespeare's time to the present with some consideration of the dramatic mode and form, in other genres.

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

Natural Sciences
Life Science
Course Chairman, 11:21
Richard D. Bjorland (fall)
Office, 222 Chemistry-Botany Building
Robert W. Crusden (spring)
Office, 506 Chemistry-Botany Building
Course Chairman, 11:22
Barbara A. Stay (fall)
Office, 317 Zoology-Annex Building
Richard V. Bovbjerg (spring)
Office, 224 Zoology Building

11:21 Life Science (first half) 4 s.h.
General principles of structure, function, and evolution of living organisms from molecular to population levels. Stress those principles common to all living things, including Man. Primarily for non-science majors. Lecture, laboratory, and discussion. The two-semester sequence may be started in fall or in spring.

Earth History and Resources
Course Chairman, Holmoe A. Semken
Office, 106C Calvin Hall

11:23 Earth History and Resources (first half) 4 s.h.

11:24 Earth History and Resources (second half) 4 s.h.
Ancient and modern environments on and within the earth and the processes by which they evolved. Evolution of organisms, and man's current use and release of present environments. Either semester may be taken independently of the other.

Historical and Cultural Studies
Course Chairman, James Kittelson (11:31, 11:32)
Office, 206 Schaeffer Hall

11:31 Western Civilization: Middle Ages to 1815 4 s.h.

11:32 Western Civilization: 1815 to Present 4 s.h.
The evolution of Western civilization with emphasis on national, cultural, social, economic, and political forces which shaped the growth and development of Europe as related to the problems of our own time.

Course Chairman
Frank Snare (11:33)
 Laird C. Addis (11:34)
Office, 269 English-Philosophy Building

11:33 Philosophies of Man (first semester) 4 s.h.
Some major philosophical theories of man and society from Plato to the present.

11:34 Philosophies of Man (second semester) 4 s.h.
A philosophical consideration of the impetus of key developments in scientific thought on man's conception of himself.

Course Chairman, George W. Forell (11:35, 11:36)
Office, 307 Gilmore Hall

11:35 Religion in Human Culture (first semester) 4 s.h.
Religion in human culture, illustrated by examples from pantheistic non-Western and Western cultures. Historical and systematic study of Hinduism, Buddhism, Judaism, and Christianity, with major emphasis on the last two. Three lectures and two discussion sessions per week. Open to freshmen.

11:36 Religion in Human Culture (second semester) 4 s.h.
Interrelationships between religion and culture; relationship of religion to literature, art, music, and drama; methodology for the historian of religion; philosophy of religion; relationships between society and sciences, religion and politics, religion and ethics, etc. Illustrations chiefly from Western culture. Three lectures and two discussion sessions per week. Open to freshmen.

Course Chairman, Robert Alexander (11:37, 11:38)
Office, W142 Art Building

11:37 History and Appreciation of Art 4 s.h.

11:38 History and Appreciation of Art 4 s.h.
Periods, styles, and great personalities in painting, sculpture, and architecture from prehistoric times to the present. Elements of theory of art and art criticism. Either half may be taken first. Four one-hour lectures and one discussion section.

Course Chairman, Eldon Obrecht (11:39, 11:40)
Office, 10 Music Studio Building

11:39 Masterpieces of Music 4 s.h.

11:40 Masterpieces of Music 4 s.h.
Representative music from the classical repertory of the 18th, 19th, and 20th centuries selected from recordings and in programs by faculty, students, and groups, supplemented by lecture-discussion and demonstration outside readings and reports. Either half may be taken first.

Course Chairman, Paul Gilligren (11:51, 11:52)
Office, 234 Jepsen Hall

11:52 Drama in Western Culture 4 s.h.
The influence of society, plays and productions since and tradition, from classical Greece to 17th century France. Particulars in painting, sculpture, and architecture. Seminar on Speech and Dramatic Art 26:31.
AMERICAN CIVILIZATION

Elaboration of two successful long papers which demonstrate command of methods and materials.

Requirements for the Doctor of Philosophy degree in American Civilization:

Course Work and Independent Study. Through a balanced and integrated program of courses and readings, the D.Phil. candidate will demonstrate an adequate knowledge at the master's level to a depth of understanding of the literature of the United States (together with their European background, as including English literature). The student will also be responsible for knowledge of any subjects his thesis committee deems valuable for the completion of his dissertation.

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

Comprehensive Examinations. Since American civilization is too broad a subject to be mastered completely, each student must offer three approved fields for the written portion of the comprehensive examination. These will include 42 of American literature, one field of American history, and the third field involving a further disciplinary area, either in the social sciences, art, or philosophy. The student must select three of these and consult with the concerned department and his adviser, an acceptable body of work to be covered in this area of the comprehensive examination.

In addition, on the oral portion of the examination the candidate must demonstrate an acceptable solid command of the total culture of one of the following periods:

I. American Colonial Civilization to 1783
II. American Civilization 1783-1823
III. American Civilization 1823-1875
IV. American Civilization 1875-1914
V. American Civilization 1914 to the present

Thus, the student must present a satisfactory thesis on a topic which concerns some aspect of one of the above fields. Before the student's topic is approved, the student must explain the subject of his thesis and convince it that the topic is one which can be successfully completed.

Final Oral Examinations. This examination shall be conducted predominantly over the field of the thesis.

Language. Candidates for the degree in American civilization are expected competence in two modern languages, or in one language and one theoretical area, and are expected to read English. Each student must master the literary and cultural materials of the subject written in the two languages, or in languages deemed necessary by the thesis committee in order to complete the comprehensive examination.
ANTHROPOLOGY

45:50 Senior Colloquium 2 s.h.

Exploration of the total culture of an era in historical perspective by applying the disciplines of history, literature, art, philosophy, and the social sciences.

45:57 Honors Colloquium crarr.

45:94 Honors Project crarr.

For Undergraduates and Graduates

45:110 Technology and Responsibility 3 s.h.

Same as Civil Engineering 3:110.

45:115 Afro-American Literature 3 s.h.

Same as English 3:114.

45:150 Individual Rights in an 3 s.h.

Industrial Society

Same as Business Administration 362:510.

45:152 American Folk Literature 3 s.h.

45:155 Significant Books in 3 s.h.

American Civilization

Same as English 3:155.

45:156 Significant Books in American 3 s.h.

Civilization II

Same as English 3:156.

45:191 Introduction to American Civilization 3 s.h.

Materials and methods for graduate study.

45:192 The Frontier and Urbanization 3 s.h.

45:197 The American Renaissance 3 s.h.

45:194 American Civilization in the 3 s.h.

1920's

45:195 American Civilization in the 3 s.h.

20's and 30's

45:196 American Civilization Since 1930 3 s.h.

45:197 Interpretations of American Civilization 3 s.h.

Primarily for Graduates

45:200 Seminar: Problems in American Civilization crarr.

Selected topics studied in depth. May be repeated. Prerequisite, consent of instructor.

45:201 Special Studies in American Civilization crarr.

45:210 Culture of Black America: As 4 s.h.

Interdisciplinary Approach

45:211 Research in Afro-American Culture crarr.

45:212 Africans in the New World 3 s.h.

45:381 Human Rights and World Order 3 or 4 s.h.

Same as Political Science 304:311 and Journalism 18:290.

45:386 American Criticism and Culture 3 s.h.

Same as English 3:386.

45:466 Seminar: American Criticism and Culture crarr.

45:457 Social Factors in American Literature crarr.

Same as English 4:457.

45:500 Special Project: Graduate crarr.


ANTHROPOLOGY

Chairman of Department, Nancie L. Gonzalez

Office, 130 Machleide Hall

Students majoring in anthropology must take a minimum of 29 semester hours of courses. The following courses are required of all majors:

113:11 Introduction to the Study of Culture and Society 4 s.h.

113:12 Introduction to Anthropology and Physical Anthropology 4 s.h.

In addition, each student must take a minimum of one course in archaeology, one course in sociological, and one course in social anthropology. The remaining hours are to be selected in consultation with the advisor. Related courses in allied areas such as sociology, linguistics, archeology, anthropology, political science, and sociology may be recommended by the advisor in consultation with the student.

Hons in Anthropology

Admission. A student must have and maintain a cumulative grade-point average of 3.0 in all courses and a 3.5 in anthropology courses, be admitted to and maintained in the honors program in anthropology. A student may not be admitted to the program beyond the beginning of his senior year.

In addition to the requirements listed for the major in anthropology, a student must take:

113:92 Honors Seminar in Anthropology 2 s.h.

113:97 Honors Research 4 s.h.

These 6 semester hours are in addition to the 29 semester hours required for a major in anthropology.

The Graduate Program

To enter and to remain (after 30 semester hours) in the graduate program in anthropology, a grade-point average of 3.0 is required. Also, access to the Graduate Record Examination Application for the M.A. degree or Ph.D. degree in anthropology is contingent upon admission to the Graduate Record Examination. A rank below 50% best indicates that admission to the Graduate Record Examination is not recommended.

The department offers the M.A. degree in anthropology with or without thesis and in cooperation with the Department of Linguistics, the Ph.D. in cultural anthropology and linguistics.

Note: A Ph.D. program in anthropology has been submitted to the Graduate Council and may be available for student registrations fall 1970, pending final approval and Board of Regents approval.

Applicants may enter the anthropology graduate program subject to a Bachelor of Arts degree or with advanced standing. Those with advanced standing must successfully complete the qualifying examination (see below) with distinction by passing the master's degree examination in anthropology when that program has been approved. The qualifying examination is normally taken at the end of the second semester in residence.

The M.A. degree offers either one of two primary purposes. First, the master's thesis, is preparatory to the Ph.D. in anthropology, at home or elsewhere. The second, without thesis, is a limited professional degree designed to master the regional and cultural types of research methods and techniques generally not involving continuing independent research. The program is general in nature, equipping one to deal with any aspect of anthropology at an introductory level. Although, course work chooses one of the traditional subjects of anthropology for special emphasis or concentration, further specialization is neither expected nor encouraged for the M.A.
Master of Arts Degree

There are two programs which lead to the Master of Arts degree in anthropology: a 32 to 38 semester hour program plus a master's thesis which will count from two to eight semester hours and for which the student will register in addition to the 32 to 38 semester hour base specified, and a 32 to 38 semester hour program without a thesis. The latter program is considered a terminal degree and ordinarily will preclude the student from consideration for candidacy for the Ph.D.

A candidate for the M.A. who enters the program without prior coursework in anthropology will take a minimum of 32 semester hours of coursework or 38 semester hours in anthropology according to which M.A. program he elects. For the candidate who elects with a B.A. in anthropology or other substantial exposure to the field, the exact number of required semester hours of coursework (no less than 32 semester hours or 38 semester hours, respectively) will be set by the students advisor in consultation with the student and A.A. In no case will the student be allowed to elect without a thesis.

In either M.A. program the candidate must pass the qualifying examination in anthropology. This is comprised of two parts: a general examination, over all aspects of anthropology, biological and cultural, and an "area of concentration" examination, either in social anthropology-ethnology or in archaeology. The qualifying examination is given three times a year. In addition, a final oral examination may be required.

Requirements for either M.A. program include an approved course in statistics or palaeontology and two courses in linguistics, one of which may be 232-160 Languages and Culture. A student without a B.A. degree in anthropology must also take a minimum of two courses in social anthropology-ethnology, two courses in ethnology, and two courses in archaeology.

Doctor of Philosophy Degree in Cultural Anthropology and Linguistics

Program Advisors

June Helm and Edwin L. Kosinski
Office, 101 McMillin Hall
Robert Howren
Office, 574 English-Philosophy Building

The Ph.D. program in cultural anthropology and linguistics (with emphasis on language and related fields) is designed to train students to do independent research and to develop in the student the capability of assimilating and analyzing the relationships between them. The program consists of three years of graduate study in three major areas: linguistic, ethnographic, and historical. In the latter, the student must demonstrate competence in at least one research tool (another language, field methodology, etc.), pass a comprehensive examination in cultural anthropology, linguistics, and ethnographic theory and methodology, and complete a dissertation. Courses in linguistics required in the program are 232-160 (Linguistics and phonetics, 212-111 Phonology, 212-115 Morphology and Syntax, 101-300 Survey of Current Research in Linguistics, and 100-120 Comparative Linguistic Methodology). Advanced Courses

General Anthropology

113-101 General Anthropology

3.0 h.

Human evolution, prehistory, and race. The major institutions and arts of man as evidenced in nonliterate societies. Primarily for nonsciencists with advanced standing. Not open to students having 101-160.

113-146 History of Anthropology

2 or 3 h.

Lectures and seminars on the development of anthropology through the historic disciplines, concentrating on European contributions. This course and methods in archaeology, physical and biological anthropology, and cultural anthropology. Prerequisite: 113-125 or consent of instructor.

ANTHROPOLOGY

Professor: Nancie L. Gonzalez, June Helm, Associate Professor: Thomas H. Charlton, Harvey E. Goldscheider, James B. McKusick.


Lecturer: Adrian D. Anderson.

STAFF

Professor: Nancie L. Gonzalez, June Helm, Associate Professor: Thomas H. Charlton, Harvey E. Goldscheider, James B. McKusick.


Lecturer: Adrian D. Anderson.

COUER DESCRIPTIONS

Anthropology

For Undergraduates Only

113-3 Introduction to the Study of Culture and Society 4.0 h.

The comparative study of culture and social organization. This course may be taken in partial fulfillment of the social science core requirement.

113-30 The World's Peoples: An Ethnographic Survey 4.0 h.

Anthropological studies of community life around the world, systems of belief and action by which different peoples live. Anthropological literature and ethnographic films on the Americas, Africa, Europe, and Oceania. This course may be taken in partial fulfillment of the social science core requirement.

113-11 Introduction to Archaeology and Physical Anthropology 4.0 h.

Origins and development of man and society from the earliest period of archaeological excavations. Introduction to bone's physical variation and culture history.

113-75 Individual Study 1 to 3 h.

Supervised reading in areas special interest or subdivision of anthropology in which the student has had a basic course.

113-90 Honors Seminar: Anthropology 2.0 h.

This seminar, requiring upper-division academic record in the social sciences or major in anthropology, selected theoretical and methodological issues. Prerequisites: senior standing and consent of instructor.

113-90 Research 2 to 4 h.

The honors candidate undertakes a special research project, under his honors chairman, chosen after consultation with the Honors advisor. May be repeated.

Advanced Courses

General Anthropology

113-101 General Anthropology 3.0 h.

Human evolution, prehistory, and race. The major institutions and arts of man as evidenced in nonliterate societies. Primarily for nonscienists with advanced standing. Not open to students having 101-160.

113-146 History of Anthropology 2 or 3 h.

Lectures and seminars on the development of anthropology through the historic disciplines, concentrating on European contributions. This course and methods in archaeology, physical and biological anthropology, and cultural anthropology. Prerequisite: 113-125 or consent of instructor.

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ANTHROPOLOGY

113:201 Advanced Survey of Anthropology 2 or 3 a.h.

113:202 Methods and Procedures in Anthropological Field Work 3 a.h.

113:203 Seminar: Anthropological Theory 3 a.h.

113:210 Economic Anthropology 3 a.h.

113:211 Social Anthropology 3 a.h.

113:212 Introduction to Anthropology 3 a.h.

113:215 Social Anthropology 3 a.h.

113:216 Social Anthropology 3 a.h.

113:220 Cultural Change 2 or 3 a.h.

113:225 Language and Culture 3 a.h.

113:230 Social Problems of Underdeveloped Areas 3 a.h.

113:235 Problems in the Anthropology of the Caribbean 3 a.h.

113:240 African Social Structure and Social Change 3 a.h.

113:245 Polynesian Tribes and Psycholinguistics 3 a.h.

113:250 Seminar: Language and Culture 3 a.h.

113:270 Principles of Anthropology 3 a.h.

113:275 Seminar: Cultural Change 2 or 3 a.h.

113:280 Cultural Change 2 or 3 a.h.

113:285 Seminar: Social Anthropology 3 a.h.

113:290 Seminar: Social Anthropology 3 a.h.

113:295 Seminar: Social Anthropology 3 a.h.

113:300 Seminar: Anthropological Theory 3 a.h.
111:124 Peoples of North Africa and the Middle East 3 s.h.

Traditional and emerging societies and cultural patterns from North Africa through the Middle East. Prerequisite, 113:5 or 113:101.

111:125 Ethnology of Japan 3 s.h.

Human behavior in the metal and ceramic cultures of Japan. Discussion of early social institutions, but focus upon developments in the early modern and modern periods. Prerequisite, 113:9 or 113:301 or consent of instructor. Same as Oriental Studies 260/365.

111:240 Process and Development: Africa 3 s.h.

Same as Urban and Regional Planning 102/240.

111:241 Process and Problems of Development: Latin America 1 3 s.h.

Same as Urban and Regional Planning 102/241.

111:242 Process and Problems of Development: Latin America II 3 s.h.

Continuation of 111:241. Same as Urban and Regional Planning 102/242.

112:247, 248, 249 Ethnological Research Seminar cr.arr.

Coordinated research on culture-areal and/or topical problems in ethnology. Content varies according to the special interests of the instructor. May be taken a maximum of three times. Prerequisite, consent of instructor.

113:380 Seminar: Personality and Cultural Systems 3 s.h.

Personality in relation to expressive activities and products such as ritual, games, and art; and instrumental roles in economics and politics.

Archaeology

113:111 Indians of the Woodlands and Plains 3 s.h.

Prehistoric and historic Indians of the Middle West region of North America. Ecological adjustments, subsistence bases, and the development of the various groups. Prerequisite, 113:3 or 113:101.

113:159 Primitive Art and Problems of Art 3 s.h.

Description under Social Anthropology.

113:160 Old World Prehistory 2 or 3 s.h.

Prehistoric races and cultures of Europe, Asia, and Africa. Rise of civilization as revealed by archaeology. Prerequisite, 113:3 or 121:101.

113:161 New World Archaeology 3 s.h.

Physical and cultural history of Native American populations of New World as revealed through archaeological techniques and remains. Data on Aztec, Maya, and Inca exemplify development of civilizations independent of Old World. Prerequisite, 113:5 or 113:101.

113:162 Laboratory Methods in Archaeology 2 s.h.

Study of archaeological materials recovered by excavation and survey training in all aspects of laboratory research. Prerequisite, consent of instructor.

113:163 High Civilizations of Mesoamerica and the Central Andes 3 s.h.

Archaeological data relating to the development of civilization in the New World. The entire archaeological sequence is examined, but emphasis is placed on the complex civilizations. Chronological materials are incorporated wherever possible. Although art required, Spanish will be of benefit. Prerequisite, 113:8 or 113:15 or 113:105.

113:164 Comparative Prehistory 3 s.h.

Cultural development in the Old World and the New World. Emphasis on developments from pre-agricultural cultures to the appearance of urban civilizations in both areas. Areas of primary concern are Mesoamerica, the Central Andes, the Near East, Egypt, the Indus Valley, and China.

113:165 The Greater Southwest 3 s.h.

Presentation and discussion of the archaeology and ethnography of native cultures in the area northwest of New Mexico. Intended as an intensive approach and attempt to demonstrate probable routes of diffusion and migration from Mesoamerica to the Southwest. Prerequisite, 113:159, 113:138, 113:181, or 113:160.

113:184 Quaternary Geology and Anthropology 3 s.h.

Plateaue stratigraphy, evolution, paleoecology, and problems of the classification of man from geological and anthropological perspectives. Selected readings from site reports. Same as Geology 127/75. Prerequisite, consent of instructor.

113:199, 299 Field Research in Archaeology cr.arr.

113:220 Seminar: History of Archaeology 3 s.h.

Development of archaeology in the 19th and 20th centuries illustrating shifts in concepts, problems, and methodology. 113:221 Seminar: Archaeological Method and Theory 3 s.h.

Presentation of techniques for the recovery of archaeological data and theories for their interpretation. Field trips and laboratory analyses required.

Linguistics

113:145 Language and Culture 3 s.h.

Description under Social Anthropology.

113:270 Field Methods in Ethnolinguistics 3 to 5 s.h.

Research methods in ethnolinguistics. Emphasis upon techniques of collecting field data, collation and analysis of data, and research design. Same as Linguistics 320/520. Prerequisite, consent of instructor.

113:271 Ethnolingual Theory 3 to 5 s.h.

Cultural and linguistic dimensions of human communication. Same as Linguistics 102/351. Prerequisite, consent of instructors.

Individual Reading and Research Projects

113:383 Independent Study: Anthropology cr.arr.

113:384 Research: Anthropology cr.arr.

113:385 Thesis cr.arr.

ART

Director of School, Frank A. Seibert

Office, E 100 Art Building

At the graduate level, for those seeking art careers or advanced training, the School of Art offers the M.A., M.F.A., and Ph.D. The doctorate is offered only in the history of art. The other degrees may be in art specializations authorized by the School.

At the undergraduate level, the School of Art offers the fundamental principles of art as part of a liberal education leading to the B.A. degree with a major in art. Advanced specialization in studio leads to a degree with
added professional preparation, the B.F.A. With appropriate course additions, the B.A. and B.F.A. may be taken with a major in art education to provide certification for teaching art in secondary or high school.

The prerequisites most commonly entered by graduates in art are college teaching of art history, art education, and studio subjects; elementary and high school teaching; and the music field in its administrative,curatorial, or educational aspects. Many professional painters and sculptors of today have begun their careers with college or university training in art.

Facilities

Housed in an art building and adjoining new facilities along the banks of the Iowa River, the School has excellent physical resources for graduate and undergraduate work in art. The space encompasses classrooms studios, three students, seminar rooms, and workshops. One of the nation's largest collections of slides, photographs, and films; color reproductions supplements study as does an art library of over 10,000 volumes housed in the building. Equipment includes large presses for printing, kilns to take life-sized ceramic sculptures, a smelting furnaces for bronze casting, a well-equipped darkroom, printing presses and type and a large shop for wood and metal working and for industrial design. A vacuum table, one of the few in American universities, is among the facilities in the area of conservation and restoration. Advanced spray equipment for application of plastic foam to forms is available for multi-media courses.

A new Museum of Art, dedicated in 1962, is contiguous to the art school and houses permanent collections of modern American and French art, as well as temporary exhibitions.

Student Financial Aid

Qualified graduate students are invited to apply for scholarships, fellowships, and assistantships. Inquiries and applications should be directed to the Director of the School of Art. Applications for financial aid in general must be submitted by January 1 or February 7th of each year and again in May. For the and for the for the are admitted is Director, Office of Student Financial Aid.

Undergraduate Program

I. The Bachelor of Arts (B.A.), degree in art requires:

1. Non-art courses in required skills and core areas as follows:
   - Basic Skills: The Historic Program (aesthetics, writing, speaking) 8 s.h.
   - Basic Skills: Physical Education (games etc., general physical competence) 4 s.h.
   - Basic Skills: Speech 4 s.h.
   - Core Courses—Literature 8 s.h.
   - Core Courses—Social Science 8 s.h.
   - Core Courses—Natural Science 8 s.h.
   - Core Courses—Historical—Cultural Studies or The core course in History and Appreciation of Art does not satisfy Historical—Cultural Requirement for art majors.

Foreign Language: minimum 12 s.h. Must complete fourth semester in one language.

2. Non-art electives totaling the number of non-art courses to a minimum of 78 semester hours.

3. School of Art requirements:
   A. For degree with studio emphasis:
      - Basic studio 12 s.h.
      - Advanced studio 18 s.h.
   B. Intermediate or advanced art history 3 s.h.

   B. For degree with art history emphasis:
      - Basic studio 12 s.h.
      - Intermediate or advanced art history 18 s.h.

   C. For degree with art history emphasis (Continued):
      - Intermediate or advanced art history 28 s.h.

   D. Core courses and art requirements for the B.A., or B.F.A. in art (see above under I and II).
2. State requirements for teacher certification as follows' 3.4.


7:130 Introduction to Secondary School 3.6.

1:196 Art Education Studio 3.6.

1:238 Art Education Elementary 2.6.

7:143 Methods of Elementary School Art 2.6.


7:191 and 7:192 Supervision and Laboratory Practice (summer period, offered 3.6.

3. Electives to complete the minimum 126 3.6.

semester hours.

IV. Suggested minor in art for non-art majors: 3.6.

7:31, 1:208 History and Appreciation of Art 3.6.

(One Course) plus 2 semester hours of 3.6.

art history electives. 3.6.

1:2, 2:3 Elements of Art 2.6.

3:20 Basic Design 2.6.

3:35 Painting 2.6.

3:15 Sculpture 2.6.

3:18.

*This course also fulfills 3 semester hours of natural 3.6.

science core.

*Students must make application for student teaching 3.6.

in the spring of their junior year in order to be as- 3.6.

signed an assignment as seniors.

Graduate Program 3.6.

1. Undergraduate prerequisites for graduate work in 3.6.

art education:

1. Besides a degree from an accredited college or 3.6.

university, the entering graduate student is ex- 3.6.

pected to have had the minimum coursework in 3.6.

art and art history equivalent to that of the B.A. 3.6.

in art at The University of Iowa, including ad- 3.6.

vanced work in drawing and at least one other 3.6.

studio area. (See above in Undergraduate Pro- 3.6.

gram.) Deficiencies in undergraduate art, if any, 3.6.

are to be evaluated following admission, and 3.6.

necessary makeup assigned. 3.6.

2. A makeup requirement does not prejudice the 3.6.

student's position as a graduate student, but will 3.6.

delay the degree up to the amount of time re- 3.6.

quired to complete makeup work. 3.6.

3. All graduate students are required to take the 3.6.

written and oral comprehensive makeup, and upon 3.6.

completion by the student, grading examining 3.6.

committees will take part in the evaluation. Satis- 3.6.

factory performance in these will obviate the 3.6.

need for a makeup requirement. 3.6.

II. Undergraduate prerequisites for graduate work in 3.6.

art history:

1. Besides a degree from an accredited college or 3.6.

university, the entering graduate student is ex- 3.6.

pected to have had a minimum of 12 semester 3.6.

hours of coursework in art history and 3.6.

deficiencies in undergraduate art history, if any, 3.6.

will be evaluated following admission, and neces- 3.6.

sary makeup assigned. 3.6.

2. A makeup requirement does not prejudice the 3.6.

student's position as a graduate student, but will 3.6.

delay the degree up to the amount of time re- 3.6.

quired to complete makeup work, and will be in ad- 3.6.

dition to the minimum semester hour requirement 3.6.

for advanced degrees. 3.6.

3. As an alternative to course makeup, and upon ap- 3.6.

plication to a committee of the art history faculty, 3.6.

examinations may be taken to correct art history 3.6.

deficiencies. 3.6.

III. Admission procedures: 3.6.

1. Application forms for admission to the Graduate 3.6.

College of Education may be obtained from the 3.6.

Committee on Admissions, 3.6.

School of Art, or from the Director of Admissions, 3.6.

Office of Admissions and Records. 3.6.

2. The Graduate Record Examination Aptitude Test 3.6.

is required and must be taken during the ad- 3.6.

mission period. 3.6.

3. Communication concerning program, student 3.6.

records, or aid should be addressed to the Direc- 3.6.

tor of the School, who is also generally available 3.6.

for advice to graduate students in their first year of graduate work at the U of I. 3.6.

4. Prospective majors in studio, in addition to slides 3.6.

or photographs of work in their area of major 3.6.

interest (or actual prints in the case of prints), 3.6.

should send to the Chair of the Graduate School 3.6.

at the latest two months prior to the date of the 3.6.

U of I.

5. Prospective majors in art history should send to 3.6.

the committee on admissions a term paper, thesis, 3.6.

or other writing by them on an art historical 3.6.

subject. 3.6.

6. Prospective majors in art education should send 3.6.

slides or photographs of studio work plus copies 3.6.

of published or unpublished papers on art or art 3.6.

education. 3.6.

7. Submitted visual materials or written papers will 3.6.

be returned in this course, following review by the 3.6.

committee on admissions. 3.6.

IV. Assistantships and Scholarships: 3.6.

Assistantships paying approximately $2,000 for 3.6.

twenty hours of departmental duties weekly are 3.6.

available to graduate students on a competitive 3.6.

basis. Ordinarily these are granted to students 3.6.

whose performance and potential have been 3.6.

demonstrated during their first year of graduate 3.6.

work at the U of I. Exception may be made in favor 3.6.

of entering students who are unusually well qualified. 3.6.

Assistantships at half the above work time and pay 3.6.

are also available. Training for all graduate 3.6.

assistantships is paid by the assistant, but the 3.6.

award of an assistantship obligates the student to 3.6.

fulfill their obligations as an assistant. Scholarships 3.6.

paying full or partial tuition and enabling 3.6.

no duties are awarded to students who demonstrate 3.6.

as background at least a cumulative average of 3.6.

B. A few scholarships are also available for 3.6.

students. 3.6.

V. Drawing requirements for new students in studio: 3.6.

Graduate students who have not had drawing at 3.6.

the U of I are required to take at least one course 3.6.

in line drawing during the first year. The instructor 3.6.

in drawing, upon seeing the quality of the student's 3.6.

work, will recommend a substitution or recom- 3.6.

mended which in his judgment will be of maxi- 3.6.

mum benefit to the student. 3.6.

VI. Master's degree requirements for all degree 3.6.

candidates:

1. Degree candidates entering the graduate program 3.6.

without the M.A. from another institution will be 3.6.

expected to take the degree at the U of I. In cer- 3.6.

tain unusual circumstances a student may be 3.6.

considered for work toward the M.A. without the 3.6.

M.A. 3.6.

2. Degree candidates entering with an M.A. in art 3.6.

from an accredited college or university will not 3.6.

be required to take any courses if the grade 3.6.

at the U of I but must be cleared for candidacy for a higher degree by 3.6.

faculty action. An history student in this 3.6.

category must take a comprehensive examination 3.6.

at the M.A. level before the end of their first 3.6.

year of residence. A studio student already 3.6.

having the M.A. must be cleared by a staff 3.6.

committee of at least five faculty members, in- 3.6.

cluding his thesis director, this will take place 3.6.

in January or May. 3.6.
VII. The degree candidate's committee and direction of the graduate program:

1. During registration, the student's first-year program is begun in consultation with the School's Director or his representative.

2. A candidate adviser will serve as chairman of the student's committee, as chosen by the student at the start of his graduate work, or as soon as the student knows definitely in what area he desires to do his thesis, and propose his work is then considered to have a thesis potential.

3. Each graduate student will be reviewed for clearance for M.A. candidacy at his option at any of the three regularly scheduled clearance meetings held in January, May, and September. The decision of the committee should be held in confidence clearing those students who wish to graduate, if possible, in June.

4. The student must be cleared for candidacy for the M.A. degree at least two full semesters, or one semester and a summer session, prior to presenting himself for the degree.

5. If a student is deferred he may come up for review only one more time which may be at a clearance meeting of his choosing. If cleared at the second review, the student must still follow the regular procedure that is, he may not receive the degree until two semesters, or a semester and a summer session, following clearance.

6. Formation of the student's M.A. committee may follow clearance.

7. Review for M.A. candidacy will be held in January, May, and September. A student may be invited by his adviser to apply for review following acceptance of the M.A. thesis.

8. As in the case of the M.A. degree, two full semesters, or a semester and a summer session, must elapse between the clearance and the awarding of the M.A. degree.

9. If a student receives the A.A. degree and leaves the University without having presented himself for clearance for M.A. he may re-enter in the School at a time of his choosing, but must be reviewed for candidacy before he can be reviewed for M.A.

10. M.A. degree review is conducted by a standing faculty committee which includes the dean with whom he has had the most work.

11. Following the report of the M.A. faculty committee follows clearance.

12. Candidates for the degree by the adviser, in consultation with the School's Director. They have the opportunity to appeal decisions of the School's Director or his representative for the M.F.A. and A.D. degrees.

13. The student's committee has the responsibility of reviewing the student's work periodically, advising with regard to the extent of its progress, of evaluating the student's attitude and potential for completing his degree, and of making the final decision about his readiness for the degree.

14. Deadlines for summer students, transfer as possible, are made commensurate with those es-

VIII. Plan of Study:

Following consultation with his adviser, every graduate student selects a Plan of study with the Graduate College during the semester of his graduation. This plan lists all courses which will fulfill the degree and the degree. In the case of the Ph.D. candidate the plan must be filed before the comprehensive examination.

IX. Thesis:

1. Majors in studio must submit a thesis of selected studio work in the discipline. The thesis is written those required, and may be a brief statement by the student of his technical, aesthetic, and/or psycholog- logical approach, unless he is assigned an art history, in technical subject by his adviser. Content, if written, will be supervised by the studio adviser, and if historical, by an art historian. Studio students doing written theses on art his-
torical or technical subjects are exempted from a written paper in the art history seminar.

2. Majors in studio, in consultation with both their thesis advisers, may take 120-199 Individual In-
struction and 150-199 Written Theses, in amount of one semester hour each for their studio and written theses. Such credits are pro-
ministered, but are in addition to other requirements of the School for the M.A. or M.F.A. degree.

3. Majors in the history of art at the M.A. level may take up to two semester hours in 150-199 Writ-
ten Theses. Following consultation with their ad-
viser. Such credit may apply to the total re-
quired for graduation, but only in addition to other specified course requirements of the School for the M.A. degree.

4. Majors in the history of art at the Ph.D. level, the emphasis on post-comprehensive ex-
asification coursework is decided in consultation with the adviser. Normally a minimum of 8 se-

X. The Master of Arts degree (M.A.) in studio:

The M.A. degree is studio may be completed with a major in painting, drawing, sculpture, prints, design, photography, ceramics, or film/video/multimedia. The degree requires:

1. The B.A. or B.F.A. in art equivalent to that offered at the U. of I.

2. A minimum of 36 semester hours of graduate work (one year and one summer session) for stu-

X. The Master of Arts degree (M.A.) in studio:

The M.A. degree is studio may be completed with a major in painting, drawing, sculpture, prints, design, photography, ceramics, or film/video/multimedia. The degree requires:

1. The B.A. or B.F.A. in art equivalent to that of the U. of I. Undergraduate deficiencies, if any, may be made up in addition to, or in place of, graduate requirements.

2. Studio courses numbered 160-199. Those most include a minimum of 18 semester hours in a major field of study.

3. History and Theory of Art 9 s.h.

4. Courses outside studio of 150-199 0-8 s.h.

5. Studio and written theses, see above under DE.

6. A final oral or written examination by the faculty in the semester of graduation, usually in May or July.

13. Eligibility requirements for admission to the M.A. or M.F.A. degree:

1. The B.A. or B.F.A. degree (see above in II), and

2. A minimum of 36 semester hours of graduate study and thesis work, or written thesis, or

3. A minimum of 36 semester hours of graduate study and thesis work, or written thesis, or

4. Art history courses (including Methodology and at least one other seminar) 18-24 s.h.

5. Studio courses 0-8 s.h.

6. M.A. candidates having had substantial under-

7. Eligibility requirements for admission to the M.A. or M.F.A. degree:

1. The B.A. or B.F.A. degree (see above in II), and

2. A minimum of 36 semester hours of graduate study and thesis work, or written thesis, or

3. A minimum of 36 semester hours of graduate study and thesis work, or written thesis, or

4. Art history courses (including Methodology and at least one other seminar) 18-24 s.h.

5. Studio courses 0-8 s.h.

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2. A minimum of 36 semester hours of graduate study and thesis work, or written thesis, or

3. A minimum of 36 semester hours of graduate study and thesis work, or written thesis, or

4. Art history courses (including Methodology and at least one other seminar) 18-24 s.h.

5. Studio courses 0-8 s.h.

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2. A minimum of 36 semester hours of graduate study and thesis work, or written thesis, or

3. A minimum of 36 semester hours of graduate study and thesis work, or written thesis, or

4. Art history courses (including Methodology and at least one other seminar) 18-24 s.h.

5. Studio courses 0-8 s.h.
ART

I:18 Introduction to Oriental Art 3 s.h.
Art and architecture in India, Southeast Asia, China, and Japan. Prerequisites: 11:57, 11:28, or equivalent. Same as Chinese and Oriental Studies 20:18.

I:28 Introduction to Ancient Art 3 s.h.
Art and architecture of Mediterranean civilizations from Mesopotamian times to the age of Constantine. Prerequisites: 11:27, 11:28, or equivalent. Same as Classics 14:28.

I:40 Introduction to Medieval Art 3 s.h.
Art and architecture in Europe from 300 to 1400 A.D. Prerequisites: 11:27, 11:28, or equivalent.

I:41 Introduction to Renaissance Art 3 s.h.
Art and architecture in Europe from the early Renaissance to 1590. Prerequisites: 11:27, 11:28, or equivalent.

I:53 Introduction to Baroque Art 3 s.h.
Art and architecture in Europe from 1600 to 1750. Prerequisites: 11:27, 11:28, or equivalent.

I:52 Introduction to Modern Art 3 s.h.
Art and architecture in Europe and the United States from the late 18th century to the present. Prerequisites: 11:27, 11:28, or equivalent.

For Undergraduates and Graduates

Note: Courses numbered above 12:500 have as prerequisites an introductory course in the appropriate art history area or permission of instructor.

I:102 Primitives Art: African 3 s.h.

I:105 Primitives Art: American 3 s.h.

I:106 Primitives Art: American 3 s.h.
Indigenous art styles in America from their origins to the Spanish Conquest.

I:110 Egyptian and Mesopotamian Art 3 s.h.
Sculpture, painting, architecture, and minor arts from the time of the Stone Age to the 14th century B.C.

I:116 Oriental Art: India 3 s.h.
Art and architecture of Greater India from the prehistoric period to the Modern period, including the philosophies and religions (Buddhism and Hinduism). Same as Chinese and Oriental Studies 20:18.

I:117 Oriental Art: India 3 s.h.
Art and architecture of Greater India, from 1500 A.D. to the modern period, in relation to philosophies and religions (Hinduism and Islam). Same as Chinese and Oriental Studies 20:18.

I:119 Art of China 3 s.h.
Art and architecture of China in relation to philosophies and religions (Confucianism, Taoism, and Buddhism). Same as Classics and Oriental Studies 20:18.

I:120 Chinese Painting I 3 s.h.
Same as Chinese and Oriental Studies 20:120.

I:121 Chinese Painting II 3 s.h.
Same as Classics and Oriental Studies 20:121.

I:122 Oriental Art: Japan 3 s.h.
Art and architecture of Japan, in relation to philosophies and religions (Shintoism, Buddhism, and Zen). Same as Chinese and Oriental Studies 20:122.

I:126 Greek Art I 3 s.h.
From Minoan to Hellanistic times. Architecture, sculpture, painting, and minor arts. Same as Classics 14:126.

I:128 Greek vase Painting 3 s.h.
Same as Classics 14:111.

I:132 Roman Art 3 s.h.
Roman architecture, sculpture, painting, and mosaic of the Republican, Imperial, and Late Antique periods. Same as Classics 20:132.

I:135 Ancient Art: Early Christian and Byzantine 3 s.h.
Architecture, sculpture, painting, and mosaic of the 4th to the 7th century in the West and to the 12th century in the East.

I:137 Byzantine Art 3 s.h.

I:140 Medieval Art 3 s.h.
Art of the early medieval period. From the dark ages in Europe to the Ottonian period, including contemporaneous Italian art.

I:141 Medieval Art 3 s.h.
Late Romanesque and Gothic period.

I:143 Medieval Art 3 s.h.
Late Gothic period.

I:144 Northern Renaissance Art 3 s.h.
Art of the international style. Netherlandish and French art to 1500.

I:145 Northern Renaissance Art 3 s.h.
German art of the 15th and 16th centuries; Netherlandish 16th century art through Bruegel.

I:147 Italian Renaissance Art 3 s.h.
Painting, sculpture, and architecture in Italy from 1250 to 1490.

I:148 Italian Renaissance Art 3 s.h.
Painting, sculpture, and architecture in Italy from 1490 to 1525.

I:149 Italian Renaissance Art 3 s.h.
Painting, sculpture, and architecture in Italy from 1525 to 1600.

I:150 17th Century Masters in Southern Europe 3 s.h.

I:151 French Painting 3 s.h.
From School of Fontainebleau to Bourgeois (1500-1730).

I:152 Spanish Painting 3 s.h.
From El Greco to Goya (1270-1800).

I:153 Baroque and Rococo Art 3 s.h.
Painting, sculpture, and architecture in Italy and Spain from 1600 to 1750.

I:154 Baroque and Rococo Art 3 s.h.
Painting, sculpture, and architecture in The Netherlands, France, Germany, and England from 1600 to 1750.

I:156 18th Century Art 3 s.h.
Architecture, sculpture, and painting in the 18th century in France, Germany, and England.

I:159 Early 19th Century Art 3 s.h.
Architecture, sculpture, and painting in Europe and the United States from the late 18th century to the mid-19th, from Neo-classicism to Realism.

I:160 Late 19th Century Art 3 s.h.
Architecture, sculpture, and painting of the Western world in the second half of the 19th century. Realism, Impressionism, Post-Impressionism.

I:162 Modern Art I 3 s.h.
Architecture from 1800 to the present in Europe and America.

I:163 Modern Art II 3 s.h.
Painting from 1800 to the present in Europe. Fauvism, Cubism, Futurism, Surrealism, and abstract art. Art of Nazi Germany, Fascist Italy, and Communist Russia.

I:166 American Art I 3 s.h.
Architecture, painting, and sculpture in the United States from colonial times through the Early Republic.
I 1:167 American Art II 3 a.h.
Architecture, painting, and sculpture in the United States from 1825 to 1893.

I 1:168 American Art III 3 a.h.
Painting and sculpture in the United States since the Armory Show.

I 1:195 Art Theory II 3 a.h.
Advanced studies in the theory and criticism of art with emphasis on the 20th century and the artist's own statement.

Primarily for Graduates

I 1:202 Seminar: Problems in Primitive Art 2 or 3 a.h.

I 1:210 Seminar: Problems in Egyptian and Mesopotamian Art 2 or 3 a.h.
Same as Chinese and Oriental Studies 15:200.

I 1:215 Advanced Oriental Art: India 3 a.h.
Same as Chinese and Oriental Studies 15:200.

I 1:216 Seminar: Problems in Oriental Art 2 or 3 a.h.
Same as Chinese and Oriental Studies 15:200.

I 1:225 Seminar: Problems in Ancient Art 2 or 3 a.h.
Same as Classics 14:210.

I 1:240 Seminar: Problems in Medieval Art 2 or 3 a.h.

I 1:244 Seminar: Problems in Northern Renaissance Art 2 or 3 a.h.

I 1:247 Seminar: Problems in Italian Renaissance Art 2 or 3 a.h.

I 1:248 Italian Renaissance Sculpture 3 a.h.

I 1:250 Venetian Painting 3 a.h.

I 1:253 Seminar: Problems in 19th Century Art 2 or 3 a.h.

I 1:262 Seminar: Problems in Modern Art 2 or 3 a.h.

I 1:266 Seminar: Problems in American Art 2 or 3 a.h.

I 1:294 Seminar: Methodology of Art History and Criticism 2 or 3 a.h.
Use of library and other investigative resources. Different types of problems in art history and criticism and their varying research requirements. Scholarly presentation of research findings.

III 300 Directed Studies crav.

III 302 M.A. Written Thesis crav.

III 303 M.F.A. Written Thesis crav.

III 304 Ph.D. Thesis crav.

Art Studio

Primarily for Undergraduates

15:1 Elements of Art 2 or 3 a.h.
Not open to art majors. Practice and nature of art, for those who have little or no previous experience with it. The studio work in drawing and design is complemented by a weekly lecture in art appreciation and by selected reading.

15:3 Art Form I 3 a.h.
For art majors only. Drawing tools and media; two-dimensional design problems; principles of space articulation; drawing from the human figure.

15:4 Art Form II 3 a.h.
For art majors only. Color theory; pictorial design; painting tools and techniques; print project; three-dimensional design. Prerequisite, 15:3.

15:5 Art Form III 3 a.h.
For art majors only. Group and individual projects in traditional or mixed media; two or three dimensional problems. Prerequisites, 15:3, 15:4, 15:5.

15:7 Life Drawing I 2 or 3 a.h.
Drawing from figure model in varied media. Prerequisite, 15:4 or equivalent. May not be repeated.

15:9 Painting I 2 a.h.
Elementary course in painting in oil. Prerequisites, 15:7 or equivalent. May not be repeated.

15:11 Prints and Composition I 2 a.h.
Elements of printmaking in various media; etching, engraving, drypoint, color print, intaglio techniques. Potentially open to freshmen or sophomores. Prerequisite, 15:7 or equivalent. May not be repeated.

15:15 Sculpture I 2 a.h.
A first course in modeling and carving. Prerequisite, 15:4 or equivalent. May not be repeated.

15:30 Basic Design 2 a.h.
Fundamental principles and their application to modern products, architecture, interior design, furniture, and visual communication. Lectures and studio projects. May not be repeated. Prerequisite, 15:4.

15:31 Problems in Design—Form and Structure 2 a.h.
Materials and their formal and structural possibilities. Prerequisite, 15:3.

15:32 Problems in Design: Form and Function 2 a.h.
Prerequisites, 15:30, 15:31.

15:35 Lettering I 2 a.h.
Basic letter forms and their relation to type design. Practice in lettering. Emphasis on the relationship between block nibbed pen lettering to build-up lettering. Problems in page design. Prerequisites, 15:3, 15:4, 15:25, or consent of instructor.

15:38 Graphic Design I 2 a.h.
Communicative potential of visual material on the two-dimensional surface. Use of various media and techniques of developing images. Emphasis is encouraged within definite restrictions. Prerequisite, 15:30.

15:34 Fundamentals of Photography 2 a.h.
Use of the camera, light meter, and darkroom; theory of photography and photographic history. May not be repeated. Prerequisite, 15:3.

15:46 Painting II 3 a.h.
Continuous of 15:9; compositions emphasizing the human figure. Prerequisite, 15:7, 8, or equivalent.

15:48 Undergraduate Painting Workshop 2 or 3 a.h.
Individual projects in any painting medium or combination of media. Prerequisite, 18:48 or equivalent.

15:60 Ceramics I 2 a.h.
Basic methods of forming, firing, and glazing clay. May not be repeated. Prerequisites, 15:3, 4, 5, or permission of instructor.

59
15:151 Ceramics II 2 or 3 s.h.
Intermediate clay forming techniques; clay and glass formulas and preparation in kiln firing. Prerequisite, 15:150 or equivalent. May not be repeated.

15:154 Metamolding 2 s.h.
Functional and nonfunctional art forms in gold, silver, copper, bronze, brass, and other metals. Basic techniques of raising, forging, casting, tubing, and surface embellishment. Prerequisites, 15:15, 15:15, 15:25.

15:156 MultiMedia I 2 or 3 s.h.
Prerequisite, 15:15, 15:16, 15:18, 15:17, or equivalent.

For Undergraduates and Graduates

15:100 Multimedia I 3 s.h.
New media such as styrofoam, plastic, polyester, and others in mutual combination and in combination with conventional media. Plastic block constructions; structured canvas; painted sculpture; light projection on sculpture; and other combinations. Special emphasis on the use of kinetic and environmental elements. Prerequisites, 15:20 or equivalent, and permission of instructor.

15:101 Intermedia 3 s.h.
Prerequisite, permission of instructor.Same as Speech 15:120 and Music 15:134.

15:105 Life Drawing II 3 s.h.
Drawing from figure model in varied media. Prerequisite, 15:15 or equivalent.

15:110 Dynamic Workshop 3 s.h.
Compositional drawing for advanced students, varied media. Prerequisite, 6 hours of 15:135 or equivalent, and permission of instructor.

15:111 Watercolor Painting 3 s.h.
Offered summers. Prerequisite, 15:15 or equivalent.

15:115 Painting III 3 s.h.
Oil, gouache, water color, tempera, acrylic, and other media. Prerequisites, 15:15, 15:45 or equivalent.

15:118 Painting Workshop 3 s.h.
Media, materials, and technical problems of the contemporary painter. Prerequisites, advanced standing and permission of instructor.

15:122 Prints and Composition II 3 s.h.
Regrettably, the handling, steering, dry plate, wood cut, and other printmaking methods in all media. Experimental studies in intaglio techniques; fine printing, Woodcut techniques. Study of advanced pictorial compositions. Prerequisite, 15:131 or equivalent.

15:120 Design Seminar 1 s.h.
Clarifying studio problems. Guest speakers from professional areas are invited to participate in open-door discussions with students.

15:131 Creative Photography 3 s.h.
Use of photographic tools, camera, and darkroom, for the purpose of understanding the expressive qualities of the graphic image. Special attention to the individual's personal view to visual elements. Training in critical compositional values. Prerequisites, 15:34 or equivalent, and permission of instructor.

15:132 Film Laboratory 2 s.h.
Fundamental instruction in expressive film making; use of cameras; editing and composing film ideas.

15:133 Graphic Design II 3 s.h.
Advanced problems in graphic communication. Designing for various printing and reproduction processes. Problems in relating image, type, lettering, paper, and color. Prerequisite, 15:33.

15:136 Advanced Problems in Photography cr.arr.
Individual instruction; specialized research in photographic techniques. Prerequisites, 15:52 and permission of instructor.

15:137 Environmental Design I 3 s.h.
Essential technology, including drafting and rendering, employed in architectural and industrial design and related especially to environmental factors, human and geographical. Prerequisites, 15:17, 15:18, 15:25, or equivalent.

15:138 Environmental Design II 3 s.h.
Essential technology, including drafting and rendering, employed in architectural and industrial design and related especially to environmental factors, human and geographical. Prerequisites, 15:17, 15:18, 15:25, or equivalent.

15:141 Interior Design I 3 s.h.
Relationship of interior design to its architecture, its environment, and to the human element. The use of color, materials, furnishing, and lighting in selected projects. Prerequisites, 15:17, 15:18, 15:25.

15:142 Interior Design II 3 s.h.
Continuation of 15:141, including display design. Prerequisite, 15:141.

15:145 Industrial Design I 3 s.h.
Preliminary studies of products and how they are designed. This student will develop modeling skills and the graphic communication skills necessary to basic project development. Design considerations related to human factors, methods of manufacture, and marketing. Prerequisite, 15:145.

15:146 Industrial Design II 3 s.h.
Design and development of products for mass consumption. Special attention to new developments in technology and how they relate to human needs. Prerequisite, 15:145.

15:147 Industrial Design III 3 s.h.
Problems related to the future of design in the machine world, especially ecological responsibility of man to his environment and how science-technology can be used to better our work and worsen our living conditions. Prerequisites, 15:145, 146.

15:149 Advanced Problems in Design 3 s.h.
Advanced problems in projects for advanced students. Prerequisite, permission of instructor.

15:151 Painting Materials I 2 or 3 s.h.
Survey of materials and survey of painting methods from the 12th to the 20th centuries. Nature of materials, inhibition, tempera, gouache, canvas, grounds, supports, and surface protection. May not be repeated.

15:152 Painting Materials II 2 or 3 s.h.
Continuation of 15:151. May not be repeated.

15:153 Painting Materials III 2 or 3 s.h.
Medieval techniques of tempera and gliding, including metallic and ink preliminary drawings. Prerequisites, 15:141, 142.

15:154 New Materials Workshop 2 or 3 s.h.
Innovative techniques of gesso and egg and oil emulsion underpainting, with various grounds and glazing media. Prerequisites, 15:33, 34.

15:155 Fundamentals of Conservation and Restoration 1 or 3 s.h.
Causes of deterioration of materials; cleaning, lining, surface protection; use of scientific equipment (infra-red, ultrasounds, X-rays, etc.). The care, handling, and storage of art objects. Prerequisite, 15:151 or equivalent. May not be repeated.
18:156 Fundamentals of Conservation and Restoration II 2 or 3 s.h.
Continuation of 18:155. May not be repeated.

18:162 Sculpture II 3 s.h.
Molding in clay or plaster; casting in wood or stone; welding. Prerequisite, 18:153 or equivalent.

18:164 Sculpture Workshop 2 or 3 s.h.
Advanced sculptural problems. Prerequisite, 18:152.

18:165 Sculpture III 3 s.h.
Fundamentals of lost wax technique. Melting and pouring of bronze, aluminum, lead, and pewter. Fielding techniques of patina and casting. Prerequisite, 18:162 or equivalent.

18:167 Ceramic Sculpture 3 s.h.
Sculptural problems in various clay bodies and glazes. Prerequisites, 18:11 and 18:91.

18:170 Ceramics III 3 s.h.
Individual projects as approved by the instructor. Prerequisites, 18:60, 61 taken consecutively.

18:171 Ceramics Workshop cr.arr.
Prerequisites, 18:170 and permission of instructor.

18:172 Glass Calculations 1 or 2 s.h.
Empirical and practical methods of glass formulation; effects of various types of kilns, firing atmospheres, and glazes.

18:174 Kiln Construction 1 or 2 s.h.
Theory and construction of kilns. One semester required for all ceramics majors.

18:190 Metalworking II 2 or 3 s.h.
Continuation of 18:19; emphasis on conceptual development. Prerequisite, 18:94; recommended, 18:162, 18:165.

18:196 Metalworking Workshop cr.arr.
Individual projects. Open to majors only. Prerequisite, 19:18.

18:197 Individual Instruction cr.arr.

18:200 Art in Urban Environment 5 s.h.
Summer only. Combination studio and lecture.

Art Education

Students in art education register for courses in methods, supervision, practical teaching, etc., in the College of Education. The following courses are offered. See College of Education for complete announcement.

18:155 Art Projects for Elementary School Teachers 2 or 3 s.h.
Both semesters. Same as Education 78:128.

18:196 Art Education Studio—Elementary 2 s.h.
Projects, techniques, and processes in art for the elementary art teacher or elementary art supervisor. Painting, drawing, printmaking, sculpture, and crafts using tools and materials commonly available in the elementary schools. Junior year.

18:198 Art Education Studio—Secondary 2 s.h.
Projects, techniques, and processes in art for the secondary school program. Drawing, painting, printmaking, sculpture, and crafts with materials and tools commonly available in the secondary schools. Junior year.

For descriptions of the following courses, see College of Education:

18:643 Supervision of Art 2 or 3 s.h.
Same as 78:643.

18:406 Research: Art Education cr.arr.
Same as 78:406.

18:147 Methods of Elementary School Art 3 s.h.
First semester.

BOTANY

TE:191 and TE:192 Laboratory Practice in the Elementary School cr.arr.
Both semesters.

TE:367 Seminar in Elementary Art Education 2 or 3 s.h.
First semester.

TS:105 Methods of Secondary Art Education 3 s.h.
Second semester.

TE:391 Observations and Laboratory Practice in High School cr.arr.
Both semesters.

TS:393 Individual Instruction in Secondary Education cr.arr.
Both semesters.

TS:405 Seminar in Secondary Art Education cr.arr.
Second semester.

TS:406 Art Education: Research Offered both semesters.

ASTRONOMY

(See Physics and Astronomy)

BIOCHEMISTRY

(See College of Medicine and Chemistry)

Students who wish to study biochemistry are directed to the B.S. or B.A. curricula in chemistry. A suggested curriculum is given which leads to a B.S. degree in chemistry with emphasis on preparation for a career in biochemistry. Other students in related fields are urged to plan programs providing equivalent backgrounds. For detailed advice, consult faculty of the biochemistry department.

BOTANY

Chairman of Department: Robert L. Hulbary
Office, 312 Chemistry-Botany Building

The aims of the Department of Botany are to offer instruction in the principles of plant biology as a part of students' cultural background; to aid in adequately preparing those who are entering careers in fields related to the plant sciences, such as agriculture, forestry, plant breeding, soil science, microbiology, medicine, pharmacy; and to prepare specialists in the various divisions of botany for teaching and research.

Undergraduate Requirements

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 220:3 Analytical Geometry 3 s.h.


Twenty-four semester hours of botany to include:

2:11 Introduction to Botany 3 s.h.

(Successful completion of the core course in 12:11, 12:12, and 12:13 Botany may be used to satisfy this requirement.)

2:11 Evolution of Land Plants 3 s.h.

2:12 Algae and Fungi 3 s.h.

2:13 Biology of the Local Flora 3 s.h.

2:12 of the following: 12:12, 12:13, 12:14, 12:15.

At least 7 semester hours to be selected from other botany courses numbered above 120.
Honors in Botany

A superior student who wishes to major in botany may choose a program commensurate with his ability, leading to graduation honors.

Prerequisites for admission to honors in botany are senior standing and a cumulative grade-point average of 3.5 or better.

In addition to the requirements for a B.A. degree, candidates shall fulfill:
1. Complete 5 semester hours of research (B124 Honors in Botany) during their senior year.
2. Maintain a cumulative grade-point average of 3.5 overall and 3.35 in botany.
3. Pass an honors examination in botany at the end of the senior year.

Graduate Study Requirements

As scientific knowledge and its relation to man and society increases at an exponential rate, young people are recognizing a need for graduate education and the advanced training it provides. The family of the Department of Botany devotes much time and thoughtful attention to planning programs toward the advanced degrees appropriate to the sciences with the advanced degree. Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) in botany.

The requirements for admission are essentially the same as those listed for the undergraduate program. Students who plan graduate study must have an undergraduate degree with a major in botany as listed above or the equivalent. Deficiencies may be made up beginning with the first year of residence as a graduate student. Those applying for a fellowship or scholarship should submit scores received on the Graduate Record Examination Aptitude Test and the Advanced Test in Biology.

Graduate College requirements. All students should become thoroughly familiar with the requirements of the Graduate College as stated in the University Catalog. Responsibility for strict compliance with these requirements rests with the student.

Doctoral degree. The following departmental minimum requirements are to be observed by all graduate students in botany.

Candidates for advanced degrees are required to perform service work as teaching or research assistant.

Master's degree in botany. Advanced study may be undertaken in emphasis of one of the following fields: anatomy, biochemistry, botany, cytology, genetics, mycology, paleobotany, physiology, plant pathology, taxonomic botany, or zoology. The candidate's degree may be achieved by completing at least 30 semester hours of graduate study including 6 semester hours of 535 Research. The preparation of a thesis is optional. In addition, each student must fulfill the following requirements:

a. Fulfill a program of study approved by his major adviser and by a guidance committee consisting of his major adviser and two other members of the graduate faculty. Normally, as a guidance procedure, the program of study should be prepared during the first semester in residence as a regular graduate student.

b. Submit 32 semester hours of botany (of which no more than 18 semester hours may be part of the student's undergraduate major program) to count toward the degree from each of the following four areas of study:

- Morphology—botany, mycology, paleobotany, physiology
- Botany—physiology, plant biology, experimental mycology
- Botany—ecology, plant taxonomy
- Botany—cellular and developmental biology—anatomy, cytology

- c. At least one graduate-level course and a minimum of 3 semester hours in related subjects (biochemistry, chemistry, ecology, geology, microbiology, microbiology, physics, physiology, plant pathology, zoology).

- d. A grade-point average of 3.0 on all courses attempted at the time of the final examination.

- e. The student's degree candidate makes a written examination, during the term in which he is to graduate. This is followed within a week by an oral examination. The scope of these examinations includes the courses and research experience that the student has had up to this point.

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 study in the Department of Botany, including the program of study described above. A program of study will be chosen by consultation with an advisory committee on the basis of the following requirements:

- a. All candidates must complete 18 semester hours of undergraduate preparation divided as follows: 8 semester hours of biology and 8 semester hours of psychology. A general biology course may not be submitted as part of this requirement.

- b. Graduation requirements:

1. With thesis: 14-20 semester hours of botany including 520 Research; 8 semester hours of psychology electives; 4-6 semester hours of electives in cognate fields.

2. Without thesis: 20-34 semester hours of botany including 520 Research; 8-10 semester hours of psychology electives; 4-8 semester hours in cognate fields.

3. A grade-point average of 3.0 on all courses attempted at the time of the final examination.

Other options see Botany.

Doctor of philosophy. The general requirements of the Graduate College (see Graduate College) apply to all students. Specialization may be in any one of the fields in the Department of Botany. A program of study including a dissertation is submitted for approval by the faculty. This dissertation is examined by a dissertation committee. A dissertation committee is a faculty-appointed committee appointed by the student to review and substantiate originality of thought concerning the dissertation and to certify the student's qualifications.

a. General language requirement.

The purpose of the foreign language requirement is two-fold: to give the candidate knowledge in the literature of his field of study; and to enable him to keep abreast of foreign developments in his field. Before taking the qualifying examination, the candidate must satisfy one of the following options, the choice to be determined in the case of each student by consultation with the student's guidance committee.

1. Reading knowledge of two foreign languages with a dictionary to be tested by written examinations administered by the department.

2. Reading knowledge of a foreign language without a dictionary to be tested by written examinations administered by the department.

b. The doctoral thesis should be submitted prior to the final examinations. It is primarily a thesis of ideas and the methods of obtaining the facts that are recorded in the thesis, an original and independent contribution to the general body of our knowledge of...
botany. In addition to its research contribution, it should contain a discussion of related knowledge and the candidate's interpretations, speculations, and generalizations about his specific topic.

Facilities

The department has an excellent library, extensive herbaria, and its main laboratories, all housed in the same building, as is also a special laboratory for plant physiology, with attached greenhouses, on the west campus. A new greenhouse, constructed on the roof of the Chemistry-Botany Building, was put into operation in January, 1966. Approximately 15,000 square feet of space in the Chemistry-Botany Building has been remodeled for classrooms, faculty and graduate student research laboratories, and an electron microscope facility. Special facilities for the Radiation Research Laboratory, the University Computer Center, and the Iowa Lakeside Laboratory at Leede (see Division of Extension and University Services) are available to botany students and staff as necessary.

Inquiries

Qualified students are invited to apply for fellowships and assistantships. Inquiries should be directed to the Chairman of the Department of Botany.

STAFF

Professors: Robert L. Hubbell, Robert M. Muir, Martin A. Bauchop.

Professor Emeritus: George W. Martin.

Associate Professor: Henry L. Dean, Robert W. Renfrew.

Assistant Professor: Wayne R. Carroll, Robert W. Craden, Jeffrey T. Schabalin, Richard D. Spalding, Stefan Burzyński.

Librarian in Charge, Botany Library: Pauline L. Mann.

COURSE DESCRIPTIONS

Primarily for Undergraduates

2:11 Introduction to Botany

5 s.h.

A cultural experience with the biology of plant life; structure, function, reproduction, and inheritance in plants. Open to all students; recommended for students in general science, zoology, and those preparing to teach science. Three lectures and two laboratory periods per week. May be continued to 2:11a or 2:11b to satisfy the natural science core requirement.

2:11 Evolution of Land Plants

3 s.h.

Bryophytes and vascular plants including their structure, reproduction, and major plant-physiological relationships. Two lectures and one laboratory period per week. Prerequisite, 2:1 or equivalent.

2:12 Algae and Fungi

3 s.h.

Biology of the major groups; their development, comparative morphology, and evolutionary relationships. Two lectures and one laboratory period per week. Prerequisite, 2:1 or equivalent.

2:13 Biology of the Local Flora

3 s.h.

Identification, recognition, and reproduction of angiosperms and gymnosperms of the Midwest will be emphasized; the ecology of the weedland and prairie communities will also be stressed. Two lectures and one laboratory per week; field work when feasible. Prerequisite, 2:1 or equivalent.

For Undergraduates and Graduates

2:101 Plant Taxonomy

4 s.h.

Principles of plant taxonomy as illustrated by a study of the variation within and the relationship between selected families and orders of angiosperms. Prerequisite, 2:1 or equivalent.

2:102 Genetics

2 or 4 s.h.

Structure, behavior, and function of the hereditary material. Laboratory illustrates basic patterns of inheritance; optional for nonmajors. Lectures and laboratory, 2 sessions each. Same as Zoology 37:109. Prerequisite, 2:1 or Zoology 37:1 or equivalent.

2:103 Fundamental Genetics

3 or 4 s.h.

Nature and function of the genetic mechanism. Three lectures and one laboratory. Laboratory illustrates application of genetic analysis; optional for nonmajors. Same as Zoology 37:110. Prerequisites, 2:1 or Zoology 37:3 or equivalent; Chemistry 4:121, 122 recommended.

2:104 Cytoprotection

4 s.h.

Structure and function of chromosomes. The process of recombination. Chromosome aberrations, including translocations, inversions, duplications, deletions, disjunction, and rings. Banding of the chromosomes. Significance of heterochromatin. Mitotic and meiotic control elements. Two lectures and two laboratories. Prerequisite, 2:10 or equivalent.

2:105 Physiological Botany

4 s.h.

Structure and function of the algae, freshwater and marine, including the physiology of representatives of the major taxonomic groups; laboratory, and field trips. Prerequisite, 2:1 or equivalent.

2:106 Bryology

4 s.h.

Lectures, laboratory, and field work dealing with the development, structure, and evolution of mosses and liverworts. Prerequisite, 2:1 or equivalent.

2:107 Mycology

4 s.h.

Morphology, cytology, and taxonomy of fungi with study of representative groups. Prerequisites, 2:1 or equivalent.

2:108 Experimental Mycology

4 s.h.

Physiology of fungi. Procedures for growth and morphogenetic investigations. Prerequisites, 2:1 or biology and a year of organic chemistry or consent of instructor.

2:109 Plant Physiology

4 s.h.

Lecture and laboratory. Experimental study of function in plants: cell physiology, water relations, and chemical syntheses. Prerequisites, 2:1 and organic chemistry.

2:111 Plant Ecology

3 s.h.

Lecture and laboratory. Experimental study of mineral nutrition, metabolism, growth, and development of seed plants. Prerequisites, 2:1 and organic chemistry.

2:111 Plant Ecology

3 s.h.

Lectures, laboratory, and field work on plant communities. General plant-physiological relationships, breeding systems, pollination systems. Lectures, laboratory, and field trips. Prerequisites, 2:1 or equivalent; a course in genetics is helpful.

2:113 Plant Anatomy

4 s.h.

Structure and organization of fundamental tissue systems of seed plants including development and differentiation of cell types. Emphasis on tissues. Relationships between structure and function. Prerequisites, 2:1 or equivalent.

2:114 Ultrastructural Plant Cytology

4 s.h.

Lectures and laboratory work on plant cells and cellular organelles with emphasis on the relationship of their structure to their function. Identification of cellular components and evaluation of morphological evidence obtained by light and electron microscopy. Prerequisites, 2:1 or equivalent.

2:115 Botanical Microtechnique

3 s.h.

Lectures and practical instruction in preparation of permanent microscopic slides. Methods of killing, sectioning, and staining plant materials. Prerequisite, 2:1 or botany 105. Necessary for research in various fields of botany. Prerequisites, 2:1 or equivalent.

45
2:116 Botanical Microtechnique cr.arr. 3 s.h.

2:117 Experimental Techniques 2 s.h.
Lecture and laboratory work with pdf, sampling, colorimetry, spectrophotometry, chromatography, and selected chemical analyses. Prerequisite, consent of instructor.

2:119 Experimental Techniques 2 s.h.
Continuation of 2:115, but may be taken as an independent unit. Chemical analysis, enzyme studies, and measurement of photosynthesis and respiration.

2:120 Paleobotany 4 s.h.
Most important groups of fossil plants, their structure, evolution, plant-physiological relationships, and geological distribution. Prerequisite, 2:11 or equivalent or consent of instructor.

2:124 Honors in Botany cr.arr. Both semesters. Prerequisite, senior standing and grade-point average 3.5 overall, 3.5 in botany.

2:125 Physiological Genetics cr.arr. Laboratory projects in the pedigree culture of plants, including microorganisms. Methods used in population studies, plant improvement, and the induction of mutation. Credits based on reports and written examinations. Prerequisite: 2:106 or equivalent. Alternate years; offered spring 1971.

2:127 Medical Mycology 4 s.h.
Basic techniques used in the study of fungi which are pathogenic for man. Registration limited and by consent of the instructor. Same as Microbiology 2:129.

2:151 Field Botany 3 s.h.
Identification and identification of plants in the living condition. Study of the origin and growth of plants, factors of plant growth, and natural classification as evident under field conditions. Lectures and discussion and frequent field trips. Offered only in the summer session.

2:160 Genetics of Cell Organelles cr.arr. Readings, conferences, and written reports on phases of plant disease of special interest to students; plants in relation to various other fields of study.

2:180 Advanced Mycology cr.arr. 3 s.h.
Advanced laboratory work in the techniques and identification of fungi and their use in the study of plant pathology. Prerequisites, 2:113 or 2:114 or equivalent.

2:201 Systematics cr.arr.
Hybridization, intergradation, polyphyletic, xenoplastic, cytophylaxis, experimental biogeography, and biochemical systematics. Credits based on utilization of a thesis derived from these areas in the study of taxonomic problems and the relationships of populations, species, and genera. Prerequisite, consent of instructor.

2:204 Genetics Seminar 2 or 4 s.h.
Lectures, discussions, and seminars on selected topics in genetics. A specific topic will be selected each year. Course may be repeated for credit. Prerequisite, 2:108 or Zoology 2:110 or consent of the instructor. Same as Zoology 2:110.

2:205 Morphogenesis Seminar cr.arr.
Does not follow a specific pattern. Study current status of the fields of development, differentiation, developmental anatomy and embryological morphology of plants. Prerequisites, 2:113 or 2:114 or equivalent.

2:207 Advanced Mycology cr.arr. 2 s.h.
A year-long course of lectures and laboratory work on the classes of fungi as preparation for teaching and research. Prerequisites, 2:108 or consent of instructor.

2:209 Advanced Plant Physiology cr.arr. Normal and abnormal physiology of plants. Reading and reference. Prerequisites: 2:106 or 2:116 or equivalent and one year of college chemistry or physics.

2:214 Electron Microscopy 3 s.h.
Lectures and laboratory. Emphasis for advanced graduate students with a definite plan to use techniques of electron microscopy in their research. Theoretical and practical aspects of these preparation, thin-sectioning, histoch- temicy, autoradiography, negative staining and shadow-casting of plastic membranes. Theory, operation, and maintenance of an electron microscope. Enrollment limited. Prerequisites, 2:114 and consent of instructor.

2:215 Advanced Botanical Microtechnique cr.arr. Survey of recent developments in botanical microtechnique. Survey of literature: use and development of special methods. Prerequisites, 2:113 or consent of instructor.

2:217 Processessrr: Mycology 1 s.h.
Readings and discussion of literature. Prerequisite, consent of instructor.

2:218 Processessrr: Plant Physiology 1 s.h.
Readings and discussion of current American and foreign research literature; monographs, and professional texts. Prerequisites, 2:106 and 2:116 or equivalent and consent of instructor.

2:220 Topics in the Phylogeny of Vascular Plants cr.arr.
Seminar dealing with selected topics of comparative morphology, evolution, and phylogeny of extant and extinct vascular plants. Prerequisites: 2:108 or consent of instructor.

2:221 Seminar: Botany 0 or 2 s.h.
Optional registration for one hour of credit for botany graduate majors. Open to senior majors in botany and graduate students in other departments.

2:222 Research: Botany cr.arr.

2:223 Thesis: Botany cr.arr.

CHEMISTRY
Chairman of Department, Frederick R. Duke Office, 303 Chemistry-Botany Building
The Department of Chemistry offers programs of study in chemistry on both the undergraduate and graduate levels. Courses are offered in general chemistry for non- science and non-science majors. A wide selection of courses is available for science and physical chemistry. Some courses are designed to give the student an understanding and appreciation of chemistry as well as a broader background of professional career in chemistry. Prerequisites, 2:111 and 2:112, or consent of instructor.

B.S. Curriculum in Chemistry
The B.S. curriculum in chemistry is the professional training program leading to employment in the chemical industry and in government research laboratories. The present and future demand for B.S. chemists for research, control, or process development work is excellent. The B.S. program also provides the necessary prerequisites for graduate work in chemistry or biochemistry.
Chemistry Courses
4.0
Elementary Chemistry Laboratory
4.121
Organic Chemistry
4.111
Analytical Chemistry
4.122
Physical Chemistry
4.141
Intermediate Chemistry Laboratory
4.143
Advanced Chemistry Laboratory
4.170
Advanced Inorganic Chemistry
4.150
Introduction to Senior Research
4.00
Chemistry Orientation
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 23.1, 18, 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 7 semester hours. Advanced science electives may be chosen in the areas of chemistry, mathematics, astronomy, physics, engineering, nuclear science, biochemistry, microbiology, pharmacology, botany, zoology, geology, and botany.

B.S. Curriculum in Chemistry

This is a modification of the B.S. curriculum which substitutes biochemistry and biological area courses for some of the requirements in the regular B.S. curriculum.

Chemistry Courses
4.1, 4.2 or 4.3 Principles of Chemistry
4.4
Elementary Chemistry Laboratory
4.122
Organic Chemistry
4.401
Analytical Chemistry
4.125
Physical Chemistry
4.141
Intermediate Chemistry Laboratory
4.143
Advanced Chemistry Laboratory
4.170
Advanced Inorganic Chemistry
4.150
Introduction to Senior Research
May be satisfied by examination

Mathematics
Selected courses to include integral calculus.

Physics
Two semesters (either 29.1, 2 or 29.17, 18; 29.17, 18 are recommended).

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

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

Teaching Certificates
The chemistry courses required by the B.S. or B.A. degree 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 Curriculum in Chemistry

The following courses are available to students who choose a two-year curriculum in chemistry.

4.1.4 or 4.2 Principles of Chemistry
4.4
Elementary Chemistry Laboratory
4.122
Organic Chemistry
4.111
Analytical Chemistry
4.125
Physical Chemistry
4.141
Intermediate Chemistry Laboratory
4.143
Advanced Chemistry Laboratory
4.170
Advanced Inorganic Chemistry
4.150
Introduction to Senior Research
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 elect work in chemical physics. The requirements for admission specified by the Graduate College must also be fulfilled.

Program.
The department offers a full program of graduate work leading to the M.S. and Ph.D. degrees in the areas of analytical, inorganic, orga- nic, 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 3.5 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.

4.170 Advanced Inorganic Chemistry
4.172 Advanced Analytical Chemistry
4.173 Advanced Organic Chemistry
4.175 Advanced Physical Chemistry

Enrolling students will be given the opportunity to take exemption examinations to demonstrate competence in the
CHEMISTRY

areas listed above. These exams will be given at the discretion of the instructor each year and will cover material equivalent to that given in the courses listed.

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

Ph.D. degree. A program of study for the Ph.D. degree in the fields previously listed consists of a minimum of 30 semester hours of graduate credit. The basis for the master's degree constitutes part of the Ph.D. program. The major emphasis of study includes two major areas, previously specified courses and courses in the major field of interest. The student may be in chemistry or in some other scientific area.

Each candidate for the Ph.D. degree must select a research problem in consultation with his research director. The problems must be investigated diligently and carried to a suitable state of completion so that they demonstrate marked originality and originality in research. A thesis covering the research work is written in the form specified by the departmental committee as evidence of a completed research project.

Residents. Although research rather than collective examinations (group in contrast) is emphasized in chemistry, written examinations are required for the various advanced degrees.

The work of the resident M.S. degree with thesis is essentially the conclusion of a course of study along with a final examination for the master's degree. The examination for the Ph.D. degree is the comprehensive examination. The Ph.D. oral comprehensive examination may also serve as the final examination following completion of all other work.

An oral comprehensive examination in defense of a proposed thesis is required for admission to candidacy for the Ph.D. degree. Students who have demonstrated the ability to do advanced work in the major areas of study and who have maintained a minimum grade-point index of 3.0 must pass the oral comprehensive examination prior to presentation and preliminary approval of their research proposal. Students may be advanced to candidacy only after they have demonstrated competence in reading German prior to admission to candidacy.

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. Ph.D. theses and a manuscript of the publishable portion of the research are required for all degrees. The Ph.D. examining committee, composed of five members of the Graduate faculty, is the final authority in recommending candidacy for the Ph.D. degree.

Languages. The Department of Chemistry does not require a knowledge of a foreign language as a part of the requirements for the advanced degree. As stated above, students majoring in organic chemistry are required to demonstrate competence in the reading of German.

To qualify for the Ph.D. degree, all graduate students majoring in chemistry are required to pass an examination in the subject in which they will do research for an advanced degree.

STAFF


Assistant Professor: Ernst, Ralph L. Strocco.


COURSE DESCRIPTIONS

Primarily for Undergraduates

4:1 Principles of Chemistry I 3 or 4 s.h.

For beginning students who plan to take more than 3 semesters of chemistry. Two lectures and one discussion weekly. Engineering students register for 4 semester hours, which includes one laboratory period each week.

4:4 Principles of Chemistry II 3 s.h.

Continuation of 4:1. Two lectures and one discussion weekly. Prerequisite: 4:1 or 4:2.

4:5 Principles of Chemistry 3 s.h.

For beginning students who plan to take more than 1 semester of chemistry and who have had a good high school chemistry course. Two lectures and one discussion weekly. Prerequisite, passing score on a chemistry examination for which an additional 3 semester hours of ungraded credit will be awarded on a minimum of a 3.0 average of advanced college placement credit from high school.

4:6 Elementary Chemistry Laboratory 2 s.h.

One lecture and one laboratory weekly. Prerequisite: 4:1, corequisite: 4:4 or 4:5.

4:7 General Chemistry I 3 s.h.

Spectrum. Two lectures and one discussion to plan one or two semesters of chemistry. Three lectures and one optional discussion weekly. Prerequisite or corequisite: 4:1 or 4:4 or 4:5.

4:8 General Chemistry II 3 s.h.

Elementary organic chemistry. For students who plan to take one or two semesters of chemistry. Three lectures and one optional discussion weekly. Prerequisite or corequisite: 4:1 or 4:4 or 4:5.

4:9 General Chemistry Laboratory 2 or 3 s.h.

One lecture and one or two laboratory periods weekly. Prerequisite or corequisite: 4:1 or 4:4 or 4:5.

4:11 Elementary Quantitative Analysis 4 s.h.

First principles of quantitative analysis. Two lectures and two laboratory periods weekly. Prerequisite: 4:4 or 4:5.

4:50 Chemistry Orientation 0 s.h.

Chemical literature. Methods of study. The chemical profession. The fields of chemical specialization. Present and future developments. Required for all majors in chemistry each semester. One meeting per month as arranged. No prerequisite.

4:51 Development of Ideas in Chemistry 4 s.h.

Development of ideas from historical and modern chemists. Ideas for the future logically developed, and from a humanistic point of view. Science elective for science majors. Two lectures and one discussion weekly. Prerequisite: and 4:1.

4:63 Inorganic Syntheses 2 or 4 s.h.

The presentation of a variety of inorganic compounds. Two laboratory periods weekly. Prerequisite: 4:1.

4:111 Analytical Chemistry 3 s.h.

Principles of modern analytical chemistry with an emphasis on instrumental methods of analysis. Two laboratory periods weekly. Prerequisite: and 4:1.

4:213 Inorganic Chemistry 3 s.h.

Principles of modern inorganic chemistry with an emphasis on the study of the chemical properties of compounds. Three laboratory periods weekly. Prerequisite: and 4:1.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Chapters</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4i12</td>
<td>Analytical Chemistry</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td>4i14</td>
<td>Instrumental Methods of Analysis</td>
<td>3 or 4 a.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Potentiometric, colorimetric, spectrophotometric, polarographic, and electrical methods of analysis. Two lectures and one or two laboratory periods weekly. Pre-requisites: 4i12.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4i11</td>
<td>Organic Chemistry I</td>
<td>3 a.h.</td>
<td></td>
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<tr>
<td></td>
<td>General principles illustrated by preparation and study of typical representatives of the aliphatic and aromatic series. Three lectures weekly. Pre-requisites: 4i11 or 4i25 or 4i16.</td>
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<tr>
<td>4i13</td>
<td>Organic Chemistry II</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continuation of 4i11, which is pre-requisite.</td>
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<td></td>
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<tr>
<td>4i15</td>
<td>Introduction to Organic Research I</td>
<td>3 a.h.</td>
<td></td>
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<tr>
<td></td>
<td>Synthesis and purification of organic compounds. Methods and techniques of structure determination. Two lectures and one to three laboratory periods weekly. Pre-requisites: 4i12 and 4i14.</td>
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<tr>
<td>4i16</td>
<td>Qualitative Organic Analysis</td>
<td>3 or 4 a.h.</td>
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<tr>
<td></td>
<td>Identification of pure organic compounds and mixtures. Two lectures and two laboratory periods weekly. Pre-requisites: 4i12, 4i13, and 4i14.</td>
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<tr>
<td>4i17</td>
<td>Introduction to Polymer Chemistry</td>
<td>3 a.h.</td>
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<td></td>
<td>Mechanics and kinetics of polymerization reactions, structure, physical properties, and preparative methods. Three lectures weekly. Pre-requisites: 4i12, 4i16.</td>
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<tr>
<td>4i19</td>
<td>Elementary Physical Chemistry</td>
<td>3 a.h.</td>
<td></td>
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<tr>
<td></td>
<td>Elements of theoretical chemistry. Effective for premedical students and biological science majors. Three lectures weekly. Pre-requisites: 4i12.</td>
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<tr>
<td>4i20</td>
<td>Physical Chemistry I</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td>4i21</td>
<td>Physical Chemistry II</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continuation of 4i11, which is pre-requisite.</td>
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<tr>
<td>4i22</td>
<td>Introduction to Quantum Chemistry</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elementary symmetry arguments applied to quantum chemistry problems. Pre-requisites: 4i12.</td>
<td></td>
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<tr>
<td>4i23</td>
<td>Intermediate Chemistry Laboratory I</td>
<td>3 a.h.</td>
<td></td>
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<tr>
<td></td>
<td>Preparation, purification, and analysis of chemical compounds, principally organic compounds. One lecture and two laboratory periods weekly. Pre-requisites: 4i12 and 4i24 or 4i25.</td>
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<tr>
<td>4i24</td>
<td>Intermediate Chemistry</td>
<td>3 a.h.</td>
<td></td>
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<tr>
<td></td>
<td>Continuation of 4i14, which is pre-requisite. One lecture and two laboratory periods weekly. Pre-requisites: 4i12 and 4i31.</td>
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</tr>
<tr>
<td>4i25</td>
<td>Advanced Chemistry Laboratory I</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical and analytical measurements. One lecture and two laboratory periods weekly. Pre-requisites: 4i12 and 4i31.</td>
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<tr>
<td>4i26</td>
<td>Advanced Chemistry Laboratory II</td>
<td>3 a.h.</td>
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<tr>
<td></td>
<td>Information retrieval from chemical literature and patent abstracts and analysis of chemical research problems. One meeting weekly. May be repeated once for credit. Pre-requisites: senior standing in chemistry.</td>
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<tr>
<td>4i28</td>
<td>Senior Research</td>
<td>1 to 4 a.h.</td>
<td></td>
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<tr>
<td></td>
<td>May be repeated for credit. Pre-requisites: senior standing in chemistry.</td>
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<tr>
<td>4i19</td>
<td>Advanced Inorganic Chemistry</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advanced topic in inorganic chemistry. Three lectures weekly. Pre-requisites: 4i19.</td>
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<tr>
<td>4i20</td>
<td>Analytical Chemistry</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Decomposition of the theoretical basis of modern analytical techniques. Three lectures weekly. Pre-requisites: 4i19, 4i21, and 4i24.</td>
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<tr>
<td>4i21</td>
<td>Advanced Physical Chemistry</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General organic chemistry for advanced students. Three lectures weekly. Pre-requisites: 4i19, 4i21, and 4i24.</td>
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<tr>
<td>4i23</td>
<td>Chemical Pedagogy</td>
<td>3 a.h.</td>
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<tr>
<td></td>
<td>Techniques and practice of presenting chemical principles and the principles of self-learning to students. One lecture and two laboratory periods. Pre-requisites: senior standing.</td>
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</tr>
</tbody>
</table>

**Primary for Graduates**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Chapters</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4i20</td>
<td>Special Topics in Inorganic Chemistry</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intensive study of selected areas of specialization within the field of inorganic chemistry. Three lectures weekly. Topic changes annually. May be repeated for credit. Pre-requisites: 4i20.</td>
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<tr>
<td>4i22</td>
<td>Coordination Compounds</td>
<td>3 a.h.</td>
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<tr>
<td></td>
<td>Formation, reactions, physical properties, and structures of molecules formed by combinations of donor molecules with acceptor elements. Three lectures weekly. Pre-requisites: 4i20.</td>
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<tr>
<td>4i23</td>
<td>Introduction to Inorganic Research</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Techniques of inorganic research including synthesis and structure determination. One lecture and two laboratory periods weekly. Pre-requisites: 4i20.</td>
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<tr>
<td>4i24</td>
<td>Physical Methods in Inorganic Chemistry</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Application of physical methods to problems in inorganic chemistry, with emphasis on recent developments. Three lectures weekly. Pre-requisites: 4i20.</td>
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<tr>
<td>4i21</td>
<td>Analytical Emission and Absorption Spectroscopy</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td>4i22</td>
<td>Electromechanical Chemistry</td>
<td>3 a.h.</td>
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<tr>
<td></td>
<td>Theory and practice of electromechanical methods of analysis. Polarographic titrations, conductimetric titrations, polarography, capillary electrometry, controlled potential coulometry, etc. Two lectures and one laboratory weekly. Pre-requisites: 4i20.</td>
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<tr>
<td>4i23</td>
<td>Special Topics in Analytical Chemistry</td>
<td>3 a.h.</td>
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<tr>
<td></td>
<td>Topic changes annually. May be repeated for credit. Three lectures weekly. Pre-requisites: 4i20.</td>
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<tr>
<td>4i24</td>
<td>Physical Organic Chemistry</td>
<td>3 a.h.</td>
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<tr>
<td></td>
<td>Fundamental physio-chemical concepts of molecular structure, stereochemistry, equilibria, and reaction rates applied to organic compounds. Pre-requisites: 4i12, 4i13, and 4i16.</td>
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<tr>
<td>4i25</td>
<td>Mechanisms of Organic Reactions</td>
<td>3 a.h.</td>
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<tr>
<td></td>
<td>Application of basic mechanistic concepts to organic reactions. Three lectures weekly. Pre-requisites: 4i20.</td>
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</tbody>
</table>
C H E M I S T R Y

4:229 Advanced Organic Preparations 3 a.h.
Discussion of the preparation of complex organic com-
ounds. Three lectures weekly. Prerequisite: 4:232.

4:231 Statistical Thermodynamics 3 a.h.
Fundamental principles of statistical thermodynamics and
deductive chemical kinetics. Prerequisite: 4:129.

4:232 Statistical Thermodynamics 3 a.h.
Advanced topics in statistical thermodynamics. A con-
tinuation of 4:231, which is prerequisite.

4:233 Quantum Chemistry 3 a.h.
Quantum mechanics of chemical systems. Time-inde-
pendent and time-dependent perturbation theory. Varia-
tional theory. Hartree-Fock theory. Atomic structure
and spectra. Prerequisite: 4:129.

4:234 Quantum Chemistry 3 a.h.
Continuation of 4:233, which is prerequisite. Group
theory. Molecular orbital and valence bond theories and
the Roothaan procedure. Electronic, vibrational, rota-
tional, and spin resonance spectroscopy. Quantum sta-
tistics. Current topics.

4:235 Chemical Kinetics 3 a.h.
Chemical kinetics and mechanisms of chemical reactions
from a more theoretical viewpoint. Prerequisite: 4:129 or
consent of instructor.

4:237 Molecular Spectroscopy 3 a.h.
Application of infrared, microwave, and Raman spec-
troscopy to chemical problems. Three lectures weekly.
Prerequisite: 4:129 or consent of instructor.

4:242 Physical Chemistry Topics 0 or 3 a.h.
Statistics of linear polymers, or high-temperature chem-
istry, or random topics. An alternate topic is covered
each year the course is offered. May be repeated for
credit when topic varies. Three lectures weekly. Prereq-
quisite, 4:129.

4:243 Diffraction Analysis 2 or 3 a.h.
Thermal diffraction of X-rays, neutrons, and
X-rays by gases, liquids, and solids. Structure de-
termination and computational methods. Two lectures
and optional three-hour laboratory weekly. Prerequisite,
consent of instructor.

Seminars in Chemistry

The following courses present discussions of latest ad-
vanced work in the various fields of chemistry. Prerequisite,
consent of instructor.

4:251 Seminar: Analytical Chemistry 0 or 1 a.h.

4:253 Seminar: Inorganic Chemistry 0 or 1 a.h.

4:255 Seminar: Organic Chemistry 0 or 1 a.h.

4:258 Seminar: Physical Chemistry 0 or 1 a.h.

Research in Chemistry

The following courses present thesis work for advanced
degrees. Conference and laboratory work arranged. Prereq-
quisite, consent of head of department and major advisor.

4:291 Research: Analytical Chemistry cr.arr.

4:293 Research: Inorganic Chemistry cr.arr.


4:296 Research: Physical Chemistry cr.arr.

INSTITUTE OF CHILD BEHAVIOR
AND DEVELOPMENT

Director, Charles C. Spiker
Office, W513 East Hall

A primary function of the Institute is the training of
students for research and teaching careers in the field of
child development. In dispensing this function the Insti-
tute offers an undergraduate major leading to the B.A.
degree and graduate programs leading to the M.A. and
Ph.D. degrees.

The undergraduate major in child development has the
broad aim of providing a broad general education and
providing a sound foundation for later specialization in a
designated area of child development. The Institute also
advances preparation for careers requiring graduate training in several different behavioral
fields of normal children. Curricular programs are pro-
tected leading to the M.A. degree in preschool education, the M.A. degree in child behavior, and the Ph.D. degree in
cchild psychology.

Facilities

The Institute operates preschool laboratories for pur-
poses of both research and teaching. The annual enroll-
ment exceeds 150 children from three to five years of age.
Other groups of subjects are available for research pur-
poses through the nursery nurseries and pediatric services
of the University Hospitals, the elementary and high
schools operated by the College of Education, the public
and parochial schools of Iowa City and surrounding com-
munities, several orphanages, and institutions for handi-
capped children.

The Institute maintains a well-equipped workshop
staffed with skilled personnel to assist with construction
of research apparatus; numerous laboratory rooms equipped
with one-way vision facilities, audiation instruments,
physiological, and recording devices; and an
adequate supply of automatic computational equipment
for data analysis.

R.A. in child development. In the course of mastering the
general requirements of the College of Liberal Arts, stu-
dents taking the B.A. degree with a major in child de-
vlopment must complete the following curriculum:

Prerequisites

5:111 Elementary Psychology 4 a.h.
5:123 College Algebra 3 a.h.
5:125 E. Analytic Geometry 3 a.h.
5:211 College Physics 4 a.h.
5:212 College Chemistry 3 a.h.
411 General Chemistry 3 a.h.
4:214 Principles of Animal Biology 4 a.h.
5:129 Principles of Human Genetics 3 a.h.

Required courses

4:215 Introduction to Child Psychology 4 a.h.
4:217 Social Development of Children 3 a.h.
4:218 Language Processes in Children 3 a.h.
4:214 Sensation and Perception in Children 3 a.h.
4:258 Physiological Psychology of Children 3 a.h.
4:215 Introduction to Child Development 3 a.h.
4:2010 Introduction to Philosophy of Science 3 a.h.
7P:143 Introduction to Statistical Methods 3 a.h.
205:151 Probability and Statistics 4 a.h.

Electives courses (9 semester hours required from those
listed below)

5:144 Children’s Language Development 3 a.h.
5:238 Observation and Participation in the
Preschools 3 a.h.
7P:131 Educational Psychology 3 a.h.
17:19 Principles of Nutrition 3 a.h.
31:101 Introduction to Experimental Psychol-
o 3 a.h.
31:120 Experimental Psychology I 3 a.h.
31:121 Experimental Psychology II 3 a.h.
31:123 Psychology of Learning 3 a.h.
31:125 Motivation 3 a.h.

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Assistant Professor: W. Keith Berg, William L. Orell, David P. Parton, Ben H. Rosser, Research Associate: Virginia H. Knott.

COURSES DESCRIPTIONS

Courses numbered 100 to 199 are open to undergraduate and graduate students who meet the specified prerequisites; courses numbered above 200 are open to graduate students only.

5:100 Child Development 3 s.h.
Methods in psychological study of infants and children; developmental norms; maturation-learning, nature-nurture controversy; perceptual, learning, and motor coordination; cognitive development; personality development; maternal deprivation effects. Same as Education 79:115 and Psychology 31:115. Not open to education majors. Recommended for students with majors other than child development.

5:123 Observation and Participation in the Preschools 2 to 5 s.h.
The University Preschool as a laboratory for studying and attempting to influence the behavior of normal 3 to 5 year-old children. Observing, assigned observation, and group and individual participation in the Preschool Laboratories are required. Prerequisites: 5:100 (same as Psychology 31:115) or 5:151 (same as Psychology 31:114) and consent of instructor.

5:151 Introduction to Child Psychology 4 s.h.
Application of experimental method and statistical models to developmental processes, with emphasis on learning, memory, and attention. Three hours lecture and 1 1/2 hours laboratory weekly. Same as Psychology 31:114.

5:152 Social Development of Children 3 s.h.
Research focusing on the learning of social behaviors in infants and children. Application of learning principles in the study of the behavioral maintenance of social behaviors. Prerequisite, Psychology 31:114 or equivalent.

5:153 Language Processes in Children 3 s.h.
Consideration of contributions from learning psychology, biological research, and linguistics in the area of children's language development. Readings from primary sources. Prerequisite, Psychology 31:11 and consent of instructor.

5:154 Sensation and Perception in Children 3 s.h.
Research procedures and results bearing on sensory and perceptual processes in children. Prerequisites, 5:151 and Psychology 31:11 or equivalent.

5:155 Psychophysiology of Children 3 s.h.
Functions of the nervous system and developmental psychophysiology. Results and concepts from studies relating physiological and electrophysiological variables with behavior in experimental work with infants and children. Prerequisites, Psychology 31:11 or equivalent.

5:156 Introduction to Child Sociology 3 s.h.
Human developmental changes from embryo to young adult. Body size, form, and tissue variations associated with sex, climate, disease, and generation. Pubertal changes. Growth appraisal.

5:251 Methodological Problems in Child Development 3 s.h.
Analysis and discussion of scientific method in the application of psychology, laboratory exercises in analyzing studies in child psychology.

5:215 Seminar: Child Development 3 s.h.
Research no cr. Analysis of recent and on-going research.

5:218 Social Behavior of Children 3 s.h.
Theories, methods, and research findings, with emphasis on a learning analysis of social interaction. Prerequisite, consent of instructor.

5:230 Preschool Education 3 s.h.
Principles and procedures, with emphasis on unique aspects of childhood throughout the preschool years. Prerequisite, 5:220 or equivalent.

5:231 Seminar: Curriculum Development in the Preschool 3 s.h.
Principles of curriculum development, improvement throughout the preschool years. Prerequisite, 5:230 or equivalent.

5:232 Seminar: Design and Use of Preschool Equipment, Materials, and Facilities 2 s.h.
Creative teaching in the preschool. Construction of play equipment and materials. Selection, care, and evaluation of plant and equipment.

5:234 Advanced Practicum in Preschool Education 1 to 3 s.h.
Directed observation and participation in the Preschool Laboratory. Prerequisite, consent of instructor.

5:235 Seminar: Preschool Supervision 2 s.h.
Teacher evaluation and guidance. Curriculum improvement and preparation of materials for use in preschool groups. Prerequisite, consent of instructor.

5:240 Learning in Children 3 s.h.

5:241 Motivational Determinants of Child Behavior 3 s.h.
Motivational vs. associative interpretations of child behavior; child research concerned with anxiety, stress, frustration, conflict, incentive motivation, boredom. Prerequisite, consent of instructor.

5:243 Visual Psychophysics in Children 3 s.h.
Analysis of interpretation of research relevant to the study of basic visual processes in children. Prerequisite, 5:14 or consent of instructor.

5:243 Verbal Process in Children 3 s.h.
Verbal processes in respect to children with similar and differential effects on children and adults, and developmental aspects of short- and long-term memory. Prerequisite, Psychology 31:125 or consent of instructor.

5:244 Mathematical Models of Child Behavior 3 s.h.
Applications of stochastic models to developmental processes. Emphasis on learning, attention, and memory. Prerequisite, Psychology 31:126.

5:245 Social Behavior of the Child 3 s.h.
Theory and research on the influence of social variables on child behavior, with focus on effects of observed behavior on development. Prerequisite, consent of instructor.

5:249 Socialization Process 3 s.h.
Influence of parent behavior and related environmental factors on social and personality development. Prerequisite, consent of instructor.

5:250 Advanced Psychophysiology of Children 3 s.h.
Theory and research on the influence of social variables on child behavior, with focus on effects of observed behavior on development. Prerequisite, 5:153 or consent of instructor.

5:249 Discrimination Learning in Children 3 s.h.
Theory and research on the influence of social variables on child behavior, with focus on effects of observed behavior on development.
5:254 Seminar: Psychophysiology of Children 2 s.h.
Detailed review and discussion of selected topics in developmental psychophysiology. Prerequisite, consent of instructor.

5:255 Seminar: Selected Problems in Learning 2 s.h.
Theory and research concerned with verbal and perceptual processes in transfer of training. Includes such topics as learning set, attitude conditioning, mediated generalization, complex mediated transfer. Prerequisite, consent of instructor.

5:256 Seminar: Motivational Systems of Children 2 s.h.
Theory concerning behavior and curiosity behavior. Infant and child research; regarding stimulus complexity and novelty; stimuli familiarization and change effect, boredom behavior. Prerequisite Psych 5:241 or consent of instructor.

5:257 Seminar: Quantitative Child Psychology 2 s.h.
Review of literature on selected quantitative methods applicable in child psychology. Prerequisite, consent of instructor.

5:258 Seminar: Selected Problems in Social Development 2 s.h.
Review of selected topics. Prerequisite, consent of instructor. May be repeated.

5:259 Seminar: Problems in Child Morphology 2 s.h.
Selected topics pertaining to anatomic abnormalities of children. Consent of instructor 5:156 or consent of instructor.

5:300 Problems in Child Development 4-5 s.h.
For child development majors. Approval of problems required in advance of registration. Consent of instructor required.

5:395 Research in Child Development 2-4 s.h.
Researches work for advanced degrees. Consent instructor for permission to register.

CHINESE AND ORIENTAL STUDIES
and Center for Far Eastern Studies
Chairman of Program, Director of Center, P. C. Lee
Office, 316 Gilmore Hall
The Program of Chinese and Oriental Studies aims at providing general education courses for the benefit of all students of the University, area and cultural studies courses for students interested in teaching or in international activities in government or business, and language instruction in Chinese and Japanese. Credits earned in these courses will apply to undergraduate or graduate degrees. The Chinese and Japanese language courses will satisfy the foreign language requirement of the College of Liberal Arts. Familiarity with a non-Western civilization should provide all students with certain broadening and comparative values of a liberal education. Those who plan to become social studies teachers in high school will be better prepared by having had this broadening experience. At the undergraduate level, besides a major in Chinese or Japanese language and civilization, a Foreign Languages Concentration on China or Japan is also offered. At the graduate level a program leading to the M.A. degree in Chinese language and civilization is available.

Center for Far Eastern Studies
The Chinese Language and Area Center at The University of Iowa was one of the first fifty-five such centers established in major universities in the country with federal aid provided by the National Defense Education Act. This federal aid has resulted in the strengthening of the faculty and course offerings of the Chinese and Oriental Studies program. Similar expending in the area of China and the Far East occurred in several other departments of the University, notably the School of Art, the School of Journalism, and the Department of Anthropology, Geography, History, Political Science, and Sociology. The aggregate resources of these other departments made possible the offering of an undergraduate major in Chinese language and civilization, a graduate program leading to the master's degree in Chinese language and civilization, and an undergraduate major in Japanese language and civilization.

Undergraduate Major Requirements in Chinese Language and Civilization
Undergraduate majors in Chinese language and civilization are required to complete a program of 32 semester hours distributed under the following categories: I. Chinese Language, II. Chinese History and Civilization, III. Literature and General Culture, IV. Related Courses, and V. Ex- ternal Consulation. The "external consultation" requirement is included to enable the student to achieve, besides the Chinese language and area studies, a certain degree of concentration in an established discipline. It is expected that both the intellectual development and vocational preparation of the student will be thereby enhanced. Some students have also taken advantage of the "external consultation" requirement to work out a double major program and fulfill the requirements of both departments. The following are lists of courses under the five categories:

I. Language
391-101 Elementary Chinese 4-4 s.h.
391-102 Second-Year Chinese 4-4 s.h.
391-103 Third-Year Chinese 4-4 s.h.

II. History and Civilization
392-101 History of China to 1840 3 s.h.
392-102 History of China Since 1840 3 s.h.

III. Literature and Culture
392-103 History of Chinese culture 2-2 s.h.
392-104 History of Modern China (Same as History 16:104) 3 s.h.

IV. Related Courses
Group A
392-150 Traditional Literature of China and the West 3 s.h.
392-151 Oriental Art: India 3 s.h.
392-152 Architecture of Japan (Same as Art 392-152) 3 s.h.
392-153 History of Japan (Same as History 16:103) 3 s.h.
392-154 History of Modern Japan (Same as History 16:105) 3 s.h.

392-155 History of Modern China (Same as History 16:104) 3 s.h.

Group B
392-102 Asian Civilization: Japan 3 s.h.
392-103 Chinese Civilization: China 3 s.h.
392-104 Japanese Civilization: Japan 3 s.h.
392-105 Korean Civilization: Korea 3 s.h.
392-106 Theories of History: China 3 s.h.

V. External Consultation
392-120 Departmental courses 2-3 s.h.
392-170 Foreign language courses 2-3 s.h.

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Honors in Chinese Language and Civilization

A candidate for Honors in Chinese Language and Civilization must be a major student in this field and:

1. Have an overall grade-point average of 3.5 or above, and receive final recommendations for Honors study from his adviser.

2. Submit during the senior year in Fall 38-193 and Fall 1939 Undergraduate Honors Tutorial for 2 semester hours for each of the two semesters: write a total readable essay in Chinese on Chinese literature or civilization under the supervision of his adviser.

3. Enroll during the senior year in Fall 1939 Senior Honors Thesis and prepare an Honors thesis on Chinese literature or civilization for 2-4 semester hours.

4. Maintain a B grade or above for all Honors courses, and a B average in coursework throughout the senior year.

A student who has fulfilled all the requirements listed above will graduate and receive the B.A. degree "With Honors" in Chinese Language and Civilization.

Foreign Studies Certificate on China

Students who have successfully (ordinarily with a 3.5 average or above) completed the following program of study will be granted the Foreign Studies Certificate on China:

20-115 Elementary Chinese Language 4 a.h.
20-116 Elementary Chinese Literature 4 a.h.
20-120 Second-Year Chinese 4 a.h.
20-121 History of China to 1840 3 a.h.
20-122 History of Modern China 3 a.h.

(Same as History 1110)
20-123 Chinese Civilization 3 a.h.
20-127 Government and Politics of the People 3 a.h.

(Same as Political Science 30-123)

20-152 Additional courses as approved by the department chairman 6 a.h.

Recommended as substitutes or additional courses:
20-141 Chinese Literature I 2 a.h.
20-142 Chinese Literature II 2 a.h.
20-119 Art of China 1 a.h.

(Same as Art 1112)

M.A. Program in Chinese Language and Civilization

Statement of Purpose. Graduate study in the Chinese and Oriental Studies program is designed to train students for continuing study in the advanced level ultimately leading to the doctorate, or for preparation for high school teaching, journalism, diplomacy, 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: a program of specialized training in Chinese language, literature, and thought, with a thesis. Program B: a prescribed curriculum plus electives to suit the individual student's course of study over a wider choice to provide the best possible training for the type of work he plans to do.

Admission Requirements. Applicants for graduate study should have completed an undergraduate major in Chinese language and civilization or equivalent, and taken the Graduate Record Examination Aptitude Test. Students with adequate knowledge in their undergraduate major are expected to have a high school diploma or its equivalent, in addition to carrying the graduate study program, and a record of satisfactory performance in Chinese summer institutes of Chinese and Japanese afforded a good opportunity for making up deficiencies in the language.

Requirements for the M.A. Degree. Mastery of the Chinese language is an essential requirement for the master's degree. Normally students who have had three years of Chinese instruction in their undergraduate courses are expected to fulfill the language requirement by taking Chinese for one additional year. Students enrolled in Program A (with thesis) will also select a year's study of Japanese and complete a seminar in 20-106 Methods of Sinological Research.

Program A comprises 32 semester hours of coursework and would lead to a terminal M.A. degree. A comprehensive examination will be 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

Advanced Chinese (below the first 2 years) 6 a.h.
Japanese 4 a.h.

Methods of Sinological Research 2 a.h.
Advanced courses in Chinese literature and thought 9 a.h.

Thesis Total 30 a.h.

Program B

Advanced Chinese (beyond the first 3 years) 6 a.h.
Advanced courses in Chinese literature and thought 15 a.h.

Additional courses as approved by the department chairman, etc., depending upon the student's interest and objective 15 a.h.

Total 38 a.h.

Undergraduate Major Requirements in Japanese Language and Civilization

Undergraduate majors in Japanese language and civilization must be major students in this field and complete at least 60 semester hours distributed under the following categories: I. Japanese Language; II. Japanese History and Civilization; III. Japanese Literature and General Culture; IV. Related Courses. The "fundamental concentration" requirement is made to ensure that the student integrates his Japanese language and area studies, a certain degree of concentration in an established discipline. It is expected that both the interdisciplinary development and vocational preparation of the student will be enhanced. These students have also taken advantage of the "external concentration" requirement to work out a double major program and fulfill all the requirements. The following are lists of courses under the five categories.

I. Language

1. Language 22 a.h.

20-120 Elementary Japanese 4 a.h.
20-121 Second-Year Japanese 4 a.h.
20-122 Third-Year Japanese 4 a.h.
20-123 History of Japan to 1868 A.D. 3 a.h.

(Same as History 3108)

II. History and Civilization

2-3-3 Japanese Civilization 4 a.h.
20-123 History of Japan to 1868 A.D. 3 a.h.

(Same as History 3108)
For general requirements of the College of Liberal Arts, see College of Liberal Arts.

Honor's in Japanese Language and Civilization

A candidate for Honors in Japanese Language and Civilization must be associated in the field of Japanese language and civilization. Acceptance as an Honors candidate shall be made by the Honors Committee on the recommendation of his or her advisor.

1. Have an overall grade-point average of 2.75 or above, and complete 18 hours of Japanese culture courses

2. Enroll in the junior year in 235J and 235J, and 235J. Undergraduate Honors Tutorial for 3 semester hours for each of the two semesters. During the junior year, write a brief, readable essay in Japanese on Japanese literature, under the supervision of his or her advisor.

3. Enroll during the senior year in 350 and 350J, Senior Honors Thesis and prepare an Honors Thesis of 4-6 semester hours.

4. Maintain a B grade or above for all Honors courses, and a B average in all coursework throughout the senior year. A student who has fulfilled all the requirements listed and will graduate and receive his or her B.A. degree "With Honors" in Japanese Language and Civilization.

Foreign Studies Certificate on Japan

Students who have successfully (ordinarily with a 3.5 average or above) completed the following program of study will be granted the Foreign Studies Certificate on Japan:

235J-105 Elementary Japanese 3 s.h.
235J-105A Elementary Japanese 3 s.h.
235J-105B Elementary Japanese 3 s.h.
235J-105C Elementary Japanese 3 s.h.
235J-105D Elementary Japanese 3 s.h.
235J-105E Elementary Japanese 3 s.h.
235J-105F Elementary Japanese 3 s.h.
235J-105G Elementary Japanese 3 s.h.
235J-105H Elementary Japanese 3 s.h.
235J-105I Elementary Japanese 3 s.h.
235J-105J Elementary Japanese 3 s.h.
235J-105K Elementary Japanese 3 s.h.
235J-105L Elementary Japanese 3 s.h.
235J-105M Elementary Japanese 3 s.h.
235J-105N Elementary Japanese 3 s.h.
235J-105O Elementary Japanese 3 s.h.
235J-105P Elementary Japanese 3 s.h.
235J-105Q Elementary Japanese 3 s.h.
235J-105R Elementary Japanese 3 s.h.
235J-105S Elementary Japanese 3 s.h.
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CHINESE AND ORIENTAL STUDIES

Korean, 588. Select basic reference materials. In the full.

Chinese, 596. Besides basic reference materials, the col-

lection has strength in history, literature, philosophy, and

art. Among the larger sets in the collection are to be

found the Complete T'ang Shih, the Sung Yüeh-Fa, the

Ku-chu T'ang-shih Chi-king, the Fat-tsu Feng-hsien Chi-

shih, the 7th-9th T'ang-shih, the Twenty-five Chinese

Histories. etc. It is the aim of the collection to become

an adequate Chinese library for general basic reference.

with special collections built around the interests and

needs of the faculty and graduate students.

The Japanese collection is being rapidly augmented.

Books on China and the Far East in Western languages

are shelved as they are acquired under their subject

classifications in the general University Library.

STAFF

Professor: C. C. Lee

Assistant Professor: Kanzo Suga, Kao-ting Wang

Lecturer: William H. Yeó

Institutional Faculty: Robert D. Baird (Religion),

William Barrett (Anthropology, Wayne E. Sagar (Art),

David Hamilton (History), Robert E. Hauk (Archaeology),

Chung-Lung Lin (Political Science), Stephen Savage

(History), W. Paiche (Religion), Winston J. Luce

(Biology), Robert Rouse (Art), H. Howard Wamberry

(Anthropology).

COURSE DESCRIPTIONS

Note: Upperclassmen and graduate students may receive

credit for courses below 568 only with special permission

from their advisor and the instructor of the course.

Primarily for Undergraduates

39:5 Asian Civilization: China 3 a.h.

Historical and topical study of Chinese civilization con-

sidered from the Neolithic through the present, with

emphasis on the period from 2000 B.C. to A.D. 1250.

Prerequisite: 29:128.

39:6 Asian Civilization: Japan 3 a.h.

Historical and topical study of Japanese civilization con-

sidered from the Neolithic through the present, with

emphasis on the period from 2000 B.C. to A.D. 1250.

Prerequisite: 29:128.

39:7 Survey of India 3 a.h.

Introduction to Oriental Art 3 a.h.

Same as Art 18:128.

39:46 Living Religions of the East 2 a.h.

Religious thought and practices in India, China, and

Japan. Same as Religion 18:46.

Chinese Language

39:101 Elementary Chinese 4 a.h.

Students admitted are required to take 39:102.

39:102 Elementary Chinese 4 a.h.

Continuation of 39:101, which is prerequisite.

39:103 Second-Year Chinese 4 a.h.

Continuation of 39:102.

39:104 Second-Year Chinese 4 a.h.

Continuation of 39:103.

39:105 Third-Year Chinese 3 a.h.

39:106 Third-Year Chinese 3 a.h.

39:107 Readings in Literary Chinese 3 a.h.


39:109 Readings in Documentary Chinese 2 a.h.

39:113 Advanced Conversation 3 a.h.

39:114 Study of the Written Character 3 a.h.

39:117 Advanced Composition 3 a.h.

39:119 Chinese-English Translation 3 a.h.

39:131 Language Laboratory Procedures 1 a.h.

French as French 3131, Spanish 3131.

39:138 Structure of Modern Chinese 3 a.h.

Introductory course to the study of the Chinese language

and includes discussion of Chinese grammar and the

study of Chinese language, phonology, syntax, dialects,

and studies in Chinese literature.

39:139 History of the Chinese Language 3 a.h.

Developments of Chinese language in its phonological

and syntactical aspects. Prerequisites: 39:138.

For Graduates

39:311 Readings in Chinese Literature 2 a.h.

39:312 Readings in Chinese Literature cr.arr.

39:313 Readings in Chinese History cr.arr.

39:314 Readings in Chinese History cr.arr.

39:319 Individual Chinese for

Advanced Students cr.arr.

39:320 Individual Chinese for

Advanced Students cr.arr.

39:336 Seminar in Chinese Linguistics 2 cr. or 3 cr.

Research in the field of Chinese linguistic philosophy

and problems in the study of modern linguistic trends

in the study of the Chinese language. Prerequisites: 39:

138, 39:139, and reasonable ability in reading Chinese

texts.

Chinese Literature (in English)

39:141 Chinese Literature I 3 a.h.

Development and characterization of Chinese literature

from 11th century B.C. to 3rd century A.D. with em-

phasis on poetry.

39:142 Chinese Literature II 3 a.h.

Development and characterization of Chinese literature

from 3rd century A.D. to the present with emphasis on

fiction and drama.

39:143 Contemporary Chinese Literature 3 a.h.

Significant writers of the May Fourth period. Literary

developments since beginning of Communist regime.

39:144 Chinese Poetry 3 a.h.

Works from the "Golden Age" of classical Chinese poetry

(7th-11th centuries).

39:145 Poetry in Chinese Painting 3 a.h.

The close relationship between poetry and painting in

Chinese art and culture.

39:146 Traditional Chinese Fiction 3 a.h.

Representative novels and short stories.

39:147 Chinese Fiction; Classical Novel 3 a.h.

39:148 Chinese Drama 3 a.h.

39:149 Chinese Theatre 3 a.h.

39:150 Literary Tradition of China and

the West 3 a.h.

39:151 Modern Chinese Fiction 3 a.h.

China's fiction from the 20th century–its relationship to

the past and the impact of Western literature.


Chinese Thought and Culture

39:330 Chinese Painting I 3 a.h.

Same as Art 18:129.

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32:12 Chinese Painting II 3 a.h.
Same as Art 131:22.

32:153 History of China to Circa 1840 3 a.h.
Origins and development of Chinese civilization through the early Ching period. Emphasis on political, economic, and social rather than intellectual trends. Prerequisite: junior or senior standing. Same as History 16:120.

32:154 History of Modern China 3 a.h.
Political and social development of China, 1840 to present. Emphasis on Western impact and Chinese response. Prerequisite: History 16:191 or 16:192 or equivalent; graduate students by permission of instructor. Same as History 16:194.

32:155 Ethnology of China 3 a.h.
Same as Anthropology 113:120.

32:17 Chinese Calligraphy and Painting 1 a.h.

32:158 Chinese Calligraphy and Painting 1 a.h.
Continuation of 32:157.

32:159 Art of China 3 a.h.
Art and architecture of China, including aesthetic principles, stylistic developments, relation to philosophies and religions (Confucianism, Buddhism, Taoism). Same as Art 17:125.

32:161 Religion in China 3 a.h.

Primarily for Graduates

32:252 Topics in Chinese Institutional History cr.arr.
Same as History 16:228. Prerequisite: consent of instructor.

32:254 Seminar in Chinese History cr.arr.
Same as History 16:228. Prerequisite: consent of instructor.

32:258 Topics in Modern Chinese History cr.arr.
Same as History 16:228.

32:260 Seminar in Methods of Sinological Research 3 a.h.
Procedures of research and use of reference materials.

Oriental Culture

32:162 Buddhist Sacred Texts 3 a.h.
Translation and Thavveda texts in translation. Same as Religion 22:158.

32:163 Indian Religious Texts 3 a.h.
Same as Religion 22:158.

32:167 Religion in India 3 a.h.
Movements, doctrines, and religious practices in India both in its history and its modern expression. Same as Religion 16:153.

32:168 Oriental Art: India 3 a.h.
Art and architecture of India and Southeast Asia; aesthetic principles, styles, development; their relation to philosophies and religions (Buddhism, Hinduism, and Islam). Same as Art 17:125.

32:169 Oriental Art: India 3 a.h.
Art and architecture of greater India from 1000 A.D. to the modern period, and their relation to philosophies and religions (Hinduism). Same as Art 16:117.

32:171 History of East Asia to Circa 1800 3 a.h.
East Asia from the beginning until the early 19th century and Asian areas connected with Chinese and Japanese civilizations. Development of political institutions and cultural traditions. Not open to freshmen. Same as History 16:191.

32:172 History of Modern East Asia 3 a.h.
Continuation of 32:171; to recent times, but may be taken as an independent unit. Modernization and relations with the West. Not open to freshmen. Same as History 18:182.

Same as Political Science 20:163.

32:25 Seminar in Oriental Art 2 or 3 a.h.
Same as Art 12:125.

32:36 Seminar in Buddhism 2 a.h.
Research and reading in a selected Buddhist thinker or movement. Same as Religion 22:215.

32:47 Seminar: Religion in India 2 a.h.
Research and reading in a selected Hindu thinker or movement. Same as Religion 22:215.

32:48 Advanced Oriental Art: India 3 a.h.
Same as Art 17:215.

32:93 Honors Courses and Theses in Chinese 3 a.h.

32:101 Undergraduate Honors Tutorial 2 a.h.

32:102 Undergraduate Honors Tutorial 2 a.h.

32:105 Senior Honors Thesis 2 to 4 a.h.

32:201 M.A. Thesis cr.arr.

32:202 M.A. Thesis cr.arr.

Japanese Language and Linguistics

32:101 Elementary Japanese 4 a.h.
Students admitted are required also to take 32:102.

32:102 Elementary Japanese 4 a.h.
Continuation of 32:101, which is prerequisite.

32:103 Second-Year Japanese 3 a.h.
Continuation of 32:102.

32:104 Second-Year Japanese 3 a.h.

32:105 Third-Year Japanese 3 a.h.

32:106 Third-Year Japanese 3 a.h.

32:111 Elementary Japanese 3 a.h.
Conversational

32:112 Intermediate Japanese 3 a.h.
Conversational

32:113 Advanced Japanese Conversational 3 a.h.

32:115 Japanese Composition 3 a.h.

32:120 Linguistic Structure 3 a.h.
Same as Linguistics 200:210.

Japanese Literature (in English)

32:141 Classical Japanese Literature 3 a.h.
Development of Japanese literature from the beginning of the Heian Period (8th century) to the Heian Period (12th century). Same as Art 17:117.

32:142 Modern Japanese Literature 3 a.h.
Novels, short stories, poetry, drama, and modern Japanese literature under Western influence. Readings from translations.

32:143 Survey of Japanese Fiction 3 a.h.
Major works from the late 19th century to present novels.

32:144 Survey of Japanese Poetry 3 a.h.
Poetry from T'ang and Ch'ing through Court Poetry, Linked Verse, and Haiku in modern poetry.

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CLASSICS

393:145 Modern Japanese Novels 3 s.h.
Major works of fiction of 20th century Japan.

393:146 Modern Japanese Poetry 3 s.h.
Major works of poetry of 20th century Japan.

393:150 Japanese Literature and the West 3 s.h.

Japanese Thought and Culture

393:153 History of Japan to 1867 3 s.h.
Japanese history from the beginning through the Tokugawa Period. Political system, culture, and economic growth. Primary source, junior or senior standing. Same as History 16:153.

393:154 History of Modern Japan 3 s.h.
Continuation of 393:153 to recent times, but may be taken as an independent unit. Modernization and emergence of Japan as a world power. Prerequisite, junior or senior standing. Same as History 16:154.

393:155 Ethnology of Japan 3 s.h.
Human behavior in the social and cultural setting of contemporary Japan. Contrast with pre-modern conditions; development since 1868. Same as Anthropology 113:155.

393:156 Art and Architecture of Japan 3 s.h.
Art and architecture of Japan; aesthetic principles, stylistic developments, relations to philosophy and religions (Shintoism, Buddhism, and Zen). Same as Art 17:156.

393:159 Japanese Thought 3 s.h.

393:161 Religion in Japan 3 s.h.
Study of the main religions in Japan. Same as Religion 15:155.

Honors Courses and Theses in Japanese

393:191 Undergraduate Honors Tutorial 2 to 4 s.h.

393:195 Senior Honors Thesis 2 to 4 s.h.

CLASSICS

Chairman of Department, Roger A. Hornby
Office, 115 Schaeffer Hall

To present in as direct and vivid a way as possible to students of Classics, the classical heritage, particularly in Greece and Rome, and those whose major interest is in ancient literature and languages, Western man; three civilizations: Minoan-Mycenaean, Greek, and Roman; two languages: Greek and Latin; and a geographical area including Greece, Rome, Egypt, and Africa. To be understood and interpreted in the contribution of the ancient world to life in the present and the future are the goals of the department.

Foreign Language Requirement

Candidates for the Bachelor of Arts degree who wish to meet the foreign language requirement in Greek or Latin may do so by completing a combination of high school and college study in one language which would be the equivalent of 8 semester hours of study at the college level; or by completing a minimum of 8 semester hours of approved college-level study in a foreign language; or by passing the 20th and 22nd semiannual examinations in a foreign language that usually attained after one year of college study of a foreign language.

Undergraduate Requirements

Undergraduate Requirements

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

16:11 and 16:12 Second-Year Greek 8 s.h.
16:21 and 16:22 Third-Year Greek 8 s.h.
16:23 and 16:24 Fourth-Year Greek 8 s.h.

Electives beyond the 24 semester-hour minimum may be taken in Greek or other related fields.

Major in Latin. Thirty semester hours, of which 24 must be in Latin language courses above 15:155, and which include 20:171 Elementary Latin Composition or its equivalent. Electives beyond the 24 semester-hour minimum may be taken in Greek or other related fields.

Major in Classics (Greek and Latin). Thirty-six semester hours, 24 in one language and 12 in the other. Course requirements for the major language, as above; for the minor language, at least two reading courses (8 semester hours) and composition (3 semester hours).

Undergraduate majors in Greek, Latin, or Classics are excused from four semester hours of the literature core requirement, but must complete 11:01.

(For the general requirements of the College of Liberal Arts, see College of Liberal Arts. For the requirements for the Iowa Teacher’s Certificate, see College of Education.)

Honors in Classics

Two courses are required in Honors Reading, one each semester, of at least four semester hours of credit each semester. These credits are not in addition to the 24 semester hours for the major or minor. The titles of the books to be read are chosen by the department. The reading and discussion are on either an ancient author or a field in ancient history or literature. During the first semester the student presents an essay every other week; at the end of the second semester the student presents a long paper which is examined by at least three members of the department.

Graduate Requirements

For the general requirements of the Graduate College incorporating the comprehensive examinations, see Graduate College.

Graduate students in Classics may include in their program courses numbered 15:155, 16:11, 16:12, and 16:21 and, with the approval of the Graduate College, 8 semester hours of courses numbered 16:21 through 16:24.

A.M. degree in Greek, Latin, or Classics. A minimum of 30 semester hours of course work, numbered 15:11 and above, must be completed in Latin who have had no Greek are normally expected to include at least elementary Greek in their program.

M.A. degree in Greek, Latin, or Classics. A minimum of 60 semester hours of course work, numbered 15:11 and above, must be completed in Latin who have had no Greek are normally expected to include at least elementary Greek in their program.

Electives to be selected from 18:100, 18:120, 18:140, 18:250. Prospective: Introduction

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. degrees (given only in Classics, i.e., Greek and Latin). Candidates for the degree require an ability to read and write Greek and Latin, as tested in qualifying examinations. The reading of the candidate will be on a reading list prepared by the student and his advisor and approved by the department; a tested reading course in Latin and Greek, and French; passing three written comprehensive ex-

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Required courses:
14.03I or 30.03I Professor: Introduction to Advanced Study 3.0
   One of each from the following two areas:
   a. Ancient Art, Literary Relations 3.0
   b. Ancient Linguistics, Paleography 3.0
   Latin Seminar 3.0
   Greek Seminar 3.0
   One of the seminars (6 semester hours) will normally be taken after the writing of the comprehensive examinations.

Special Facilities
Excellent collections of classical texts and periodicals in the University Library and Art Library institutes research in the major areas of Greek and Roman civilization. The department has a varied and extensive collection of slides on classical subjects. Associated with the department is the Classical Museum, which contains a valuable collection of miscellaneous coins, vases, and furnishings in terracotta from Mycenae, Pompéi, and Herculaneum.

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

STAFF
Professor: Jonathan Goldstein, Roger A. Horvay, Oscar E. Myres, Jr.
Associate Professor: Margaret Alexander, Shirley B. Haltman, Gabe A. Rowe
Assistant Professor: Archie Bush, Virgil C. Stubbell, M. K. Inklesinger, Donald Jackson

COURSE DESCRIPTIONS
Greek
For Undergraduates Only
Students wishing to study the S.J. foreign language requirement should consult the course catalogue or faculty member. Students should take the Greek course sequence of courses: 14.03, 14.11, 14.12.

14.03 Elementary Greek 4.0
Fundamentals of Attic Greek and basic concepts of Greek civilization. Five meetings per week.

14.04 Elementary Greek 4.0
Continuation of 14.03. Selections from Greek authors are read.

14.05 New Testament in Greek 3.0
Rapid reading of selections from the Gospels. May be taken 1 or 2 times.

14.11 Second-Year Greek 3.0
The reading of selected texts of Greek prose and poetry. Prerequisite: 14.04 or equivalent.

14.12 Second-Year Greek 3.0
Continuation of 14.11, which is a prerequisite for this course.

For Undergraduates and Graduates
14.131 Homer and Heroid I 3.0
For third-year Greek students. Selections from Homer's Iliad and Odyssey and from Heroid's Works and Days and Theognos in Greek; complete works read in English.

14.122 Homer and Heroid II 3.0
Continuation of 14.131, which is a prerequisite.

14.161 Greece and Persia 3.0
For students in their fourth year of Greek. Events leading to the Persian war, the course of the war, and its immediate aftermath. Athens' power and selection from Herodotus read in Greek; supplementary readings read in English.

14.162 Fifth-Century Athens 3.0
Combination of 14.161, which is a prerequisite. The changing intellectual climate of the late fifth-century, and the emergence of democracy. Selections from Thucydides, Sophocles' Philoctetes, Euripides' Alcestes, and fragments of the Sophists read in Greek; supplementary readings in English.

14.171 Elementary Greek Composition 3.0
Review of morphology and syntax, Greek sentence structure, and the composition of short passages in Greek.

14.172 Advanced Greek Composition 3.0
Practice in writing thematic Greek prose with styles of Lyricus and Demosthenes as models.

14.189 Hellenistic Greek Historical Texts 3.0
Readings in Polybius and Manichaean.

14.191, 14.192 Honors Reading 3.0
Supervised readings on special author or topic leading to several short essays in the first semester, a long paper in the second semester. For Honors sending both courses are required.

14.193 Private Tutorial 1 to 3.0
For classical majors who have completed four years of Greek or the equivalent.

14.194 Private Assignments 3.0
Supervised individual study. For advanced graduates who are not majors in the department. May be repeated.

For Graduates
14.201 Professor: Introduction to Advanced Study 3.0
Advanced methods and discipline bibliography, textual criticism, palaeography, epigraphy, history of classical scholarship. Required of all graduate students.

14.252 Advanced Reading in Athenian Democracy 3.0
Open only to graduate students in the department.

14.303 Indo-European Philology 3.0
Exposition of the comparative method as applied specifically to Greek and Latin, and a study of phonological and etymological laws.

14.304 Greek Paleography 3.0
Study of Greek papyri, manuscripts, early printed texts,illumina, and papyrological notes.

14.310 Problems of Ancient Art 2 or 3.0
Same as Art 310.

14.311 Problems of Ancient Art 2 or 3.0
Continuation of 14.310.

14.320 Greek Lyric Poetry 3.0
A detailed and critical reading of selections from Greek lyric poetry.

14.323 Aeschylus 3.0
Critical reading of the plays of Aeschylus.

14.334 Aristophanes 3.0
Critical reading of selected comedies.

14.335 Plato's Republic 3.0
Examination of Plato's presenation of justice.

14.342 Thucydides 3.0
Reading and critical study of Thucydides' intellectual background and the sins of his history.

14.380 Greek Biography 3.0
The biographical writings of Plutarch, Xenophon, and Pindar.

14.381 Greek Seminar 3.0
In 1971-72 the seminar will concern Byzantine Greek

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with readings from the Cappadocian church fathers to the Crusades, with emphasis on the characterization of each age. (Topic changes annually.) Required of all Ph.D. candidates.

14:322 Greek Seminar 3 s.h.
Coordination of 14:281. Required of all Ph.D. Candidates.

14:321 Greek Thesi
or arrange. Open to Ph.D. candidates for the writing of the dissertation.

Latin

For Undergraduates Only

Students may elect 20:1 and 3 or 20:15 as part of their language requirement for the B.A. or B.S. degrees. Students with some high school Latin should enroll in 20:15. Students who have completed either 20:15 or 20:1 should next enroll in 20:14.

20:1 Elementary Latin 4 s.h.
Practical application of modern linguistic methods to learning Latin. Preparation for reading Roman literature. Five meetings per week.

20:2 Elementary Latin 4 s.h.
Coordination of 20:1. Prerequisite, 20:1.

20:15 Latin Review 4 s.h.
For students who have had some high school Latin for general review. Not open to students who have passed 20:1 or 20:2.

20:16 Intermediate Prose 3 s.h.
Prerequisite, 20:2 or 20:15 or two years of high school Latin. Reading of Latin prose writers.

20:17 Elementary Latin Poetry 3 s.h.
Prerequisite, 20:15 or equivalent. Introduction to Latin poetry and metre.

20:21 Age of Cicero 3 s.h.
Prerequisite, 20:17 or equivalent. The cultural and social life of Rome in the last century of the Republic. Reading in Latin of selected works of Cicero and Catullus. Supplementary readings in English.

20:32 Age of Augustus 3 s.h.

For Undergraduates and Graduates

20:117 Special Latin Review 3 s.h.
Offered only in summer term. A rapid review of the elements of Latin. May not be taken by students who have completed 20:1, 20:2, 20:15, or higher.

20:119 Methods in High School Latin 3 s.h.
Aims, subject matter, textbooks, and methods in secondary school teaching. Same as Education 75:119.

20:122 Caesar 3 s.h.
Caesar's Commentaries on the Gallic Wars and the Civil War emphasizing his attitude toward Gaul and Rome and his concept of Rome as a great state.

20:130 Latin Lyric Poetry 3 s.h.
Prerequisite, 20:17 or equivalent. Reading and criticism of selected Latin poetry from the writings of Catullus, Horace, Vergil, and later Latin poets.

20:131 Vergil's Aeneid I-V 3 s.h.
A critical reading of Horace's Odes and Satires; and their place in the Horatian corpus and in Latin literature.

20:171 Elementary Latin Composition 3 s.h.
Latin sentence structure and the composition of Latin essays.

20:172 Advanced Latin Composition 3 s.h.
Writing Latin prose, with studies of Caesar and Cicero as models.

20:180 Latin Prose 3 s.h.
Readings of personalities of the late Republic and the Empire as presented by Nepos, Suetonius, Tacitus, and the Historia Augusta.

20:185 Medieval Latin 3 s.h.
Reading in authors chosen for content and as representing important types of medieval Latin.

20:187 Roman Imperial History 3 s.h.
Origin and recovery of the Roman Empire, from 48 to 79. A.D. as seen in Tacitus, Suetonius, and Eutropius' Life of Nerva.

20:191 Honors Reading 3 s.h.
Supervised reading on special author or topic leading to several short essays.

20:192 Honors Reading 3 s.h.
Continuation of 20:191, and requiring a long paper.

20:193 Private Tutorial 1 to 3 s.h.
For Classics majors only who have completed four years of Latin or the equivalent.

20:199 Private Assignments cr.arr.
Supervised individual study. For advanced students who are not majors in the department. May be repeated.

For Graduates

20:201 Proseminar: Introduction to Advanced Study 3 s.h.
Same as Greek 14:201.

20:202 Advanced Reading cr.arr.
Open only to graduate students in the department.

20:205 Cicero's Letters
or arrange. Readings from Cicero's letters which illustrate the political and social life of Rome from 63 to 43 B.C.

20:232 Advanced Vergil I 3 s.h.
The first term will include Vergilian Bibliography, the Appendix, Eclogues, and Georgics.

20:233 Advanced Vergil II 3 s.h.
The second term will concentrate on the Aeneid.

20:243 Litivy 3 s.h.
Selections of literary, historical, and cultural interest from Litivy's narrative.

20:253 Survey of Latin Literature 3 s.h.
History and character of the literature of the Roman Republic. Assignments mainly in works not read previously.

20:274 Survey of Latin Literature 3 s.h.
Literature of the early Empire: continuation of 20:273.

20:275 Roman Drama: Republic 3 s.h.
Three or more plays, with the history of the Roman theatre and the development of comedy.

20:276 Roman Drama: Empire 3 s.h.
Selections from the works of Seneca, with a study of the development of Roman tragedy and related problems.

20:279 Roman Satires 3 s.h.
The history and nature of the genre with detailed analysis of the writings of Horace, Persius, Juvenal.

20:281 Latin Seminar 3 s.h.
In 1970-71 the seminar will be an examination of the definitions of familial relationships found in the Roman jurists, lexicographers, and grammarians, and the reasons for any lack of conformity between the definitions and actual usage. (The topic changes annually.) Required of all Ph.D. candidates.

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20:282 Latin Seminar 3 s.h.
Consolidation of 20:281. Required of all Ph.D. candidates. 
20:291 Latin Thesis cr.arr.
Open to Ph.D. candidates for the writing of the disserta-
tion. 
20:295 Sanskrit I 3 s.h.
Basic Sanskrit grammar and prose selections. Offered in 
alternate fall terms. 
20:296 Sanskrit II 3 s.h.
Continuation of 20:295, which is a prerequisite. Offered 
in alternate spring terms. 
20:297 Sanskrit III 3 s.h.
Religious texts from the Hitopadesa and the Bhagavad-
Gita will be read. Offered fall 1970. 
20:298 Sanskrit IV 3 s.h.
Continuation of 20:297, which is a prerequisite. Offered 
spring 1971. 

Classics Courses in English 
(No Knowledge of Greek or Latin Required) 
For Undergraduates and Graduates 
14:25 Introduction to Ancient Art 3 s.h.
Same as Art 15:25. Art and Architecture of Medi-
terranean civilization from Minos times to the age of 
Constantine. Prerequisites, 11:37, 11:38, or permission of 
Instructor. 
14:101 Greek and Roman Civilization 2 to 3 s.h.
Life, art, and literature of the ancient world, and its 
relevance to modern times. Emphasis on Greece. 
14:102 Greek and Roman Civilization 2 to 3 s.h.
Continuation of 14:101, may be taken as an inde-
pendent subject. 
14:107 Odyssey and the West 3 s.h.
Odysseus as a figure in European literature. 
14:108 Greek Drama in Translation 2 to 3 s.h.
Greek drama as an art form, with analysis of selected 
plays and history of the Greek theater. Same as Drama-
tic Art 32:108. 
14:109 Greek Legacies 3 s.h.
The art, science, and literature of ancient Greece, their 
disciples, and influence. 
14:110 Greek Art and Archaeology 3 s.h.
Principles of study of Greek art and its relation to 
archaeology, and minor arts. Same as Art 11:110. 
14:111 Greek Art and Archaeology II 3 s.h.
Continuation of 14:110. Same as Art 11:111. 
14:112 Classical Mythology 3 s.h.
Lecture on classical myths and legends for 
courses for purposes, and historical mythology are mentioned. 
14:114 Greek Vase Painting 5 s.h.
A survey of Greek painted pottery from Protogeometric 
through the Geometric and Archaic times, same as Art 11:114. 
14:115 Scientific and Medical 
Principles in the derivation of scientific and medical 
terminology in Greek and Latin. 
14:116 Byzantine Art 3 s.h.
Same as Art 11:116. 
20:101 Greek and Latin for Vocabulary Building 3 s.h.
Analysis of Greek and Latin elements in English words. 
Semesters in January and June. 
20:107 Roman Erotic Poetry 3 s.h.
The love poetry of ancient Rome, its precursors and influences. 

Comparative Literature 
Chairman of Program, Frederic Will 
Office, 425 English-Philology Building 
The purpose of the Program of Comparative Literature is to present 

Admission 
Admission is subject to approval by the Committee on 
Comparative Literature. Interested students who meet 
the requirements for admission to graduate study in the 
University should consult Professor Frederic Will, chair-
man of the committee. Formal application is made to the 
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 has completed 44 semester hours of graduate course work, at least 24 of them at The University of Iowa, with a grade-point average of 6.00 or better, and in accord-
ance with a plan of study approved by the Comparative Literature 
Committee and the Dean. He shall be given the maximum 
qualifying examinations for the Ph.D. in Com-
parative 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 his major profes-
sional contribution. The minor, which is aimed at a limited 
area of specialization in two other literatures. A third 
portion of his program is devoted to comparative study 
which brings his teacher minor into one focus. A total of 
90 semester hours (including any work done for the M.A. degree) is required. 

Languages 
A study of literature across linguistic boundaries re-
cquires special training in languages. Accordingly a thor-
ough knowledge of at least two foreign languages is essential to the literary curriculum. Students should have advanced knowledge of one foreign language (approximately three years of college work or the equiva-
 lent). 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 reading and analyzing texts in the second foreign language. Some reading skill must be demonstrated in a third foreign language, to be used as a tool of scholarship as required by the Graduate College. 

Courses in department may be offered in Old Eng-
lish, Old or Middle High German, Old Norse, Old French, 
Old Spanish, etc., or in a classical language and literature. 

They may, however, substitute a literary course in a 

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COMPARATIVE LITERATURE

Course of Study

The major should comprise about half of the student's graduate study in English, French, German, Italian, and Spanish. Courses should range over the entire history of literature. Above all, the major should involve a close study of the most important literary genres. The minor, required in the case of English majors, includes two additional literatures, permits several choices: a student may elect to study a segment of literary history, an aspect of classical literature, a medieval literature, a genre (e.g., novel, drama, or poetry), a mode, or literary criticism. Courses applicable to the minor are available in English, French, German, Italian, Russian, and Spanish, as well as in Latin and Greek.

Comparative study consists of work in comparative literature courses and seminars. A reasonable knowledge of literary traditions and an understanding of the comparative method in scholarship and criticism should be obtained in these courses. Although the student's training in comparative literature involves an understanding of the European tradition as a whole, it is expected that he will apply his comparative method within his area of concentration (e.g., French, English, or German novel, or the 18th century, or romanticism). Particular programs for each student will be worked out with faculty advisors.

Examinations

By the end of his first year of graduate study, the student should be qualified as a candidate for the doctorate, and have completed a minimum of 30 credits of work in English literature. He should also have knowledge of additional literatures (also in the foreign language) the work in question, and an oral examination designed to test the student's group of comparative critical principles and knowledge of sources in further work within the comparative discipline. At the end of the student's regular course of study he will take a comprehensive examination consisting of a written and an oral part. The oral examination is divided equally into a written and oral elaboration of questions asked in the written exam. In some cases, the student will be given two weeks' time to outline his projected dissertation and compile a bibliography for it. He will at the end of the second period defend his project before the Program Committee.

Dissertation

The candidate's dissertation should demonstrate his ability to write a substantial piece of scholarship or criticism, and his proficiency in the designated foreign language. A translation of a work of sufficient critical significance, or the translation and literary introduction, may be acceptable as a dissertation. The final comprehensive examinations on the dissertation and its background.

Concentration in Comparative Literature in Other Programs

A concentration in comparative literature, roughly equivalent to a minor within the regular Ph.D. degree in English, is also available. For this alternative, consult the brochure Graduate Study in English.

Special Programs

Available to Graduate Students in Comparative Literature

Two special programs are also available to students in comparative literature. The University of Chicago Workshop offers a workshop course which permits students to specialize in any major area of comparative study. The graduate seminar program in the theory and practice of literary criticism.

STAFF

Faculty committee directing the program:

Professors: Alexandre Azeel (French and Italian), Rudolph Bertram (English and Comparative Literature), Siegel (English), Anselm (French), Flanagan (German), Karl (French), and harbinger (Comparative Literature), Robert Exley (Classics), John C. Henderson (English and Comparative Literature), Frederick W. Friedmann (English and Comparative Literature), Donald A. Zemminsky (English, and Comparative Literature), Norman Luxenberg (Russian), Assistant Professor: George S. Saks (English, and Comparative Literature), Allen T. Neale (English and Comparative Literature), and other members of the faculty taking part in the course.

Instructors:

Professor: W. H. Irwin (English), Associate Professor: David Chamberlain (English), Assistant Professor: George S. Saks (English, and Comparative Literature).

In comparing, the courses and seminars listed below unit studies in several literatures.

European Literature

Primarily for Graduates

46.221 Medieval Drama 3.0

46.222 Continental Drama: 1500-1700 3.0

Same as Speech 36.222

46.226 Continental Drama: 1700-1875 3.0

Same as Speech 36.226

46.233 Critical Theory: Plato to the Romans 3.0

Same as English 36.233

46.241 Coleridge to Croce 3.0

Same as English 36.241 and Speech 38.241

Comparative Courses

46.203 The European Renaissance 3.0

46.204 Baroque and Neoclassicism 3.0

46.205 Age of Enlightenment 3.0

46.206 European Romanticism 3.0

46.207 Major figures in English and continental romanticism, with emphasis on the poets. Questions about the unity and diversity of the movement, and about the relation of romanticism to other traditions, will be considered. A term paper will be required. Prerequisite: reading knowledge of one modern foreign language. Same as French 36.207.

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European Fiction 3 a.h.
Critical treatment of major European fiction writers. Prerequisite, reading knowledge of at least one of the following languages: French, German, Italian, Spanish. Same as English 2307, French 2307, and Spanish 2336.

European Poetry 3 a.h.
Recent European Poetry 3 a.h.
Critical treatment of major European poets. Prerequisite, reading knowledge of at least one modern European language. May be repeated indefinitely for credit with the permission of the chairman. Same as English 2307, French 2308, and Spanish 2336.

Literary Movements in European Literature 3 a.h.
Historical and critical study of selected literary movements in Europe. Prerequisite, reading knowledge of one modern foreign language. May be repeated indefinitely for credit with the permission of the chairman. Same as English 2307, French 2308, and Spanish 2336.

Literary Genres in European Literature 3 a.h.
Theory and practice of selected genres. Different genres include: epic, tragedy, lyric, drama, novel. Will be treated at various times. Prerequisites will vary. Permission of instructor required. May be repeated indefinitely for credit with the permission of the chairman.

Literary Modes in European Literature 3 a.h.
Theory and practice of mode as exemplified in major works: epic, tragedy, lyric, drama, novel. Will be treated at various times. Prerequisites will vary. Permission of the instructor required. May be repeated indefinitely for credit with the approval of the chairman.

Patterns of Myth and Literary Forms 3 a.h.
Comparative presentation of selected topics involving at least three bodies of myth and exploring thematic patterns in individual mythologies and literatures. Lectures open to all students of the University and seminars restricted to those who wish to work for credit.

Translation Workshop 77-a.t.
Prerequisites, at least one classical or modern foreign language (not the German, Spanish, Italian). Same as English 3933.

Types of Modern Criticism 3 a.h.
Recent European and American criticism. Prerequisite, reading knowledge of one foreign language. Same as French 3233.

Comparative Seminars 3 a.h.
A fluent reading knowledge of at least one foreign language is prerequisite for 4300; for all other seminars students should also have a reading knowledge in a second foreign language.

Comparative Literature 3 a.h.
Comparative Seminars 3 a.h.
Comparative Seminars 3 a.h.
Comparative Seminars 3 a.h.

Special Topics in Medieval and Renaissance Literature 3 a.h.
Comparative problems in medieval and Renaissance literature. Topics will differ from year to year.

Special Topics in Neoclassical Literature 3 a.h.
Studies in 18th and 19th century literature, with particular emphasis on Greek and Latin influences on European neoclassicism.

Teaching of Comparative Literature 3 a.h.
Methods and problems in the teaching of comparative literature. Class discussions, directed reading, and occasional participation in teaching comparative literature courses, under the supervision and with the consent of the regular instructor, as circumstances permit.

Seminar in Modern Literature 3 a.h.
Topics in recent and contemporary literature in English, the United States, and the European countries.

Seminar in Special Topics in Modern Literature 3 a.h.
Topics in recent and contemporary literature in English, the United States, and the European countries.

Thesis 3 a.h.

Computer Science
(See College of Engineering and Interdisciplinary Programs)

Economics
Chairman of Department, Calvin D. Siebert Office, 271 Phillips Hall
Economics is the study of how individuals and societies choose to allocate scarce production resources to produce various commodities and distribute them for purposes of current or future consumption among various individuals and groups in society. The study of the basic economic problem involves the examination of individual human behavior, pricing of goods and services, and the allocation of economic resources. Economics analyzes the framework in which to analyze economic policy problems in our society relating to unemployment, growth, inflation, and balance of trade. It also evaluates the role of market, prices, and competition in the economic system. Economists use tools in college teaching or research positions in business and government.

Undergraduate Requirements
Besides providing electives for students majoring in other areas and courses which allow a student to broaden his undergraduate program, two bachelor's degrees, the B.A. and B.S., are available for students in economics. The B.A. degree is a more general degree and is designed for students who want a more flexible and broader undergraduate program. The B.S. degree is a more extensive one and is suggested for students contemplating graduate study in economics and for business students. The student should elect one of these two degree programs with the aid of their adviser.

Program for the B.A. Degree
In addition to the general College of Liberal Arts' requirements relative to the skills and core courses, including at least two years of one foreign language, the following requirements for the B.A. major in economics must be fulfilled:

Introductory Courses 6 a.h.
E 21 and E 22 Principles of Economics
(See E 21EN in these courses will satisfy the social science core requirement)
E 232 Business and Economic Statistics
or
E 232C Elementary Probability and Statistics
E 222 Introduction to Mathematical Economics for Undeclared Students

100-Level Courses 10-70 hours of credit in 100-level economics courses including E 110 Micro-Economics and E 120 Macro-Economics. 61
Program for the B.S. Degree

The major in economics for the B.S. degree must, in addition to meeting the general College of Liberal Arts requirements relative to skills and core courses, including one year of one foreign language, include credits in the following courses and electives:

6E:1 and 6E:2 Principles of Economics 8 s.h.
6E:1 Introduction to Mathematical Econometrics II

A 2-year-hour statistics course specified by the department.
30-41 semester hours of credit in 300-level economics courses including 6E:153 Micro-economics and 6E:153 Macro-economics.

Courses Outside the Department
222:15 and 222:16 Calculus
222:103 Probability and Statistics
28:104 Introduction to Philosophy of Science is recommended.

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 for this program.

Graduate Study

Various programs of graduate study in the Department of Economics are outlined in the Economics listing under the College of Business Administration section of this Catalog.

STAFF

Professors: Anthony K. Chenoweth, Walter Krause, Cliff Lord, Chester A. Morgan, Gerald L. Nordquist, George S. Peck, Richard Wu*

Professor Emeritus: Paul B. Olsen.

Assistant Professors: Bill Barnard, James Jeffers, Thomas Pogue, Roy Ruffin, L. G. Slep, Calvin R. Smith.


*On leave, Fall semester 1970-71.

COURSE LISTINGS

See Economics listing under the College of Business Administration for descriptions of the courses listed below.

Primarily for Undergraduates
6E:1 Prerequites of Economics
6E:2 Principles of Economics
6E:5 Principles of Economics
6E:105 Principles of Statistics I
6E:87 Introduction to Mathematical Economics for Undergraduates

For Undergraduates and Graduates
6E:103 Micro-Economics
6E:105 Macro-Economics
6E:111 Labor Economics
6E:113 Economic Analysis and Policy
6E:115 Economics of Human Resources
6E:117 Money and Banking
6E:119 Economics of the Government Sector
6E:125 International Economics
6E:129 Economic Development: Underdeveloped Areas
6E:131 Economic Growth: Industrially Advanced Areas
6E:135 Introduction to Regional and Urban Economics
6E:137 Problems in Urban Economics
6E:141 Industrial Organization
6E:150 Entrepreneurial and Organizational History
6E:151 American Economic History

6E:15 History of Economic Thought
6E:155 Economic Systems
6E:150 Comparative Labor Movements
6E:153 Quantitative Methods in Business and Economics
6E:155 Business and Economics Statistics II
6E:158 Introduction to Mathematical Economics I
6E:159 Introduction to Mathematical Economics II
6E:199 Senior Seminar in Economics

*Courses 6E:156 and 6E:159 are intended to be an invitation to students in the Honors Plan. By registering for 6E:156, preferably qualified undergraduate students may be permitted to work in courses listed for graduate students.

EDUCATION

(See College of Education)

ENGLISH

Head of Department, John C. Gerber
Office, 306 English-Philosophy Building

The basic curriculum for undergarde wishing to specialize in English is expressed in general terms so that a student, with the help of advisors, can design a pattern of courses to augment his previous experience and to satisfy his educational needs. By selecting special electives within this curriculum, students who wish to do so may satisfy requirements for the English major in Creative Writing or for the English House Program. Leadsheets are available in the departmental office describing these programs in detail. A pamphlet on general principles for designing your major in English is also available. For general information see College of Liberal Arts.

The graduate program is designed to accommodate a variety of interests and specialties. In addition to advanced training in various areas of English and American literature, the department offers work in imaginative writing, critical and contemporary literature, linguistics, folklore, bibliography, and modern languages; the department plays an active part in international seminars in American and comparative civilization and literature.

The English Major

The general purpose of the major is to provide a program in English which fulfills the major serves as training for writing and for the teaching of English, as well as provides general background for careers in law, business, and other professions. Since the student is given considerable freedom in working out a program to achieve these goals, he should submit a plan of study to his advisor for early in his junior year for review and approval.

The pamphlet on designing an English major gives detailed help in preparing such a plan. Each student should consider a broad chronological range in his study of literature, a sampling in several genres, background material in literatures of other nations, and especially in Biblical and classical literature. He also should choose some close experience with language itself in advanced courses in writing and literature. In addition, he should select a number of courses required by the college, he should select work that enhances his intellectual background, and he should consider the skills needed in studying graduate work or careers in teaching should be especially crucial to include experience relevant to their later work.

As a general matter students should plan to take some courses of limited enrollment. Students who pre-

fer intensive cooperative study should consider the limited enrollment 12-semester-hour courses called English de-

2.31 and 2.32. These courses, which are led by three instructors, meet two hours a day, five days a week, and provide a comprehensive and demanding introduction to the range of English and American litera-
ture as well as sophisticated analysis in narrative and literary discussion. Students should preregister and schedule courses to take as many as the same time.

The official requirements for the major are 30 semester
hours of work in courses offered by the Department of English, including at least 9 semester hours of work in courses dealing principally with literature written before 1800. At least 12 semester hours of this credit must be earned at the U of L. English Semester 1 may be used to fulfill the requirement for literature before 1800. Freshman English courses (e.g., rhetoric or its equivalent in transfer work) and general education literature courses (e.g., literature core or transfer courses in humanities) may be applied toward the 12 semester hours. Majors in English are not required to take the literature core course, but those who are uncertain of their commitment to literature or of their skill in reading may prefer to begin their study with transfer core as a general education course. Courses in the Written Writework or in linguistics (when cross-listed with English) may be counted.

English and Education

The department is concerned with preparation for teaching English at all levels, the elementary school through the 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 different streams 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 critical, the department recognizes that all of its Ph.D.'s have supervised experiences in teaching, and shares with the College of Education, the responsibility for training teachers and researchers in English education.

Students planning careers 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—composition, poetry, and fiction are all important—or rhetoric, or literature in all of their fields for preparing a literary text. Especially, they should remember the importance of communication. Functionalists may prefer a career in teaching English majors who are working for their degrees for teaching career-minded general education courses. Those undergoing a career in teaching should remember that an undergradu-
ate major is not enough good. In order to teach English, they should plan a program which will permit graduate study.

Graduate Degrees

Detailed information on requirements for advanced de-
grees may be obtained in the office of the Department of Education, 151 Caudill Hall, or from the nature of the degrees offered.

Graduate courses in English are divided into the fol-
loving: (1) Completion of at least 30 semester hours of grad-
uate study, of which 24 semester hours must be earned in residence, with a grade-point average of at least 3.0. (2) Completion with a grade of B or better in a semester of approved advanced composition course. (3) Satisfactory performance on a four-hour written final examination in the major appropriate to the degree. (4) Successful completion of a thesis or dissertation, if required by the program.

The program for the M.A. degree presupposes a strong undergraduate background in English literature, expository writing, linguistics, and such related areas as the history of language and literature. Coursework in these areas may be taken with approval from the department.

1. Literary history. Selected courses in English and American literature and at least one course in English or American history.
2. Literary criticism. Courses in the history, theory, and practice of criticism and in literary theory.
3. Rhetoric and writing. Courses in advanced writing—compositions in rhetoric, rhetoric, literature, and education. This concentration should be elected only by persons already qualified for secondary school certification in English.
4. English education. An interdisciplinary program planned individually for improving the preparation of the secondary school teacher. It includes courses in linguistics, rhetoric, literature, and education. This concentration should be elected only by persons already qualified for secondary school certification in English.
5. Area Special. Study centering on a period or other topic of concentration with the approval of the student and the departmental advisor. The student must select coursework in foreign literature, history, philosophy, art, speech, cinemaography, etc.
8:22 Understanding Poetry 2 a.h.
A study of poetry similar to the study of fiction in 8:21.

8:25 Undergraduate Writers Workshop: Fiction crarr.
Enrollment limited to 25. Admission to the course based on submission of samples of the student's work to the instructor prior to registration. See English Major for creative writing.

8:46 Undergraduate Writers Workshop: Poetry crarr.
Prerequisites, same as those for 8:25.

8:51 Honors Proseminar 3 a.h.
See Honors in English.

8:52 Honors Proseminar 3 a.h.
See Honors in English.

8:53 Expository Writing 3 a.h.
Analysis, order, and precision in prose. Suitable for majors and minors. Prerequisite: Freshman rhetoric or equivalent. Students needing remedial help should go to the Writing Laboratory of the Rhetoric Program and not take 8:53.

8:54 Theories of Rhetoric 3 a.h.
Same as Speech 3:15.

8:55 Technical Writing I 2 a.h.
Techniques of objective reporting on problems in science and engineering, sanity of language. Prerequisites: freshman rhetoric or equivalent and junior standing.

8:56 Technical Writing II 2 a.h.

8:58 Undergraduate Honors Project crarr.
Students may register for up to four hours of credit each semester to be granted on an Honors paper. Prerequisite: consent of instructor.

8:59 Special Project for Undergraduates crarr.
Students may register for up to four hours of credit for an independent study or reading project. The topic and instructor must be approved by the instructor prior to registration.

Courses of General Interest

8:101 Chaucer 3 a.h.

8:103 The English Novel: Defoe to Austen 3 a.h.

8:104 The English Novel: Scott to Bulwer 3 a.h.
Continuation of 8:103, but may be taken as an independent unit.

8:109 African Literature 3 a.h.

8:110 The American Novel 3 a.h.

8:111 American Folk Literature 3 a.h.
The folklore frontier: folklore of various occupations, the religious revival movement and the white spiritual. Negro folk music, methods of collecting and classifying folklore.

8:117 The American Short Story 2 a.h.

8:118 Shakespeare 3 a.h.
Ten to ten plays.

8:114 American Humor and Satire 2 a.h.

8:115 Afro-American Literature and Thought 3 a.h.

8:116 The Southern Novel 3 a.h.

8:117 American Jewish Writers 3 a.h.

8:118 The Literature of Ivan Turgenev 3 a.h.

8:119 19th-Century British Authors 2 a.h.
Normally the course will focus on two major authors of the period.

ENGLISH

8:122 English and Scottish Ballads 3 a.h.

8:124 American Poetry 3 a.h.

8:125 Modern Jewish and American Poetry 3 a.h.

8:131 Tudor-Stuart Drama 3 a.h.

8:133 Restoration Drama 3 a.h.
Same as Speech 3:124.

8:134 English Drama of the 18th Century 3 a.h.
Same as Speech 3:124.

8:136 Modern Drama: Ibsen to Shaw 3 a.h.
Same as Speech 3:137.

8:137 Drama Since Pirandello 3 a.h.
Same as Speech 3:138.

8:138 Modern American Drama 3 a.h.
Same as Speech 3:139.

Literature in Translation

8:141 European Literature: St. Augustine to Dante 3 a.h.
Certain of the following will be read: The City of God/ selected Latin lyric poetry; Irish and Welsh literature/ Latin Biblical epic; Old English, Old Saxon, Old High German narrative poetry, French chanson de geste.

8:142 European Literature: St. Augustine to Dante 3 a.h.
Dante's Divine Comedy and Medieval romance. In addition, certain of the following will be read: Prose Edde, Prose Edda, Saga of Mjolnir, Old norse lyric poetry.

8:144 Medieval English Literature 3 a.h.
Chiefly Old and Middle English writings; also some Latin and Anglo-Norman, including Bede, Beowulf, Cynonwyld, O.E. lyrics, Gesta of Monmouth, Tristan and Isolda, Meroz of Fries, Piers, Gaimar, Langland, Chaucer, Gower, Malory, Gower, and lyrics.

8:145 European Literature in Translation 3 a.h.
Same as Letters 102/107.

8:146 European Literature of the 19th Century 3 a.h.
Storm and Stress, Romanticism, Realism, and Naturalism. Authors include Guesdon, Schiller, Keats, Balzac, Flaubert, Hauptmann, and Zola.

8:147 European Poetry in Translation 3 a.h.
Same as Letters 115.

8:148 The European Novel, 1700-1850 3 a.h.
Boccaccio, Voltaire, Goethe, Balzac, Dostoievski, Schiller, Heine.

8:149 The European Novel, 1850 to Present 3 a.h.
Readings include, at various times, works by Maeterlinck, Ibsen, Leo Tolstoy, Gorky, Juan, Paul Trouil, Stendhal, Flaubert, Dostoievski, Tolstoy, Turgenew.

Great Books

8:151 Masterpieces of the Renaissance 3 a.h.

8:155 Significant Books in American Civilization I 3 a.h.
Same as American Civilization 4:155.

8:156 Significant Books in American Civilization II 3 a.h.
Same as American Civilization 4:156.
Linguistics
8:160 Introduction to Linguistics 3 s.h.
Linguistic theory and methodology, including descriptive and historical linguistics. Presentation of general principles supplemented by practical problems in linguistic analysis. Same as Linguistics 100/106.

8:161 Modern English Grammar 3 s.h.
Relationship of traditional English grammar to new structural grammar. Same as Linguistics 120/122.

8:163 Structure of English 3 s.h.
Application of modern linguistic theory to analysis and description of linguistic structure. Modern English brought into the universal and transformational frameworks of generative syntax. Prerequisite, 8:150. Same as Linguistics 126/126.

8:164 History of English 3 s.h.
Phonological, syntactical, and semantic changes in English from approximately the tenth century to the eighteenth. Prerequisite, 8:150. Same as Linguistics 128/128.

8:165 Introduction to Historical Linguistics 3 s.h.
Principles of comparative linguistics and genetic classification of languages. Problems in analysis. Prerequisite, 8:150. Same as Linguistics 130/130.

8:167 Language Teaching and Linguistic Behavior 3 s.h.
Same as Linguistics 132/132.

Writing
8:171 Advanced Expository Writing 3 s.h.
Theories of prose style. Practice in various styles. Prerequisite, 8:150 or better in rhetoric or equivalent. C or better in 8:150, or permission of instructor.

8:172 Advanced Expository Writing 3 s.h.
History of English prose style, practice in various styles. Prerequisite, 8:150 or better in rhetoric or equivalent. C or better in 8:150, or permission of instructor.

8:173 Advanced Technical Writing 1 s.h.
Writing papers on scientific subjects. Restricted to graduate students in engineering or science.

8:175 Extended Essay 3 s.h.
Methods of seeking information. Use of sources. The course minimum in the preparation of an extended paper or report, but various kinds of minor papers and letters will be required.

8:181 Fiction Writing cr.arr.
No more than 4 semester hours of credit in 8:181 may be applied toward fulfillment of the undergraduate major requirements. May be taken for up to 6 semester hours with consent of instructor.

8:182 Poetry Writing cr.arr.
No more than 4 semester hours of credit in 8:182 may be applied toward fulfillment of the undergraduate major requirements. May be taken for up to 6 semester hours with consent of instructor.

Printing
8:187 The Hand-Printed Book: Problems in Design and Production cr.arr.
Prerequisite, consent of instructor.

English-Education
8:197 Methods in Teaching High School English 3 or 6 s.h.
Organization, objectives, methods. Same as Education 78:333.

8:198 Literature for the Adolescent 3 s.h.
Same as Education 78:333 or 78:335.

Master's Level Courses
8:201 Critical and Scholarly Approaches to Literature 6 s.h.

8:210 Studies in Genre: Fiction 3 s.h.

8:211 Studies in Genre: Poetry 3 s.h.

8:212 Studies in Genre: Drama 3 s.h.

8:220 Rhetorical Theory and Application 3 s.h.

8:225 Teaching Literature in the Two-Year College 3 s.h.

8:250 Proseminar: Literary Interpretations cr.arr.

8:251 Proseminar: Fiction cr.arr.

8:252 Proseminar: Poetry cr.arr.

8:253 Proseminar: Drama cr.arr.

8:260 Seminar: English-Education cr.arr.

8:265 Seminar: English in the Two-Year College cr.arr.

8:281 Fiction Workshop cr.arr.
Group and individual conferences. Prerequisite, consent of instructor.

8:282 Poetry Workshop cr.arr.
Prerequisite, consent of instructor.

8:285 Translation Workshop cr.arr.
Primarily for those interested in the translation of foreign texts into English. Group sessions and individual conferences. Prerequisite, consent of instructor.

8:288 International Writers Workshop cr.arr.
Prerequisite, consent of instructor.

8:291 Form of Fiction 3 s.h.

8:292 Form of Poetry 3 s.h.

8:293 Seminar: Problems in Modern Fiction cr.arr.

8:296 Seminar: Problems in Modern Poetry cr.arr.

Advanced Graduate-Level Courses
8:301 Elementary Old English 3 s.h.

8:302 Old English: Beowulf 3 s.h.

8:303 Middle English Language and Literature 3 s.h.

8:304 Old Norse 3 s.h.

8:305 Old Norse The Poetic Edda 3 s.h.

8:307 Chaucer: Major Poems Other Than the Canterbury Tales 3 s.h.

8:308 Precursors of the Renaissance, 1400-1552 3 s.h.

8:310 The Age of Spenser 3 s.h.

8:311 Shakespeare: Early Plays Same as Speech 38:305 3 s.h.

8:312 Shakespeare: Later Plays Same as Speech 38:305 3 s.h.

8:315 17th-Century Literature, 1600-1660 3 s.h.

8:316 Milton 3 s.h.
ENGLISH

8.320 Restoration Literature, 1660-1700 3 s.h.
8.321 Augustan Literature, 1700-1740 3 s.h.
8.322 Later 18th-Century Literature 3 s.h.
8.325 Neoclassical Literary Forms 3 s.h.
8.327 Neoclassical Literature and Intellectual Movements 3 s.h.
8.331 English Romantic Literature 3 s.h.
8.332 British Literature, 1830-1870 3 s.h.
8.333 British Literature, 1870-1914 3 s.h.
8.334 British Literature, 1914-1945 3 s.h.
8.335 British Literature, 1945 to the Present 3 s.h.
8.341 Early American Literature 3 s.h.
8.342 American Romantic Literature of the 19th Century 3 s.h.
8.343 American Realistic Literature of the 19th Century 3 s.h.
8.344 American Literature, 1114-1945 3 s.h.
8.345 American Literature, 1945 to the Present 3 s.h.
8.351 European Fiction 3 s.h.
8.352 Recent European Poetry 3 s.h.
8.353 Modern Anglo-European Literary Relations 3 s.h.
8.355 Dramatic Theory 2 or 3 s.h.
8.356 Classical and Renaissance Rhetoric 2 to 3 or 4 s.h.
8.357 Classical and Renaissance Rhetoric in the Greek and Roman Worlds. Prior attention to the relevant works of Plato, Aristotle, Seneca, Cicero, and Quintilian. See Speech 36200.
8.358 Modern Rhetoric 3 or 4 s.h.
8.360 Contemporary Rhetoric 3 s.h.
8.361 History of Criticism: Plato to the Romanticism 3 s.h.
8.362 History of Criticism: Coleridge to Croce 3 s.h.
8.365 American Criticism and Culture, 1900 to 1930 3 s.h.
8.371 Literary Periods and Movements in Criticism 3 s.h.
8.376 Intellectual Backgrounds of Literary Periods 3 s.h.
8.378 Literary Genres and Modes 3 s.h.

8.381 Articulatory and Acoustic Phonetics 3 s.h.
8.382 Linguistic Analysis I 3 s.h.
Same as Linguistics 101.111.
8.383 Linguistic Analysis II 3 s.h.
Same as Linguistics 101.112.
8.384 Dialectology 3 s.h.
Same as Linguistics 101.113.
8.385 Syntactic Analysis: Generative Grammar 3 s.h.
8.386 Text Analysis: Language Data Processing 3 s.h.
8.387 Literary Tools and Research Methods 3 s.h.
8.388 Introduction to Language 3 s.h.
8.389 Introduction to Language 3 s.h.
8.389 Introduction to Language 3 s.h.
8.390 Literature and Psychology 2 s.h.
8.391 Literature and Society 2 s.h.
8.392 Literature and the Arts 2 s.h.
8.393 Literature and the Cinema 2 s.h.
8.394 Literature and Science 2 s.h.

Graduate Seminars
Open only to Ph.D. candidates and to other graduate students with adequate background to the field of the seminar. Permission of the instructor must be obtained before registering for any 600-level course.

8.402 Seminar: Medieval Literature cr.arr.
8.403 Seminar: Middle English Literature cr.arr.
8.404 Seminar: Chaucer cr.arr.
8.405 Seminar: Renaissance Non-dramatic Literature cr.arr.
8.406 Seminar: Renaissance Dramatic Literature cr.arr.
8.411 Seminar: Shakespeare cr.arr.
8.412 Seminar: 17th-Century Non-dramatic Literature cr.arr.
8.413 Seminar: 17th-Century Dramatic Literature cr.arr.
8.414 Seminar: Milton cr.arr.
8.415 Seminar: Neoclassical Prose cr.arr.
8.416 Seminar: Neoclassical Poetry cr.arr.
8.427 Seminar: Edmund Burke cr.arr.
8.431 Seminar: Romantic Literature cr.arr.
8.432 Seminar: Victorian Literature cr.arr.
8.433 Seminar: 19th-Century Fiction cr.arr.
8.434 Seminar: 20th-Century British Literature cr.arr.
8.441 Seminar: 18th-Century American Literature cr.arr.
8.442 Seminar: American Realism cr.arr.
8.443 Seminar: American Romantic Literature of the 19th Century cr.arr.
8.444 Seminar: American Realism Literature of the 19th Century cr.arr.

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EUROPEAN LITERATURE AND THOUGHT

8:457 Seminar: Social Factors in American Literature cr.arr.
8:460 Seminar: Problems in Aesthetics and Literary Theory cr.arr.
8:461 Seminar: Literary Criticism of Antiquity cr.arr.
8:464 Seminar: Continental Criticism cr.arr.
8:466 Seminar: American Culture and Criticism cr.arr.
Prerequisites, 8:386.
8:467 Seminar: Problems in Themes cr.arr.
Same as Speech 26:346
8:418 Seminar: Literature and Other Intellectual Disciplines cr.arr.
8:480 Seminar: Problems in Linguistics cr.arr.
8:490 Seminar: Analytical Bibliography and Textual Criticism cr.arr.
Independent Study
Students registering for independent study courses must have the consent of an instructor for a topic and the number of credit hours prior to registration.
8:500 Readings in Medieval Literature cr.arr.
8:505 Readings in 16th-Century Literature cr.arr.
8:510 Readings in 17th-Century Literature cr.arr.
8:515 Readings in 18th-Century Literature cr.arr.
8:520 Readings in 19th-Century Literature cr.arr.
8:525 Readings in American Literature cr.arr.
8:530 Special Project for Graduate Students cr.arr.
Prerequisite, consent of instructor.
8:550 Colloquium: Teaching of Freshman Composition 2 or 3 s.h.
8:560 Colloquium: Teaching of Literature in College cr.arr.
Limited to those holding teaching assistantships in the literature core program.
8:590 M.A. Thesis cr.arr.
8:595 Ph.D. Thesis cr.arr.

EUROPEAN LITERATURE AND THOUGHT

Chairman of Program, Joseph E. Baker Office, 422 English-Philosophy Building
European literature and thought courses are open to juniors, seniors, and graduate students from any department. A variety of opinion is brought to bear upon these upper-division courses. No technical background in history, philosophy, or literature is necessary. The three-hour lecture course meets three hours a week, and each course may be taken independently.

These courses are conducted by round-table discussion. Some of the important issues of contemporary times are explored and evaluated through a basic reading list of outstanding works. Two or more instructors from various departments, such as literature, philosophy, history, fine arts, and the sciences, guide the discussion, drawing on their special knowledge and particular methods.

Undergraduate Major
A major in European Literature and Thought serves as a basis for a liberal education and to equip a student for further study in the special area of his choice. The major is set up to provide broader training than is ordinarily obtained under the specialized requirements of a single department.

Most students can major in the area and still have room for earning teaching certificates in one or more of the related disciplines. 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 as to core, foreign languages, etc.

European Literature and Thought
(round-table courses): 12 s.h.
History, social sciences: 12 s.h.
Philosophy, religion, history of science: 12 s.h.
Liberature of England and of the Continent: 12 s.h.
Fine arts (excluding studio courses): 3 s.h.
Foreign languages: European. One semester beyond the elementary level. European literature 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.

Honor in European Literature and Thought
The degree of Bachelor of Arts with Honors may be earned by superior students who undertake a further program of independent study. To be considered as a candidate for Honors, the student must have the endorsement of the chairman of the Program in European Literature and Thought.

STAFF
Professor: Alexander Angel (French and Italian), John Baker (English), Kiki Berge (Law), Christy Davis (Political Science), Frederick duke (Chemistry), Charles duPont (German), Richard Hanley (French), Robert Scherreken (Art), Frank Schilling (Art), Dewey Stitt (Psychology), John Walsh (Political Science), J. Richard Vincent (Biology) .

Associate Professor: Kenneth Cameron (Speech and Dramatic Art), Hugh Dooley (History), Benjamin Hopkins (Law), John Huntley (English), John ter Haar (German).

Assistant Professor: William Klink (Physics).

COURSE DESCRIPTIONS

3:101 The Pursuit of Happiness 2 to 4 s.h.
Treats of individual happiness in various types of human experience by Aristotle, Freud, Collin, Montaigne, Voltaire, Diderot, Rousseau, etc.

3:111 Myth and Reason 2 to 4 s.h.
Interplay between myth and reason as significant patterns in Western thought. Reading from Sophocles, Plato, Milton, Nietzsche, anthropologists, novelists.

3:131 The Good Society 2 to 4 s.h.
Man's life in society, and its potentialities, as seen in works by Plato, Rabelais, Machiavelli, Shakespeare, Locke, Gibbon, Marx; recent fiction and nonfiction.

3:142 Virtue and Stress 2 to 4 s.h.
The literature of war (Swift, Caesar, War and Peace, Proust, etc.). In 1948-49, the course was included in 3:152.
33:152 Values in the Contemporary World 2 to 4 s.h.

Modern problems in the definition and choice of values examined through the writings of contemporary ethical theorists and novelists.

33:154 Science and the Nature of Man 2 to 4 s.h.

Relationship of scientific to social and humanistic thought.

33:161 Forms and Milieux in the Arts 2 to 6 s.h.

Interplay between art forms and other cultural patterns, including social, economic, and political conditions of creation and theoretical writings, specific works of music, and selected art works.

33:164 Roots of Modern Culture 2 to 6 s.h.

Literary and social manifestations of modern Romanticism.

33:180 Special Projects cr.arr.

33:191, 192 Independent Study for Honors 2 to 4 s.h.

Either semester of this course may be taken separately. Two semesters (totaling 8 semester hours), not taken concurrently, are required of Honors candidates.

DIVISION OF FINE ARTS

School of Art, Frank A. Schorrling, Jr., Director.
School of Music, Hiram Yanam, Director.
Department of Speech and Dramatic Art, Samuel Becker, Chairman.

For descriptions of courses, see School of A; School of Music, and Department of Speech and Dramatic Art, respectively.

FOREIGN STUDIES

The Program of Foreign Studies is designed for undergraduate students who are intellectually curious and who seek knowledge of contemporary societies other than their own. General education is the object, desirable in itself and desirable as a basis for graduate work. The program is approved as an option for a substitute for the major. Once the student selects the country or region on which to focus, the program directs him to a recommended list of courses offered by various departments. Students whom meet the requirements receive a Foreign Arts Certificate at the time of their graduation.

The study is divided into, to focus on any one of the following: China, France, Germany and Austria, Japan, Latin America, or the U.S.R. In consultation with a program advisor, he will select the courses he wishes to take and must earn a grade-point average of at least 2.00 in these courses. Programs include a minimum of 18 semester hours of work in addition to language study. In no language of the country or area chosen, a level of competence normally demonstrated as follows: for French, German, or Spanish, the level of competence normally achieved by three years of college study or its equivalent; for Chinese, Japanese, Portuguese, or Russian, the level of competence normally achieved by two years of college study or its equivalent; and for any of these languages in the first group, a level of competence that may be satisfied by five years of high school study. These requirements may be met either by completing the appropriate language courses or by a language examination administered by the appropriate language department.

The following programs are: Anthropology, Economics, Far Eastern Studies, Geography, History, International Relations, Political Science, Sociology, and several offering modern foreign languages. Interested students may consult a program advisor in the Center of International Studies or the College of Liberal Arts.

FRENCH AND ITALIAN

Chairman of Department, Richard O’Gorman
Office, 10 Schaeffer Hall

The department provides facilities for the study of

French and Italian at the undergraduate level and French at the graduate level. There are requirements for the B.A. degrees in French and Italian and for the M.A. and Ph.D. degrees in French. The staff will offer training in the language, literature, and civilization of the countries represented, and they provide facilities for the fulfillment of many vital requirements in graduate and undergraduate programs held by other departments of the University.

Foreign Language Requirement

Candidates for the Bachelor of Arts degree who wish to meet the foreign language requirement in French or Italian may do so by completing four years of high school study in one language, performing satisfactorily in an achievement examination, intended to measure proficiency equivalent to that usually attained in four semesters of college study in one language, completing a minimum of 24 semester hours in the study of the language offered by the department, or achieving a combined grade-point average of 3.00 in college study in one language which would be the equivalent of 8 semester hours of study at the college level, if the four semesters are taken at The University of Iowa, the series of courses will total 14 semester hours. In the case of the last two options, the student must complete the second semester of the second-year course.

Bachelor of Fine Arts, Bachelor of Music, and Bachelor of Science degree candidates who wish to meet the foreign language requirement in French or Italian may do so by completing a combination of high school and college study in one language which would be the equivalent of 8 semester hours of approved college-level study in the language, or by giving satisfactory performance in an achievement test measuring proficiency equivalent to that usually attained after one year of college study of the language. Courses may be taken on a Pass-Fail basis.

Undergraduate Requirements for Majors

French

The following courses constitute the minimum major requirements:

Language

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>121L</td>
<td>Introduction to French</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>121R</td>
<td>Elementary French</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>121S or 121F</td>
<td>Elementary French</td>
<td>1 or 2 s.h.</td>
</tr>
</tbody>
</table>

Total 15 s.h.

Literature

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>16100</td>
<td>18100</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>16105</td>
<td>18105</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>16110</td>
<td>18110</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>16120</td>
<td>18120</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>16200</td>
<td>18200</td>
<td>4 s.h.</td>
</tr>
</tbody>
</table>

Total 28 s.h.

Honors in French

The requirements for Honors in French are 9 semester hours beyond the French major requirements, a senior paper written in French on a French literary topic, and a minimum cumulative grade-point average of 3.33. For the 9 semester hours, students must elect three of the following:

121L, 122L Honors Composition
121R, 122R Honors Literature

The major paper may pertain to the literature of any period.

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GRADUATE STUDY

Appointments. Teaching, research, and laboratory assistance are available to qualified graduate students. A certain number of NDEA Title IV fellowships in French, Teaching-Research Fellowships, and University scholar-
ships and fellowships are also available. Inquiries should be addressed to the department office.

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 6 may be taken in S217 (thesis supervision), the writing of a thesis and an oral examination, and the defense of a thesis. The course of study must include four semester courses in literature at the graduate level, 9137 French Prose Composition and Dictation, and 9206 and 9125 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 outlined above 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 ad-
vanced degree primarily intended for prospective secondary and junior college teachers. Candidates must hold a B.A. in French or its equivalent and a secondary teach-
ing certificate for prospective secondary school teachers. Requirements include a total of 38 semester hours at the advanced level, of which 6 may be taken in education or related fields and a minimum of 9 semester hours of grad-
uate coursework in French literature. Other selected courses include 9115 and 9114 French-Year Composition and Conversation, 9206 and 9210 Advanced Composition and Conversation, 9215 and 9114 French Civilization, 9114 French Language, 9210 Language Laboratory Procedures, 9114 Language Laboratory Procedures, 9115 Language Laboratory Laboratory Procedures, 9215 Contemporary French Civilization, and French Pronunciation and Conversation. 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 this University, the passing of a comprehensive examination, and the oral defense of a dissertation. The dissertation is based primarily on the candidate's achievement in a field of specialization within the discipline. A candidate for the degree shall have completed a program of study with a minimum of 36 semester hours in the Advanced French major program. The dissertation must be based on substantial original research in some field of the discipline.

Specific requirements for the Ph.D. must include thesis, 9206, 9210 French-Year Composition and Conversation in French language other than French, and proficiency in a related language (minimum of 3 semester hours in that field). The choice of language and the specific course in related field are to be determined by the department according to individual needs.

In pursuing the program, coursework and individual research must be designed to include the following:
1. (1) A comprehensive knowledge of the history of the French language, its literature and related civilization from medi-
eval to modern times; (2) provide adequate experience in a related area of the humanities; (3) develop the capacity for critical analysis of literary texts.

French language work for an advanced degree are required to spend one year in teaching as a graduate teaching assistant in the department.

Language Laboratory

The Laboratory provides facilities for lan-
guage learning, teaching, and research; standard and short-wave radio; tape recorders; record players; sound-
proofed teaching rooms; drum-instructor rooms; with sixty-eight dual channel tape recorders providing a simultaneous music instructor and student record; an electronic chess-
room; a soundproof work room; and a library of tape and other audio-visual aids available to the department faculty for their use as a specific course in language laboratory procedures.

STAFF

Professor: Alexandre Angl, Florencio Carvallo, Camille
LeVere, Richard O'Connell, and John R. Lounettes.

Professor Emeritus: George C. A. Cunat, R. T. Crockett.

Associate Professors: Robert W. Greswe, Joanne Harnett, Marguerite Ikoven, John T. Nottegat, Pierre de Sainte Viole.

Assistant Professors: Simonetta Sattin, Robert S. Tate, Jr., Richard Wayne.

Assistant Professor Emeritus: Cecile Marsh,Jacques Bourgeois, Laboratory Director: Winston J. Reece.

COURSE DESCRIPTIONS

French

Primarily for Undergraduate

Students who have had any experience with French through study in foreign residence are required to take placement tests. If students with two years of high school French place in 81, four semester hours will be added to their graduation requirement.

A student may repeat, for either credit or quality points, an elementary course if he has already completed a higher-level course for which the elementary course is equivalent, in a prerequisite.

9.1 Elementary French 4 s.h.

9.2 Elementary French 4 s.h.

Prerequisite: 9.1 or equivalent.

9.11 Intermediate French 3 s.h.

Required for students who plan to terminate their study of French with the second year. Prerequisites: 9.2 or equivalent.

9.12 Intermediate French 3 s.h.

9.13 Prerequisite 9.11 or equivalent.

9.25 French Pronunciation 1 s.h. or equivalent.

May be taken in conjunction with 9.27, 9.28, 9.111, 9.112.

9.27 Second-Year Composition and Conversation 4 s.h.

9.30 Recommended for students who intend to continue the study of French and are planning to improve their active com-

9.33 Second-Year Composition and Conversation 4 s.h.

Continuation of 9.3, Prerequisite 9.27 or equivalent.

9.51 Ph.D. French 60 cr.

For candidates for the doctorate in other departments who want reading ability for purposes of research.

9.53 Ph.D. French III 60 cr.

9.54 Ph.D. French IV 60 cr.

9.55 Special Work 1 to 3 s.h.

Prerequisites: 9.2 or equivalent.

For Undergraduates and Graduates

9.105 Introduction to French Literature 3 s.h.

From earliest writings to end of 18th century. Given in French for French majors, in English for others. Pre-

required: 9.12 or 9.27.
9:106 Introduction to French Literature 3 a.h. 
Continuation of 9:206, but may be taken as an independent unit. 
From 19th century to the present.

9:111 Third-Year Composition and Conservation 4 a.h. 
Prerequisite, 9:208 or equivalent.

9:112 Third-Year Composition and Conservation 4 a.h. 
Continuation of 9:111. Prerequisite, 9:211 or equivalent.

9:113 French Civilization 3 a.h. 
Given in French. From the Middle Ages to 19th. 
Prerequisites, 9:210 or 9:210, and 9:228 or equivalent.

9:114 French Civilization 3 a.h. 
Continuation of 9:223.

9:115 Literature of French Classicism 3 a.h. 
Given in French. Prerequisite, 9:228 or equivalent.

9:116 Literature of the Enlightenment 3 a.h. 
Given in French. Prerequisite, 9:228 or equivalent.

9:117 French Novels of the 19th Century 3 a.h. 
Given in French. Prerequisite, 9:212 or equivalent.

9:118 French Novels of the 20th Century 3 a.h. 
Given in French. Continuation of 9:217, but may be taken 
as an independent unit.

9:119 Critical Approaches to French Literature 2 or 3 a.h. 
Given in French. Prerequisite, 9:228 or equivalent.

9:120 Aspects of French Poetry 3 a.h. 
Given in French. Prerequisite, 9:228 or equivalent.

9:121 Honors: Composition 3 a.h. or cr.arr. 
Prerequisite, 9:212 or equivalent.

9:122 Honors: Composition 3 a.h. or cr.arr. 
Continuation of 9:211.

9:123 Honors: Literature 3 a.h. or cr.arr. 
Continuation of 9:218.

9:124 Honors: Literature 3 a.h. or cr.arr. 
Continuation of 9:123.

9:125 French Drama of the 20th Century 3 a.h. 
Given in French. Prerequisite, 9:228 or equivalent.

9:130 Methods in High School Modern Languages 3 a.h. 
Foreign Languages 3 a.h.

Ordinarily elected as Education 7E:130.

9:151 Language Laboratory Procedures 1 a.h.

9:152 Contemporary France 3 a.h. 
Prerequisite, 9:152 or equivalent.

9:153 Fourth-Year Composition and Conservation 3 a.h. 
Given in French. Prerequisite, 9:122 or equivalent.

9:154 Fourth-Year Composition and Conservation 2 a.h. 
Given in French. Continuation of 9:123, but may be taken 
as an independent unit.

9:157 French Pronunciation and Diction 2 or 3 a.h. 
Prerequisite, 9:122 or equivalent. Recommended for teachers.

9:158 French Pronunciation and Diction 2 a.h. 
Prerequisites, 9:127 or equivalent. Intensive practice in pronunciation.

Courses offered in Rouen, France, under Iowa and Illinois Year Abroad Programs.

9:170-176 Political Institutions 2 to 3 a.h.

9:179 Phonetics 3 a.h.

9:180 Diction 3 a.h.

9:181 Syntax 3 a.h.


9:185-186 History of Art in France 2 a.h.

9:187-188 History of France 2 to 3 a.h.

9:189-190 Human Geography 2 a.h.

9:191-192 17th Century French Literature 3 a.h.

9:193-194 18th Century French Literature 3 a.h.


9:197-198 20th Century French Literature 3 a.h.

Primarily for Graduates

9:209 Advanced Composition and Conservation 4 a.h. 
Prerequisite, 9:212 or equivalent. Emphasis on syntax as means of expression.

9:210 Advanced Composition and 
Conservation 4 a.h. 
Prerequisite, 9:206. Exercises in advanced syntax. Syntax as literary device.

9:211 Literature of the 19th Century I: 
Romanticism 3 a.h. 
Given in French. Romantic prose, poetry, and drama.

9:212 Literature of the 19th Century II: 
Realism and Naturalism 3 a.h. 
Continuation of 9:211, but may be taken as an independent unit.

9:213-114 18th Century* 3 a.h. 
GIVEN IN FRENCH. Liberal ideas in France, a study of the masterpieces by Montesquieu, Voltaire, Diderot, and Rousseau.

9:214 Literature of the 18th Century* 3 a.h. 
The literary genres. Continuation of 9:213, but may be taken as an independent unit.

9:215 Literature of the 18th Century* 3 a.h. 
Given in French. Rabelais, humanitarian, and poetry to 1830.

9:216 Literature of the 19th Century* 3 a.h. 
Continuation of 9:215, but may be taken as an independent unit. Montalembert, theater, and poetry of late Renaissance.

9:218 Literature of the 19th Century III: 
Symbolism 3 a.h. 
Continuation of 9:213, but may be taken as an independent unit.

9:221 Literature of the 20th Century 3 a.h. 
Given in French. Gide, Valery, Claudel, and modern theatre.

9:222 LiteraryW orks of the 20th Century 3 a.h. 
Continuation of 9:213, but may be taken as an independent unit. Freud, surrealism, existentialism, and contemporary trends.

9:227 Literature of the 17th Century 3 a.h. 
Given in French. Great classical writers. Emphasis on drama.

9:238 Literature of the 17th Century 3 a.h. 
Continuation of 9:226, but may be taken as an independent unit.

9:233 Literary Movements 3 a.h. 
Given in French. Selected major literary movements in French literature.

"Not offered every year."
GENERAL SCIENCE

9:233 Seminar in Teaching 1 s.h.
Problems and techniques of foreign language teaching at the college level. Ordinarily elected as Education 7H233.

9:251 Old French* 3 s.h.
Phonology. Readings in Old French.

9:252 Old French* 3 s.h.
Phonology. Readings in Old French. Prerequisite 9:251.

9:253 Literature of the Old French Period 3 s.h.
Development of vernacular literature in Northern France.

9:254 Literature of the Middle French 3 s.h.
Period 3 s.h.

9:277 Thesis cr.arr.

9:279 Special Work cr.arr.

9:351 Seminar in French Civilization 3 s.h.

9:353 Seminar: Explication of Texts 3 s.h.
Given in French. Methods and practice of "Explication de Textes."

9:354 Seminar: Explication of Texts 3 s.h.
Continuation of 9:353, but may be taken as an independent unit.

9:355 Seminar: Methodology 3 s.h.
Given in French. Methods of research in literary history and criticism.

9:356 Seminar: Stylistics 3 s.h.
Continuation of 9:355, but may be taken as an independent unit.

9:357 Seminar 2 or 3 s.h.

9:358 Seminar 2 or 3 s.h.
Attention of graduate students in French is called to the following courses offered in the Program of Comparative Literature:

48:203 The European Renaissance 3 s.h.

48:204 Baroque and Neoclassicism 3 s.h.

48:205 Age of Enlightenment 3 s.h.

48:206 European Romanticism 3 s.h.

48:207 European Fiction 3 s.h.

48:208 Recent European Poetry 3 s.h.

48:212 Literary Movements in European Literature 3 s.h.

48:225 Types of Modern Criticism 3 s.h.

ITALIAN

Prerequisites:

18:1 Elementary Italian 4 s.h.

18:2 Elementary Italian 4 s.h.
Prerequisite, 18:1 or equivalent.

18:11 Intermediate Italian 3 s.h.
Prerequisite, 18:2 or equivalent.

18:12 Intermediate Italian 3 s.h.
Prerequisite, 18:11.

18:13 Conversational Italian 3 s.h.
Prerequisite, 18:2 or equivalent.

18:53 Special Work cr.arr.

18:111 Advanced Composition and Conversation 4 s.h.
Prerequisite, 18:12 or equivalent.

18:112 Advanced Composition and Conversation 4 s.h.
Prerequisite, 18:11.

For Undergraduates and Graduates

18:101 Literature of the 19th Century 3 s.h.
Given in Italian.

18:102 Literature of the 20th Century 3 s.h.
Given in Italian.

18:103 Elementary Italian: Intensive Course 3 s.h.
Open to undergraduates with a minimum of two years in another foreign language and to graduate students.

18:104 Elementary Italian: Intensive Course 3 s.h.
Prerequisites, 18:103.

18:105 Introduction to Italian Literature 3 s.h.
From earliest writings to end of 18th century. Given in Italian. Prerequisite, 18:12.

18:106 Introduction to Italian Literature 3 s.h.
Continuation of 18:105, but may be taken as an independent unit. From 17th century to the present.

18:116 Petrarch and Early Italian Lyric 3 s.h.
Given in Italian.

18:117 Literature of the 16th Century 3 s.h.

18:118 Dramatic Theory and Practice of the Renaissance 3 s.h.
Given in Italian.

18:119 Dante and His Times 3 s.h.
Given in Italian.

18:120 Dante and His Times (2nd part) 3 s.h.

Primarily for Graduates

18:219 Special Work cr.arr.

GENERAL SCIENCE

Head of Program, Robert E. Yager
Office, 458B Physics Research Center

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 academic requirements for graduation. Students not interested in one of the professional areas must meet with an advisor for structuring a specific program. Completion of random courses will not meet the requirements.

The minimum requirements for the general science degree involve selection of courses 2-4, three of the following science departments: chemistry, geology, physics and astronomy, biology, zoology, and mathematics. Two options are available to the student: completion of 20 semester hours in one department and 8 semester hours in each of two other departments, or completion of 18 semester hours in one department, 12 semester hours in a second department, and 8 in a third. Earth sciences and life science core courses may not be used as part of the 18, 16, or 20 semester hour sequence, but either may be

*Not offered every year.
used to fulfill an 8 semester hour requirement. At least 20 semester hours must be completed in residence.

Each the Bachelor of Science and Bachelor of Arts degrees are offered. The B.A. requires the completion of a minimum of four semesters of college-level study of a foreign language, totaling not less than 12 semester hours in German, French, or Russian. The B.S. requires 8 semester hours of one of the same three languages. The student will be required to demonstrate high proficiency in the same foreign language if there are circumstances making such a choice desirable. Students in the B.S. program must complete a minimum of 48 semester hours of science credit.

Engineering-General Science Combination
(B.S. in engineering; B.A. in liberal arts)

Coordinator: Donald H. Madsen

Mathematics
22M:20 Elementary Functions 3 a.h.
22M:25 Calculus I. 4 a.h.
22M:30 Calculus II 4 a.h.
Electives in Division of Mathematics (as prescribed by the various departments of the College of Engineering) 8 a.h.

Physics
20:7 General Physics 4 a.h.
20:8 General Physics 4 a.h.

Chemistry
2:1 Principles of Chemistry I 5 a.h.
2:2 Principles of Chemistry II 5 a.h.
2:3 Elementary Chemistry Laboratory 2 a.h.

(An additional course in chemistry or physics may be substituted for an equivalent course in mathematics)

Total required courses 36 a.h.

Medicine, Technology

Coordinator: Earl Ross, Kenneth Cross

Chemistry
4:1 Principles of Chemistry I 3 a.h.
4:2 Principles of Chemistry II 3 a.h.
4:3 Quantitative Analysis 4 a.h.
4:125 Organic Chemistry I 5 a.h.
4:126 Organic Chemistry II 5 a.h.

Zoology
27:1 Principles of Animal Biology 5 a.h.
27:118 Parasitology 4 a.h.

Elective in Zoology 3 to 4 a.h.

Mathematics
22M:13 Introduction to Statistical Methods 3 a.h.
22M:35 College Algebra (More advanced mathematics course may be substituted) 4 a.h.

22M:16 General Microbiology 4 a.h.

Total required courses 36 a.h.

Nuclear Medical Technology

Coordinator: R. E. Peterson

Chemistry
4:1 Principles of Chemistry I 3 a.h.
4:2 Principles of Chemistry II 3 a.h.
4:13 Quantitative Analysis 4 a.h.
4:125 Organic Chemistry I 5 a.h.
4:126 Organic Chemistry II 5 a.h.

Zoology
27:1 Principles of Animal Biology 5 a.h.
27:115 Principles of Human Genetics 3 a.h.
27:116 Principles of Human Genetics 3 a.h.

Elective in Zoology 3 to 4 a.h.

Physics
20:1 College Physics 4 a.h.
20:2 College Physics 4 a.h.

Mathematics
22M:2 Mathematical Techniques I 3 a.h.
22M:4 Mathematical Techniques II 3 a.h.

(See following courses: (More advanced mathematics courses may be substituted)

Total required courses 40 a.h.

Other Science Requirements
20:1 Elementary Human Anatomy 4 a.h.
27:52 Introductory Radiology 4 a.h.
99:161 Biochemistry 4 a.h.

Total required courses 46 to 51 a.h.

Physical Therapy

Coordinator: Terry Jones

Chemistry
4:1 Principles of Chemistry I 3 a.h.
4:2 Principles of Chemistry II 3 a.h.
4:8 Elementary Chemistry Laboratory 2 a.h.
4:125 Quantitative Analysis 4 a.h.
4:126 Organic Chemistry I 5 a.h.
4:127 Organic Chemistry II 5 a.h.

Zoology
27:1 Principles of Animal Biology 5 a.h.
27:101 Principles of Human Genetics 3 a.h.
27:102 Vertebrate Embryology 4 a.h.
27:110 Fundamentals of Genetics 4 a.h.
28:100 General Zoology 5 a.h.
28:101 Human Anatomy 5 a.h.
28:102 Human Anatomy 5 a.h.
28:101 Mammalian Physiology 5 a.h.

Physics
20:1 College Physics 4 a.h.
20:2 College Physics 4 a.h.

Note: 15 semester hours must be in either zoology (with above courses) or in chemistry with 15 semester hours completed in the other.

Total required courses 36 a.h.

Predentistry

Coordinator: Richard M. Jacobs

Chemistry
4:1 Principles of Chemistry I 3 a.h.
4:2 Principles of Chemistry II 3 a.h.
4:8 Elementary Chemistry Laboratory 2 a.h.
4:125 Quantitative Analysis 4 a.h.
4:126 Organic Chemistry I 5 a.h.
4:127 Organic Chemistry II 5 a.h.

Mathematics
22M:3 Mathematical Techniques I 3 a.h.
22M:4 Mathematical Techniques II 3 a.h.

(See following courses: (More advanced mathematics courses may be substituted)

Elective: two advanced courses in Department of Zoology 7 to 8 a.h.

Total required courses 40 a.h.

Prenursing

Coordinator: George E. Brosseau, Jr.

Chemistry
4:1 Principles of Chemistry I 3 a.h.
4:2 Principles of Chemistry II 3 a.h.
4:8 Elementary Chemistry Laboratory 2 a.h.
4:125 Quantitative Analysis 4 a.h.
4:126 Organic Chemistry I 5 a.h.
4:127 Organic Chemistry II 5 a.h.

Elective: two advanced courses in Department of Zoology 7 to 8 a.h.

Total required courses 40 a.h.

Zoology
27:5 Principles of Animal Biology 5 a.h.

(See following courses: (More advanced courses may be substituted)

TOTAL: 73 a.h.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
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<td><strong>Physical</strong></td>
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<td>29:1</td>
<td>College Physics</td>
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<td>General Physics</td>
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<td>29:4</td>
<td>College Physics</td>
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<td>29:5</td>
<td>General Astronomy</td>
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<td>29:8</td>
<td>General Physics</td>
<td>4 a.h.</td>
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<td>29:9</td>
<td>Introduction to Modern Physics</td>
<td>3 to 4 a.h.</td>
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<td>32:12</td>
<td>Mathematical Techniques II</td>
<td>3 a.h.</td>
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<td>Elementary Functions</td>
<td>3 a.h.</td>
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<td>3 a.h.</td>
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<td>2 a.h.</td>
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<td>22M:36</td>
<td>Calculus II</td>
<td>3 a.h.</td>
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<tr>
<td>97:128</td>
<td>Meeting of Science</td>
<td>2 a.h.</td>
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<td>97:130</td>
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<td>22M:11</td>
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<td>Principles of Chemistry II</td>
<td>3 a.h.</td>
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<td>Elementary Chemistry Laboratory</td>
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<td>Calculus I</td>
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</tr>
<tr>
<td>22M:26</td>
<td>Calculus II</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>22M:28</td>
<td>Calculus III</td>
<td>3 a.h.</td>
</tr>
<tr>
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<td>Mathematical Techniques II</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>22M:30</td>
<td>Elementary Functions</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>22M:35</td>
<td>Calculus I</td>
<td>3 a.h.</td>
</tr>
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<td>Calculus II</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>22M:45</td>
<td>Electives in Physics &amp; Mathematics</td>
<td>2 a.h.</td>
</tr>
</tbody>
</table>

**Total required courses**: 54 a.h.
Minors in Science Teaching
Coordinator: Robert R. Yager

Five teaching minors in science are also available for
pupils studying major in other academic areas.
Only those combinations of courses will qualify a pupil
for certification in the area specified with each heading.

Biology-22 h.
21. Introduction to Botany
22. Introduction to Zoology
23. General Biological
24. History of Science
25. Botany
26. Zoology
27. Environmental Science
28. History of Science

Chemistry-24 h.
21. Principles of Chemistry I
22. Principles of Chemistry II
23. Elementary Chemistry Laboratory
24. Elementary Chemistry Laboratory
25. Inorganic Chemistry
26. Organic Chemistry
27. Physical Chemistry
28. History of Science
29. History of Science

Physical Science-24 h.
21. Principles of Chemistry I
22. Principles of Chemistry II
23. Elementary Chemistry Laboratory
24. College Physics I
25. College Physics II
26. Electives in Chemistry or Physics
27. History of Science
28. History of Science

Earth Science-18 h.
21. Principles of Geology (Physical)
22. Principles of Geology (Historical)
23. Physical Geology Laboratory
24. Historical Geology Laboratory
25. General Astronomy
26. Electives in Geology
27. History of Science
28. History of Science

GRADUATE PROGRAMS IN SCIENCE EDUCATION
Coordinator: Robert R. Yager

Graduate Education Center

The fundamental purpose of the various plans of study
in science education is to improve science teaching through
strengthening the content background and professional
competence of the candidate. Each program is designed for
students interested in science instruction at all academic levels-Kindergarten
to graduate school-as well as research in science education. The department is the center for several in
stitute efforts, mental projects, curriculum committee, and professional
organizations.

Current research being carried out at the Science Educa-
tion Center includes: philosophical and historical founda-
tions of science education; learning theory and science
education; evaluation of current programs in science education; science curriculum design in the elementary
school; science curricula at all education levels; teacher
characteristics and student learning; and teaching ap-
proaches and their effects on learning. The graduate
programs are sponsored jointly by the College of Liberal
Arts, the College of Education, and the Graduate College.

The general requirements for a grade-point aver-
age of admission to the Graduate College apply. A minimal grade-point average of 2.5 is needed for science
and graduation from a master's program; a 3.0 is re-
quired for the Ed.D. and Ph.D. degree programs.

Master of Arts in Teaching Degree. The M.A.T. degree
assumes no previous work in education and is the ideal
program for persons who want to become teachers after
they have completed their bachelor's degree. Degree
in general psychology and American government should
have been completed before applying for such degree candidates.
Eighteen semester hours in each, life, or physical sciences
are required. Credit for 66 semester hours of graduate study.
Ed.D. History of Science must be included in the 18
semester hours unless equivalent courses were a part of
the undergraduate program of the candidate. Credit in
mathematics can be approved by the advisor. For in-
formation, 21 semester hours are required for those who
have completed 2 or more semester hours of undergraduate
education courses. One three-hour comprehensive ex-
amination in a science area and one three-hour
thesis-directed examination in education sciences are required.
The graduate committee must consist of the student's
adviser, a professor from a science area, and a third
person from a social science area or from science education.

Master of Science degree without thesis. The nonthesis
program is the one which is most appropriate for teachers
who plan to remain in the classroom. It is not a research
degree and is not recommended for students who plan
to continue their education beyond the master's degree
level. A total of 24 semester hours is required for the
cumulative program. The program consists of 24 semester
hours in at least two areas of science chosen from astronomy, biochemistry, botany, chemistry, earth science, microbiology, pediatrics, phy-
ology, physical science, psychology, radio science, geology, and radiation research. A minimum of 12 semester
hours must be completed in each of two areas. Two
semester hours of professional education courses are re-
quired.

Master of Science degree with thesis. The thesis pro-
gram is appropriate for candidates who plan to con-
tinue for the specialist degree or the Ph.D. A total of
30 semester hours is required for the cumulative
program. It consists of 18 semester hours of graduate level science
courses from the areas in the student's specific program.
Two areas of science must be selected where
18 semester hours are completed. Ten semester hours of professional education are required, and an additional 2
semester hours of credit be earned in an area of
science science education, and may be counted as part of
the 24 semester hours of science credit or the 10
semester hours in science education.

Note: Both of the above-listed master's programs require
graduate committee members for the student's special
area in science education, a professor from a science area, and
a professor from a social science area or from science education.
Comprehensive written examinations are re-
quired for the student seeking to complete the degree.
Students in the thesis program oral defense of the thesis must be scheduled and approved by the graduate
counsel.

Specialist degree. The Specialist is an intermediate degree
between the master's and the Ph.D. program. It is re-
commended for supervisors, state regions, or local
educators. The degree consists of 12 semester hours of
work beyond the bachelor's degree, of which 12
semester hours are support in the student's major area of
study, of which 18 semester hours are in supportive sciences, 15
semester hours in related fields, and 30 semester hours in
science education including research and internship credit.
The comprehensive exam is a three-hour examination in
a science area, a three-hour examination in a support-
area, and a three-hour examination in science education.
The graduate committee must be composed of the
education advisor, a professor from a science area, and
75
a professor from a related area, and a professor from a second science area or from science education. An oral defense of the research project must be scheduled with 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 demonstrate his ability in scientific or educational research by the completion of a master’s thesis. Previous teaching experience is assumed for all students and additional teaching experiences are generally incorporated into the degree program. The student should have a general knowledge of the fundamentals of at least one science area as evidenced by the completion of a general comprehensive examination. Upon completion of the 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:

A. Twenty-eight semester hours in one of the following areas: biological sciences, physical sciences, or social sciences. This major area should not encompass the same area that was part of the past teaching of the candidate unless the candidate is preparing himself specifically for college teaching in one field in science.

B. Sixteen semester hours in another area: botany, chemistry, geology, mathematics, physics, psychology, criminology, history and philosophy, microbiology, radiology, radiation therapy, microphysics, or education.

C. Two semester hours of special research in science.

D. Twenty-eight semester hours of education, including science education, and educational research.

E. There are no specific test requirements such as foreign languages. However, the student and his advisor will plan a program which will 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 another area of science. The graduate committee for the comprehensive examinations must be composed of at least three members. Of these three members, at least two must be from the science division. From science education, one professor from science education, and a professor from science education or general education.

Financial Aid

Provision is made for advanced graduate students in science education to serve as faculty members in the University Laboratory School, as laboratory instructors in some University science courses, and as instructors in the College of Education. Several research and assistantships are offered in the field of science education. Also, in addition to the fellowship available to University students generally (see Scholarships and Loans and Graduate College).

STAFF

Professor: Robert R. Yager.
Assistant Professor: George W. Cofer, Darrell G. Phillips, Ronald D. Tomlinson.
Visiting Professor: Richard F. Talber.

ADVISORY COMMITTEE

Robert L. Edsary, Chairman, Department of Botany; Frederick M. Duke, Chairman, Department of Chemistry; Bruce F. Giesler, Chairman, Department of Geology-Crime Laboratory; William F. Schaeffer, Department of Physics; and Robert R. Yager, Head, General Science Program, chairman.

SCIENCE EDUCATION

SPECIALIZED COURSES IN SCIENCE EDUCATION are described in the College of Education, TE 27 and 75 divisions. The following general science courses may also be included in the program in physical science.

97.55 Science Foundations I 4 s.h.
Interdisciplinary laboratory approach to some of the more fundamental questions related to science as it is based upon individualized exploration of major science content areas. Enrollment restricted to elementary education majors.

97.56 Science Foundations II 4 s.h.
Continuation of 97.55 which is prerequisite, but with increased emphasis placed upon student-designed experiments. Controlling variables, formulating hypotheses, interpreting data, and drawing valid conclusions are but a few of the processes of science which are emphasized. Enrollment restricted to elementary education majors.

97.108 Laboratory and Field Study in Earth Science cr. arr.
Primarily for teachers with minimum training in earth sciences. Brief systematic review of the principles of geology with emphasis on laboratory and field work dealing with minerals, rocks, fossils, maps, and local geology.

97.109 Laboratory Study in Biological Science cr. arr.
Specially designed for teachers to familiarize students with modern theories of molecular biology. Careful consideration will be made of the new materials of the Biological Sciences Curriculum Study.

97.114 Laboratory Techniques in Biology cr. arr.
Special techniques involved with laboratory preparations, including solutions, cultures, and organizations.

97.105 Concepts in Contemporary Physics cr. arr.
Provide background for a consideration of modern physics, such as will be used in the various "national programs" in physical science.

97.106 Modern Concepts in Chemistry cr. arr.
Updates and strengthens the content knowledge of teachers. Attention will be given to the various "national programs" in chemical education.

97.110 Seminar: Research in Science Education cr. arr.
Review of research in the field with special reference to its applicability to the elementary schools.

97.112 Advanced Science Foundations 4 s.h.
A composite of elements of 97.55 and 97.56. Required of science education majors who have not had previous experience with elementary school teachers with a traditional background in one or more of the sciences.

97.119 Directed Study cr. arr.
Provision for independent study.

97.129 Meaning of Science 2 or 3 s.h.
Explores the elementary philosophy and logic which characterizes science. Emphasis upon the use of each concept in teaching.

97.130 History of Science 2 or 3 s.h.
Major steps in the development of 20th century American science. Effect of early Greek, Roman, and modern European science upon current concepts of the scientific enterprise.

GENETICS

(See Botany, Microbiology, Zoology, and Genetics—Interdisciplinary Programs)
GEOGRAPHY

Chairman of Department, C. F. Kohn
Office, 327 General Library

Modern geography is concerned with the spatial analysis of physical, economic, social, and political phenomena, the spatial aspects of human behavior, and the interactions of man and his environment. To develop concepts, models, and theories which facilitate the study of location, human behavior, and man-environment relations from a geographic perspective, the Department of Geography offers a comprehensive program of courses at the beginning, intermediate, and advanced levels, with research seminars for qualified graduate students. In addition, courses have been developed to provide students with the technical skills necessary for geographers analysis of human activity and the environments in which they take place. Special attention is given to the utilization of theory and the construction of models in analyzing urban and regional problems.

An undergraduate major in geography should be regarded as part of a liberal arts program, and not necessarily as preparation for a specific profession. However, opportunities for undergraduate majors in geography do exist in various branches of government and in business. There is a demand for persons capable of dealing with resource management, production potential, economic development, market area analysis, and other problems related to the distribution of physical, economic, social, and political phenomena in the world or a whole of its major parts. At the same time there is also a growing demand for young people concerned with many problems of our environment who are willing to undertake advanced training in the social sciences. At the University of Iowa, extensive interactions between social science programs and the College of Liberal Arts in General Education courses offer considerable scope for the teaching profession at the elementary and secondary school levels, and of those who desire to work in urban and regional planning.

Graduate training, culminating in the M.A. and Ph.D. degrees, is essential for those who expect to make a career in college teaching. Also, many of the governmental and position in private industry are available only to those who have completed graduate work in the discipline. The Association of American Geographers publishes monthly a bulletin entitled Jobs in Geography. Copies of this bulletin may be reviewed in the departmental office.

Social Science Core Requirement

The social science requirement may be fulfilled by the completion of 441 and 442, which may be taken in either order or simultaneously.

Undergraduate Requirements

Students majoring in geography may qualify for either the Bachelor of Arts or Bachelor of Science degree. The requirements for these degrees are:

Twelve to eighteen semester hours in geography including:

441:03 Introduction to the Study of Geography 3 h.
442:03 Introduction to the Study of Human Geography 3 h.
450:03 Undergraduate Seminar for Geography Majors 3 h.

A total of 36 semester hours must be completed from any of the 100-level courses offered by the department of geography.

205:25 Introduction to Statistical Methods 3 h.

For the B.S. degree, students must also complete:

For the general requirements for the B.A. degree see College Ritual. The following interdisciplinary requirements in geography are urging to complete the requirements for the B.A. degree in that a course in foreign language is contemplated, at least three years of the appropriate foreign language should be completed.

Graduate Study

Reflecting modern trends in geographic research and instruction, the faculty of the Department of Geography is engaged in all-over emphasis of research in the following major areas, especially as they are related to urban and regional systems analysis; behavioral theory, location theory, and the interaction of environment and human behavior.

Human behavior will be studied in its spatial context. Problems of population growth and dispersion, development of models of environmental perception, the construction of models for the appraisal of behavior patterns, and public policy implications of behavior patterns will be studied.

In the development of location theory, special attention will be given to the study of economic theory, the interaction of behavioral theory and practices in locational analysis; policy implications of behavioral theory; and the application of theory to the location of public services and the problems of under-developed areas.

In studying the interaction of man and his environment, specialization will be given to the evolution and analysis of the natural resource base; regional problems in forest development and management; urban land use patterns and growth; environmental hazards and stress; environmental pollution and control; landform processes; and landscape systems.

Advisors to students. In addition to the general rules and regulations set forth in the Manual of Rules and Regulations of the Graduate College, the Department of Geography will not accept any student whose undergraduate grade-point average is less than 2.5 (4.0 basis), unless special consideration of a particular student is merited. A student's Graduate Record Examination Aptitude Test should total 1150. All new students must be recommended by at least two instructors familiar with their undergraduate work, or in the case of students admitted with advanced graduate credit, by two instructors familiar with their graduate work.

Students whose undergraduate grade-point average is between 2.5 and 3.2 will be admitted on a conditional basis. They must achieve a grade-point average of 3.2 or better on their first 12 hours of graduate work as approved by the department in order to remain as graduate student.

The student will be considered for a graduate assistantship or fellowship whose grade-point average during his junior and senior years was less than 3.0 on a four-point scale.

Grades of the graduate course work, whether advanced graduate credit, that has been given for the graduate degree will not be accepted for credit.

Students who plan to continue their graduate work beyond the Ph.D. degree should consult all distribution and lists above for the terminal degrees, 440, 449, and 450. Candidates may be advanced to candidacy at the end of 30 semester hours of graduate work, including 440, 449, and 450. The candidate must be advanced to candidacy no later than the final week of the semester in which the student is to be advanced to candidacy. Students entering the Graduate College after the first half of the fall term and enrolling in a program of 100- or 200-level courses, courses in discipline closely related to the student's major field, and courses in mathematics to complete the major requirements for the doctoral degree may be advanced to candidacy in the spring semester in which the student may earn credit by working as a research assistant or teaching assistant. No more than 8 semester hours may be earned, however, as a research assistant.
44.302 Geographical Analysis II 3 s.h.

A critical examination and evaluation of recent methodological and theoretical developments in geography. Prerequisites: 44.201.

44.308 Advanced Quantitative Methods 3 s.h.

Mathematical and statistical techniques in current geographical research with emphasis upon the employment of the computer and the development of research designs. Prerequisites: a knowledge of computer programming and 44.108, its equivalent, or consent of the instructor.

44.311 Spatial Organization of Society 3 s.h.

Processes and Behavior 3 s.h.

Spatial aspects of diffusion processes as applied to the growth of culture areas and ideas; diffusion of innovations; human migrations; growth and spread of rural and urban settlements; changes in the spatial characteristics of social phenomena in urban areas. Prerequisites: 44.108, or consent of the instructor.

44.315 Locational Analysis of Political Behavior 3 s.h.

Locational basis of political and quasi-political behavior at the individual and various systems levels. Spatial dimensions of electoral behavior; aspects of political modernization; urban public policy making. Prerequisites: 44.108, 44.109, or consent of the instructor.

44.316 Behavioral Analysis in Geography 3 s.h.

Various behavioral model-building strategies pertaining to spatial behavior and spatial structure with an emphasis on environmental perception approaches. Prerequisites: 44.108, 44.203, or consent of the instructor.

44.319 Fluvial Morphology and Landscape Systems 3 s.h.

The role of running water and mass movement in shaping the form of the land. Systems of description and expression of landscape form.

44.320 Elements of Natural Hazards 3 s.h.

Physical and human elements that combine to produce natural hazards with emphasis on the frequency and distribution of the natural processes. Man as catalyst, man as controller, cultural and social adjustments, and prediction.

44.325 Locational Analysis of Economic Behavior 3 s.h.

Development and testing of normative and descriptive models for the location of economic phenomena. Prerequisites: 44.203, 44.208, or consent of the instructor.

44.335 Spatial Structure of Residential Areas 3 s.h.

Behavioral processes as related to spatial patterns of residential areas. Theoretical and practical site selection and the attributes of residential areas. Linkages between residential areas and other elements of urban area. Prerequisites: 44.108, 44.203, or consent of instructor.

44.336 Travel Behavior in Urban Areas 3 s.h.

Theoretical and practical bases of urban travel behavior. Evaluation of current models of travel behavior, interaction between intraurban space structure and travel behavior, new research strategies and experimental behavioral techniques for gaining insights into urban travel behavior processes. Prerequisites: 44.108, 44.208, or consent of the instructor.

44.337 Macro Models of Urban Growth and Development 3 s.h.

The development of urban models which attempt to predict urban growth and activity location patterns. The theoretical and operational bases of these models, statistical methods employed, and new concepts in urban macro-modeling strategies. Prerequisites: 44.203, 44.208, or consent of instructor.

44.338 Spatial Implications of Public Policies 3 s.h.

The impact of public policies at national, regional, and local levels on the location of a range of physical and social phenomena, with emphasis on international comparisons. Urban renewal, regional growth policies, transportation systems, and conservation policies. Prerequisites: 44.108, 44.203, or consent of instructor.

44.339 Spatial Aspects of Urban Renewal 3 s.h.

Progress of public urban renewal in American cities from current perspectives. Sidings of projects, economic aspects of urban renewal, social impact and problems of relocation, political decision, evaluation of the programs, and legislative framework of urban renewal with consideration of projects in selected countries. Prerequisites: 44.108, 44.208, or consent of instructor.

44.361 Geophysical Perspectives on Development 3 s.h.

Theoretical and empirical studies of the development process with special emphasis on spatial implications of socio-economic changes attendant upon development. Prerequisites: 44.208, 44.209, or consent of instructor.

44.360 Field Techniques in Physical Geography 3 s.h.

Sampling procedures, and the collection of field data in physical geography, together with the laboratory analysis of data.

44.306 Research Seminar: The Teaching of Geography 3 s.h.

44.308 Research Seminar: Quantitative Methods, Computer Methods, and Modeling 3 s.h.

44.311 Research Seminar: Geographic Analysis of Social Behavior 3 s.h.

44.315 Research Seminar: Locational Analysis of Political Behavior 3 s.h.

44.316 Research Seminar: Spatial Perception 3 s.h.

44.318 Research Seminar: Pleistocene 3 s.h.

44.319 Research Seminar: Physical Geography 3 s.h.

44.320 Research Seminar: Natural Hazards and Problems 3 s.h.

44.330 Research Seminar: Geographic Analysis of Economic Behavior 3 s.h.

44.331 Research Seminar: Location Theory 3 s.h.

44.335 Research Seminar: Urban Housing, Redevelopment, and Renewal 3 s.h.

44.336 Research Seminar: Urban Travel Behavior 3 s.h.

44.337 Research Seminar: Urban Macro Models 3 s.h.

44.338 Research Seminar: Urban Transportation Issues 3 s.h.

Same as Urban and Regional Planning 101/202.

44.339 Research Seminar: Urban Information Systems 3 s.h.

Same as Urban and Regional Planning 101/202.

44.350 Staff Seminar 3 s.h.

44.380 Field Seminar 3 s.h.

44.406 Research: The Teaching of Geography 3 s.h.

44.408 Research: Quantitative Methods, Computer Methods, and Modeling 3 s.h.
The Department of Geology instructs students in the fundamental principles of geology for purposes of general education and prepares specialists for careers in academic, public, and industrial work. Courses are offered for the general liberal arts student, for those pursuing curricula on the undergraduate and graduate levels, for those planning to teach in secondary schools, and for those planning to enter professional work.

Two undergraduate degrees are offered, the Bachelor of Arts in geology and the Bachelor of Science in earth sciences.

Because geologists need a thorough background in related sciences, the Master of Science degree is highly desirable for any geological vocation. Therefore, successful majors in geology are required to take 28 semester hours or more of graduate courses leading to the Master of Science degree.

The Bachelor of Science degree is designed to prepare majors of earth science in the secondary schools and junior colleges. To complete the requirements necessary for Iowa secondary teaching certification in this field, the student must take the equivalent of the one-year program leading to the Master of Arts in Teaching degree at this University.

Undergraduate Requirements

With the current explosion of knowledge and the breakdown of traditional disciplinary boundaries, professional geologists need a broad background in mathematics, natural science, and social science, as well as competencies in geology. These two goals can no longer be realized in the traditional four-year undergraduate program. Therefore, practically all students wishing to become professional geologists should earn a master's degree. The B.A. program is designed primarily to prepare students for graduate study. Employers of geologists are primarily interviewing advanced-degree candidates.

Required courses in the B.A. program fall into four categories:

1. Liberal arts. The student enters the course sequence in foreign language, rhetoric, and mathematics at a level appropriate to his or her high school performance and previous examination.

2. Geology requirements. It is suggested that the social science requirements be fulfilled by approved courses selected from economics, geography, and anthropology. Maximum semester hours in this first category will be 14; most students will require less.

3. Supporting sciences. Mathematics, chemistry, physics, and biology courses are required by the geology department to give the student a basic understanding of principles and techniques valuable to advanced geological investigations. At least seven courses in the supporting sciences are required. In this category the student may substitute the certificate coursework of the student's high school science background and/or minor in another field.

4. Electives. The student will take two seminars of chemistry, calculus, and one or two seminars of biological science to obtain minimum breadth of experience.

Some students will be able to demonstrate the need for additional coursework in one area in place of work in another area. For example, a student definitely committed to paleontology might take two additional semesters of biology rather than calculus; a potential geophysicist might elect additional mathematics and physics in place of biology. In any case the seven-semester-courses requirement may be modified.

A. Some students may find it advantageous to substitute specialized electives for one of the more traditional sciences. Courses in engineering, statistics, computer science, aromatology, or archaeology are examples. Again, the seven-semester-courses requirement will be met.

2. Geology courses. Thirty semester hours are required to acquire the undergraduate student with the fundamental and broad scope of geological subjects. Courses required of all geology majors are:

- Elective: Department of Geology, 30-60
- Elective: Geology Field Methods (Junior, Senior)
- Departmental Honor's Program (Junior, Senior)
- Departmental Senior Seminar (Junior, Senior)

Recommended electives to complete the 28-semester-hour minimums are stratigraphy, geomorphology, sedimentology, and paleontology. The requirements may be satisfied for the B.A. and B.S. Physical and Historical Geology.

4. Research. Many students in the junior or senior year will be ready to pursue some aspect of original investigation for credit. Each case will be considered individually.

The student may select a faculty member or graduate student with a current research project, or he may initiate a small-scale project involving a combination of field, laboratory, and library investigation. Such work will be in addition to the requirements for the major, and will count toward the geology courses.

The requirements for a Bachelor of Science in earth science are the same as those for the B.A. except that the language and mathematics requirements vary.要求

Graduate Requirements

A number of facilities are available within the department for the research training of graduate students. Some students plan to take graduate work in geology should have completed, as undergraduates, geology courses equivalent to those required of U of I undergraduate geology majors. Reviewing courses in chemistry, physics, geology, and mathematics. Deficiencies in background should be remedied before the initial graduate year. Applicants must meet the general requirements for admission to the Graduate College.

The Graduate College requires a minimum of 20 semester hours of graduate work for the M.S. degree; at least 30 semester hours must be completed in residence. For the Ph.D. degree at least three academic years must be completed altogether, during which the candidate earns a minimum of 45 semester hours of graduate credit in residence.

All graduate study in geology are required to perform either teaching, research, or other services for the university; such service is a normal part of the degree program.

Bachelor of Science Degree with Thesis

1. Candidates should, as undergraduates and graduates, complete courses in discipline, optical mineralogy, stratigraphy, geomorphology, field geology and field course, structural geology, and sedimentary geology, paleontology, and petrology. All completed courses in the department should fulfill the requirements.

2. Graduate students are expected to complete the requirement supporting courses required of department undergraduates (one year of college chemistry, physics, and geology, plus mathematics through calculus). Some
appropriate additional work in one area may be used to satisfy the requirement in another area. The same courses cannot be used under requirements 2 and 3.

3. Candidates require competence in a scientific language (French, German, or Russian) or in an appropriate tool, such as statistics. Competence is demonstrated by examination or by satisfactory completion of a one-year sequence in a scientific language course or comparable tool area, either as part of the degree program or in previous training.

4. For purposes of computing graduate credit, not more than 22 credit hours of research courses may be included in the 36 semester hours minimum required for the degree program.

5. To qualify for thesis defense or final oral examination, the candidate must have at least 2.50 GPA. on graduate courses taken at the University of I that are being offered toward a degree.

Master of Science Degree without Thesis

The Master of the two degrees without thesis is designed for students with extensive geological background and experience.

1. A candidate selected for this program must have had approximately three months' experience under the supervision of a professional geologist, or the equivalent, in some phase of geological activity. If possible, the candidate should receive permission from the staff, before beginning that activity, to use the experience toward his degree. The candidate must submit a written report describing his activities and the geological principles involved, the value of the work, and its broader applications and implications. The work will not be accepted toward the Master of Science degree requirements until the report has been approved. No college credit will be given for this work.

2. The Master of Science degree without thesis requires a minimum of 30 semester hours of coursework at the graduate level, of which 9 semester hours must be taken in other departments of the University. All other departmental requirements will apply under this option.

3. In addition, the staff may require the degree candidate without thesis to prepare a formal scientific report dealing with an appropriate subject or project. Credit may be received for this report.

Requirements for Thesis Candidates

Within broad limits, courses selected should reflect the language needs, interests, and talents of the applicant. The minimum requirements are:

1. Usually three courses in each of the major fields covered in the Ph.D. Program of research.

2. Graduate coursework totaling 24 semester hours exclusive of dissertation research credits, and in addition to courses used for the master's degree.

3. Thesis work in a major field, in a scientific language, or in a combination of one language and one tool. Proficiency in one language may substitute for competence in two areas. Competence is demonstrated by examination or by satisfactory completion of a one-year sequence in a scientific language course or comparable tool area, either as part of the degree program or in previous training. Competence is demonstrated by satisfactory completion of a two-year sequence in a scientific language course, either as part of the degree program or in previous training.

4. In each of these three areas, the degree candidate must demonstrate an original and independent contribution to the general body of geological knowledge. In addition to its original research, the thesis should present a synthesis of all pertinent knowledge and related matters and the candidate's evaluations, speculations, and generalizations about his topic.

STAFF


Associate Professors: Joseph J. Rimmer, Allen C. Tester, Mark M. Klesius.


Research Associate: Barret L. Shimpke.

Laboratory Manager: Roger C. Riedle.

Librarian: Vera Necsoiu.

Technician: Katsuyuki Kamemoto.

COllSE DESCRIPTIONS

Primarily for Undergraduates

12:3 Principles of Geology (Physical) 2 s.h.

Geology for students who wish to become acquainted with the philosophical aspects of geology. Study of rocks and minerals, weathering, erosion, rock deformation, mountain building, earthquakes, and interior of the earth. Open to all except those who have had previous college courses in geology or earth sciences.

12:4 Principles of Geology (Historical) 2 s.h.

Continuation of 12:3, but may be taken as an independent unit. Earth history through 5 billion years, with emphasis on the last 600 million years. Evolution of selected animal and plant groups and a survey of geologically important fossils. Not open to students who have had a college course in historical geology.

12:5 Physical Geology Laboratory 1 or 2 s.h.

Not open to those who have had or are taking 12:35 Earth History and Resources. May be taken concurrently with 12:3. Prerequisites, college geology.

12:6 Historical Geology Laboratory 1 s.h.

Not open to those who have had or are taking 12:35 Earth History and Resources. May be taken concurrently with 12:4. Prerequisites, college geology.

12:9 Geology of Iowa 3 s.h.

Survey of geological features in the state. For students who have had a previous course in geology. Lectures and field trips.

12:10 Honors Thesis in Geology 3 s.h.

Prerequisite, consent of the department.

12:11 Methods of Geological Investigation 3 s.h.

Instructional methods utilized in elementary geology. Literature review of presentation techniques, and instructional duties in an elementary laboratory. Prerequisites, consent of instructor.

12:17 Terrane Analysis 3 s.h.

Techniques of topographic map and aerial photo reading. Lecture and practical work.

12:41 Mineralogy 3 s.h.

Introductory study of minerals, classification, discovery, identification, and economic significance. Prerequisites, introductory geology course.

12:52 Elementary Petrology and Geochemistry 3 s.h.

A lecture, laboratory, and discussion course dealing with the principles of petrology and petrography, and the principles of petrology for igneous, sedimentary and metamorphic rocks. Prerequisites, 12:42.

For Undergraduates and Graduates

13:03 Physical Geology 2 or 3 s.h.

Summer session.

13:04 Historical Geology 2 s.h.

13:10 Geologic Map and Aerial Photo Interpretation 3 s.h.

Prerequisites, consent of instructor.

13:105 Geology of North America 3 s.h.

Offered in 1971-72 and in alternate years. Prerequisite, either science or college geology.

81.
12.152 Thin Section Petrography 3 s.h.
Laboratory course in the description, classification, and analysis of igneous, sedimentary, and metamorphic rocks. Prerequisite: 12.151.

12.161 Principles of Stratigraphy 3 s.h.
Prerequisite, each science or college geology. Continuation of 12.160, which is prerequisite.

12.171 Geomorphology 4 s.h.
Prerequisite, earth science or college geology.

12.172 Glacial and Pleistocene Geology 3 s.h.
Prerequisite, earth science or college geology.

12.173 Quaternary Geology and Exploration 3 s.h.
Lecture, laboratory, field trip, and a research problem. A lab- and field-oriented approach to study the evolution of selected materials and significant features. Prerequisite, 12.171 or consent of instructor.

12.181 Principles of Geophysical Exploration 3 s.h.
Fundamental physical principles, instrumentation, field techniques, data reduction and interpretation. Prerequisite, college geology and college physics.

12.182 Principles of Economic Geology 3 s.h.
Processes of formation of mineral deposits (exclusive of petroleum problems). Evaluation and geologic and geophysical methods of search. Prerequisite, consent of instructor.

12.183 Principles of Mineral Economics 3 s.h.
Mineral resource distribution, exploration, and conservation; the role of mineral resources in regional, national, and international development. Prerequisite, consent of instructor.

12.191 Structural Geology 4 s.h.
Description and interpretation of rock structures. Prerequisite, Mathematics 222 or 224.

12.192 Geotectonics 4 s.h.
Origin of the continents, oceans, and oceanic crust, based on geophysical, geologic, and geophysical evidence. Prerequisites, 12.191; 12.220 recommended; Mathematics 222.

12.194 Senior Seminar in Geology 2 s.h.
Prepared before graduation for undergraduates, junior or senior year; designed to help consolidate accumulated knowledge in geology.

Primarily for Graduates

12.221 Invertebrate Paleontology 4 or 5 s.h.
Morphology, taxonomy, chronology, and ecology of selected macroscopic invertebrates. Prerequisite, 12.221 (or by consent of instructor, enroll for 3 semester hours and attend first half of 12.221), 12.192, and college zoology.

12.222 Microplantyology 3 s.h.
Morphology, taxonomy, and evolution of selected groups of microflora. Prerequisites, 12.221 or consent of instructor, 12.192, and college zoology.

12.223 Seminar: Paleontology 2 s.h.
Prerequisites, 12.222 and consent of instructor.
GEANG

Chairman of Department, Edward Doversett
Office, 182 Schaeffer Hall

The primary function of the Department of German is to teach American students the liberal arts—a knowledge of the language and literature, the civilization, and culture traditionally designated as German.

University graduates with a major in German frequently find the teaching profession. (For teacher certification requirements, see College of Education.) They may also find positions in government, foreign service, and commercial enterprises, where their specialized knowledge of the language and literature, the history, and culture of Germany is indispensable.

Undergraduate Requirements

Students majoring in German are normally required to complete, in addition to the general requirements of the College of Liberal Arts (see College of Liberal Arts), a minimum of 30 semester hours of coursework in the department. Beyond the 30-semester hour major program, no further German courses are required. (For the General Education requirements, see page 7.)

Basic Program

First and Second Year

15-11 First Semester German 3 a.h.
15-12 Second Semester German 3 a.h.
15-21 Third Semester German 3 a.h.
15-22 Fourth Semester German—Reading 3 a.h.
15-23 Fourth Semester German—Composition and Conversation 3 a.h.
15-32 15-32 and 15-32 may be taken concurrently, if desired, or tandem.

Third Year

15-31 German Classics 3 a.h.
15-32 Intermediate Composition and Conversation 3 a.h.
15-34 Intermediate Composition and Conversation 3 a.h.

Fourth Year

15-28 Advanced Compositions and Conversation 3 a.h.
15-10 German Historical History 3 a.h.
15-1113 Survey of German Literature 3 a.h.

**An eight-week intensive course of 10-11 is offered only in the semester immediately following the examination for the bachelor's degree, and is scheduled for the professional semester.

Terms courses are to be taken in sequence (after following the intensive course in the semester immediately following the examination for the bachelor's degree, and is scheduled for the professional semester.

Some students who have been awarded an advanced degree are encouraged to add 10-12 German Phonology (3 semester hours) to the above.

German majors, graduates as well as undergraduates, are urged to supplement their degree programs with either one of the above or History of Germany or professorship.

If a student who has completed the major in German, he may do so, but this must of the undergraduate course requirements is waived in such a case. It will be necessary for him to des- be considered a second major. The student is expected to earn a complete first major in a subject in which he has no such substitute advantage over his peers.
The Teaching Minor
In addition to the Basic Program of the first and second year, above, the following courses or their equivalents are recommended for the teaching minor, effective September 1, 1960:

19.332 German Classics
19.333 German Literature, Composition and Conversation
19.334 Intermediate Composition and Conversation
19.140 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 3.0 or better point average in German may enroll in this program. The student chooses an inspecor in the field of his area of interest, under whom he works. An extensive reading program, discussions of regular reports, and a summer paper are required for each unit (3 semester hours). A total of 6 to 8 semester hours may be taken in this program. Also, graduate courses and seminars for which the student is judged to be ready are open to him. A comprehensive examination in the senior year terminates the program.

Special Facilities
Students have the opportunity to improve their comprehension and enjoyment of the language by working with recorded materials in the Language Laboratory. An extensive collection of works still pertinent to the University Library facilities 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 and potential for productive scholarship on the graduate level and who plan to continue in the doctoral should elect the program with thesis. A minimum of 30 semester hours or the equivalent of graduate level work beyond that which normally counts toward the requirements for the A.B. or the A.M. degree of 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 will include them in his program plan along with the other required courses as listed in the Table of Required Courses for the Master of Arts Degree in German. Below, the candidate will receive graduate credit for each undergraduate work, but this credit will not normally be counted toward the degree. Additional courses are selected with the approval of the graduate adviser. A minimum of 30 semester hours is required for the degree, some graduate work may be required beyond this figure. Normally 6 semester hours credit may be accepted for satisfactory completion of a thesis. The thesis may be either linguistic or literary and is subject to the approval of the faculty. These 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. exam can be administered—usually after acceptance of the M.A. thesis—the candidate must show a competence level in a foreign language other than German equivalent to two years of college study or four years of high school study, with a grade of B or higher. M.A. without thesis. A graduate student who elects his program to be oriented in the direction of optimum preparation for secondary school teaching, government service, translation, etc., may elect the one without thesis. This program requires a minimum of 25 semester hours of coursework calculated to provide the student with training for the work he plans to do, and is considered acceptable for admission to the doctoral program. The same course requirements outlined for the M.A. without thesis apply to candidates for the M.A. without thesis, with the approval of the graduate adviser. The student should choose those courses which will best prepare them for their teaching careers, etc.

Table of Required Courses*
for the Master of Arts Degree in German

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<th>Course</th>
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<td>18.136</td>
<td>3 h.</td>
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<td>18.122</td>
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<td>18.113</td>
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<td>18.301</td>
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<td>18.302</td>
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<td>18.303</td>
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<td>18.240</td>
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<td>18.251</td>
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<tr>
<td>18.285</td>
<td>3 h. (any one of the 2)</td>
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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 18.280 in their graduate work.

Doctor of Philosophy degree in German. The Ph.D. degree is awarded upon the satisfactory completion of 15 graduate semester hours or their equivalents beyond the requirements for the M.A. degree, and fulfillment of the requirements of the Department of German and the Graduate College (see Graduate College). The candidate may concentrate in either Germanic linguistics or German literature. The Ph.D. program will normally include the coursework listed in the appropriate table below, or its approved equivalents, and at least two advanced seminars. The remainder of the program is planned by the candidate in consultation with the graduate adviser in such a way as to assure satisfactory balance and concentration. The student may earn up to 15 semester hours credit for satisfactory completion of the Ph.D. dissertation. Some graduate courses outside the department in related subjects may be counted toward the degree with the approval of the graduate adviser. The master's degree is required to demonstrate adequate teaching ability in German. Wherever possible the department will award the opportunity and privileges to desiring 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 Slavonic language or Latin is required of all doctoral candidates in Germanic linguistics; a candidate concentrating in literature must demonstrate a reading knowledge of French and either a Slavonic language which has been certified by his adviser as pertinent to the research interests of the student. Competence in these languages may be demonstrated by two years of college study or four years of high school study, with a grade of "B" or higher, in each of the languages, or through testing by the department, or through testing by the department if such testing is ordered before the comprehensive exams can be administered.

Table of Required Courses*
for the Doctor of Philosophy Degree

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<tr>
<th>Course</th>
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A reading knowledge of French or Russian, and of a modern Slavonic language or Latin is required of all doctoral candidates in Germanic linguistics; a candidate concentrating in literature must demonstrate a reading knowledge of French and either a Slavonic language which has been certified by his adviser as pertinent to the research interests of the student. Competence in these languages may be demonstrated by two years of college study or four years of high school study, with a grade of "B" or higher, in each of the languages, or through testing by the department, or through testing by the department if such testing is ordered before the comprehensive exams can be administered.
Table of Required Courses* for the Doctor of Philosophy Degree
with a concentration in Germanic linguistics

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<tr>
<th>Course Code</th>
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*B.A. degree, may do so by completing, in addition to the 8-quarter-hour basic course sequence above, a fourth-quarter course. For this fourth-quarter course the student has an option of taking either 12.122 or 12.123. See below for particulars.

A student may not take or repeat, for either credit or quality points, any course if he 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 3 h.
First unit of the three-semester course sequence. Emphasis on reading and the basic structure of the German lan-
guage.
13.12 Second-Semester German 3 h.
Second unit of a three-semester course sequence. Study of the basic structure of the German language continued.
Students for whom 12.111 is beyond their ability to work in this language are urged to register on the waiting list for 12.110, and if there are any vacancies, to request to be added to the class as space becomes available.

13.13 Third-Semester German 3 h.
Third unit of a three-semester course sequence. Study of the basic structure of the German language reviewed.
Emphasis on simple conversation, composition, and exact translation.

Note: A student who has had all three of the units of the basic course sequence or equivalent has an option of taking either 12.122 or 12.123 for his fourth semester.

12.22 Fourth-Semester German: Reading 3 h.
Standard fourth-semester course for students satisfying their foreign language requirement for a B.A. degree. Thumbsketch of German literature. Reading of short but representative literary works.
12.23 Fourth-Semester German: Elementary Composition and Conversation 3 h.
Fourth-semester course for students satisfying the foreign language requirement for the B.A. degree. Recommended for those who wish further training in the active use of the language. Emphasis on work on compositions, and on conversations in German.

13.11 German Classics 3 h.
Representative works of Leopold, Goethe, and Schiller studied in their relation to the classical period of German literature. Prerequisite, 12.22 or equivalent.
13.12 German Classics 3 h.
Continuation of 13.11. Representative works of 19th- and 20th-century authors. Prerequisite, 12.23 or equivalent.
13.13 Intermediate Composition and Conversation I 3 h.
Practice in the translation of selected English texts, paraphrasing of German texts, the learning of German vocabulary, and intensive work in word conso-

13.14 Intermediate Composition and Conversation II 3 h.
A continuation of 13.13, with emphasis on idiomatic expression and composition and extensive speaking. Prerequisite, 12.23 or equivalent.
13.15 Ph.D. Reading no cr.
Courses 12.21, 12.22, 12.23, and 12.24 (see below) compri

12.21 First-Year Seminar for Graduate Students in Germanic Linguistics 3 h.
Prerequisites: 12.21, 12.22, 12.23, or equivalent, as determined by the instructor. Designed for graduate students with a background in Germanic linguistics who wish to learn more about the field and to prepare for the advanced study of the language.
12.22 First-Year Seminar for Graduate Students in Germanic Linguistics 3 h.
Prerequisites: 12.21, 12.22, 12.23, or equivalent, as determined by the instructor. Designed for graduate students with a background in Germanic linguistics who wish to learn more about the field and to prepare for the advanced study of the language.
12.23 First-Year Seminar for Graduate Students in Germanic Linguistics 3 h.
Prerequisites: 12.21, 12.22, 12.23, or equivalent, as determined by the instructor. Designed for graduate students with a background in Germanic linguistics who wish to learn more about the field and to prepare for the advanced study of the language.
12.24 First-Year Seminar for Graduate Students in Germanic Linguistics 3 h.
Prerequisites: 12.21, 12.22, 12.23, or equivalent, as determined by the instructor. Designed for graduate students with a background in Germanic linguistics who wish to learn more about the field and to prepare for the advanced study of the language.
13:34 Seminar in Proto-Germanic Linguistics 3 s.h.
May be repeated for credit.

13:41 Seminar in Linguistics 3 s.h.
May be repeated for credit.

13:301 Seminar in German Literature of the 19th Century 2 s.h.
May be repeated for credit.

13:306 Seminar in German Literature of the 20th Century 2 s.h.
May be repeated for credit.

13:308 Seminar in German Literature 2 s.h.
May be repeated for credit.

13:391 Seminar in German Literature of the 19th Century 2 s.h.
May be repeated for credit.

13:396 Seminar in German Literature of the 20th Century 2 s.h.
May be repeated for credit.

13:398 German Poetry of the 20th Century 2 s.h.

13:400 F.D. Dissertation 2 s.h.
cr.arr.

GREEK
(See Classics)

HISTORY
Chairman of Department, Sydney V. James
Office, 306 Schaeffer Hall

The courses and training offered by the Department of History are intended in the first instance to help satisfy a natural curiosity about man’s past, through teaching the development of things in time and through a synthesis of various aspects of man’s activity in any period, and thus to aid in gaining a better understanding of ourselves and of the world in which we live. In addition to its general role of providing information and methods which are an essential and integrating part of any liberal education, the department trains professional historians and teachers of history at various levels, and serves those who require a knowledge of a period or aspect of history as background for their own specialized interests in other fields.

Undergraduate Requirements

The requirements for the bachelor’s degree with a major in history fall under three plans: for the general major in history, for prospective teachers, and for honors candidates.

General Major in History (Plan A)

1. Satisfaction of General-Cultural Core requirement.
2. A minimum of 24 semester hours in courses which the Department of History offers. No more than 12 semester hours of American history will count toward fulfilling this requirement.
3. A minimum of 18 or 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 areas requirement.

Prospective Teachers in History (Plan B)

This plan is designed to attract and train students of the several professions who seek a teaching position in the social sciences.

Core courses: 13:31 and 13:32 History of Western Civilization (or equivalents) for teachers in social studies.

A minimum of 18 semester hours of work in courses offered by the history department at which 12 semester hours are in the Ancient World and Medieval Europe, and 9 in the Modern World.

A minimum of 18 semester hours of work in basic courses in three of the following 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 minimum requirement in related areas.

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4. Required courses in teaching methods and practical teaching.

History Honors Major (Plan C)

This is a program leading to the Bachelor of Arts degree with Honors in History. 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:

1. A semester of 24 semester hours of work in history with at least 9 hours in the department's Honors offerings, which may include as many as 8 hours of Honors thesis credit.

2. Complete the department as for the General Major in History (Plan A), above.


Graduate Study Requirements

Major's degree. No special requirements are required for admission to the degree. Each applicant must meet the general requirements for admission to the Graduate College (see Graduate College) and must, in addition, take the Graduate Record Examination Aptitude Test, have an official report of his performance in that examination forwarded to the graduate admissions office, and submit a specimen of his writing, such as a term paper or seminar paper, to the Department of History.

As soon as possible in the first semester of residence the candidate should select a field of mental interest and consult with a faculty member in that field, who will act as his 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 defining the thesis or taking the comprehensive examination.

Students who do not expect to become candidates for the Ph.D. may proceed to the M.A. by fulfilling the requirements of Plan A, below. Every student who eventually wishes to become a candidate for the Ph.D. must take at least one seminar, for at least 3 semester hours credit, during one of his first two semesters of study. His record will be evaluated by the department at the end of the second semester of his registration (regardless of the total credit hours), in order to determine whose relatively small membership in their first two semesters of registration indicates that they are serious students. On the other hand, the departmental independent research required for the Ph.D. will be directed

Plan B. Students who have made exceptionally good record in the quality of their seminar papers will be given permission to pursue Plan C, if they wish to do so.

Plan A. M.A. without thesis. This plan requires a minimum of 36 semester hours credit. The work must be chosen in accordance with the following rules:

1. The student must present 8 semester hours of work in each of three fields of study. The fields of study in history are those determined by letter in the last column. The fields chosen by the student may all be in history, or two of them may be in history and one in a related discipline. If the three fields are all in history, then they must be chosen from at least two different divisions of the field and at least one of the three fields must be a seminar field. The remaining two fields to history may be chosen without regard to the distinction among divisions.

2. The student must present 8 to 18 semester hours of further work in history, which may be within or outside the chosen fields of study.

3. The work in history must be arranged so that at least 12 semester hours fall into one single division. Of these 12 semester hours at least 3 must be in seminars. Students may provide for 12 semester hours in one division by selecting two of their 6-semester-hour fields from a single division.

4. The student must present 10 to 12 semester hours of further work in related advanced studies outside the history department.

After completing these requirements, or in the semester in which he expects to complete them, the candidate must present himself for a comprehensive examination. This includes written examinations in the candidate's three fields of study and an oral examination on all the candidate's work both in history and in related disciplines.

Students who take Plan A may not become candidates for the Ph.D.

Plan B. M.A. with thesis. This plan requires a minimum of 36 semester hours credit. The work must be chosen in accordance with the following rules:

1. The student must present 6 semester hours of work in each of three fields of study, as described under Plan A, above.

2. The student must present 6 to 8 semester hours of further work in history, either within or outside his fields of study.

3. The work in history must be arranged so that at least 12 semester hours fall into one single division. Of these 12 semester hours, at least 3 must be in seminars. Students may provide for 12 semester hours in one division by selecting two of their 6-semester-hour fields from a single division.

4. The student must present 4 to 6 semester hours of further work in related advanced studies outside the history department.

The requirements of Plan B are completed by writing a master's thesis. When work is begun on the thesis, a statement of its subject must be submitted to the chairman of the department. The student may claim 12 semester hours credit for the required. When the thesis has been completed, the candidate must defend it orally before a committee of three examiners.

The candidate will be allowed to proceed to the Ph.D. if, in the candidate's judgment, he feels that he is ready to continue his studies. The candidate will decide whether he may become a candidate for the Ph.D.

Plan C. Combined program. Students who are admissible to this program as described above are candidates for the M.A. or Ph.D. Students need not follow the same requirements for the M.A. and the Ph.D. Students who earn the M.A. degree may continue in the program for the Ph.D. These students in this combined program must meet the general requirements for admission to the Graduate College and, in addition, take the Graduate Record Examination Aptitude Test, have an official report of their performance in that exami-
HISTORY

The candidate undertakes his comprehensive examination when he receives a definite assignment of the written work required in one or more of his four fields. But if the time to be allowed after the assignment of written work and before its submission is more than six months, the candidate will not be considered to have undertaken the examination until six months before the assignment is due. Once he has undertaken his examination, the candidate must complete it; if he does not do so he will be considered to have failed.

The candidate and his supervisor must draw up a formal plan of study in the semester in which the comprehensive is to be completed and must submit the plan to the Graduate College through the chairman of the Department. As early as possible, before his comprehensive examination, the candidate should submit to his committee a written proposal for his dissertation. Within the semester in which the comprehensive examination is to be completed, the proposal, as the subject of research, should include a description of the subject, a plan of research, and a statement of the sources that will be used. The committee again revised if necessary to at least five members and including for this purpose at least one member from outside the department, will approve or disapprove the proposal.

After the proposal is approved the committee will invite one or more of its members to join with the candidate's supervisor in reading and criticizing drafts of parts of the dissertation as the candidate completes them. When the dissertation is completed the full committee, constituted as it was when it approved the proposal, will administer the final examination for the dissertation. This will consist of an oral defense of the dissertation.

Faculty members join a candidate's committee of direction by accepting the invitation of the candidate and his supervisor to serve. Committees reach their decisions by unanimous agreement in each case, except that when they sit as examining committees for the final examination of a comprehensive examination or a dissertation, the vote of a single member to fail the candidate isoverride(d) if all the other members vote to pass him. A faculty member who votes to fail a student must be replaced by a new member invited by the committee to serve on his own responsibility and to vote on the basis of the statement of his opinion of study; his fields for the examination. When the dissertation is completed, the candidate must offer it to the committee for its consideration at the examination. If the committee is satisfied, it may certify the examination to the Graduate Council for the case to be recorded in the case of one-year's absence from the Society.

The Division of History mentioned above are distributed as follows:

Division I: The Ancient World
Division II: European History, 1815 to Present
Division III: European History, 1815 to Present
Division IV: Latin American History
Division V: Latin American History
Division VI: Far Eastern History

The Ph.D. student is required to complete the program in six years.

The PhD. student is designated to be completed in four or five years from the commencement of graduate study. The candidates must complete their requirements within five years from the end of the semester in which the comprehensive examination was passed, 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. Often only these must be supplemented by interlibrary loan or by use of other libraries.

Qualified graduate students are invited to apply for fellowships. Such applications should be directed to the departmental office.

STAFF

Professors: William O. Alyea; Lawrence R. Goff; Ralph E. Glesne; Ellis Hawley; Sydney V. James; Lawrence

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16:127 Intellectual History of the 17th Century. 3 a.h.

Effects of the Reformation upon religious thought, of the rise of scientific theory and practice as a branch of philology, and of developments in aesthetics and political theory. A knowledge of the political history of the period and of one relevant foreign language is assumed.

16:128 The Enlightenment. 3 a.h.

Intellectual and social history from the late 17th century to the early 18th century. Developments in religious, political, and philosophical thought will be discussed with particular attention to their implications for political life. A knowledge of one political history of the period and of one relevant foreign language is assumed.

16:129 French Revolution and Napoleon. 2 or 3 a.h.

Antecedents of the Revolution, principal developments in France, and impact of the Revolution on Europe. Prerequisite, junior or senior standing.

16:131 Tudor England. 4 a.h.

England in the 16th century. Prerequisite, junior or senior standing.

16:132 Stuart England. 4 a.h.

England in the 17th century. Prerequisite, junior or senior standing.

16:134 Christian Humanism in the Renaissance and Reformation. 3 a.h.

16:137 Survey of English History. 400 to 1559. 3 a.h.

English history from the coming of the Anglo-Saxons to the reign of Elizabeth I.

16:143 History of East Central Europe to 1800. 2 or 3 a.h.

Problems in political, socioeconomic, and cultural history of the Polish-Lithuanian Commonwealth, Kingdom of Hungary, and Bohemia (Czech).

16:147 History of Russia to 1800. 3 a.h.

Major political, socioeconomic, and cultural developments in the Kievan, Moscowite, and early imperial periods. Modern Europe

16:138 History of France, 1715 to Present. 3 a.h.

Continuation of 16:137, but may be taken as an independent unit. French history, political, economic, social, and intellectual, from 1715 to present. Prerequisite, junior or senior standing.

16:138 Survey of English History. 1559 to Present. 3 a.h.

Continuation of 16:137, with emphasis on political and economic developments.

16:140 Survey of Modern Europe. 1815-1990. 3 a.h.

Main factors in European history, political, economic, social, and intellectual, from beginnings of the 19th century to 1990. Not open to freshmen.

16:141 Survey of Modern Europe. 1890-1939. 3 a.h.

16:142 Survey of Recent Europe. 1929 to Present. 3 a.h.

16:144 History of East Central Europe, 1800 to Present. 2 or 3 a.h.

Major political, socioeconomic, and ideological developments in the history of the Polish and non-Germanic peoples of the Habsburg Empire (Hungarian, Western, and Ruthenian Slav). The period of independent statehood (1815-1945) and the new Communist systems will receive special attention.

16:145 Modern European Intellectual History. 3 a.h.

Prerequisite, junior or senior standing.

16:146 Modern European Intellectual History*. 3 a.h.

Major political, socioeconomic, and ideological developments in imperial Russia and the Soviet Union.

16:149 History of Germany, 1789 to 1918. 3 a.h.

Prerequisite, junior or senior standing.

16:150 History of Germany, 1918 to Present. 3 a.h.

Prerequisite, junior or senior standing.

16:151 Modern England, 1660 to 1848. 2 or 3 a.h.

16:152 Modern England, 1848 to Present. 2 or 3 a.h.

16:155 Diplomatic History of Europe. Since 1815. 2 or 3 a.h.

16:156 War and Society. 3 a.h.

The role of the military in western society since the French Revolution, with particular attention given to the impact of technology and ideology, civil-military relations, military sociology, and the development of strategic thought.

16:157 European Socialism and Labor Movements. 3 a.h.

Collectivist ideologies, socialist parties, and labor organizations from the French Revolution to the Bolshevik Revolution. Prerequisite, junior or senior standing.

16:158 History of Marxist Theory in the West, 1840 to Present. 3 a.h.

Origin and development of Marx's theory, including an analysis of Capital, bourgeois criticism of the theory, Development of Marxism: late REFORM, Kentucky, Lowell, Finken- burg, Flahmank, Hilvert, Trotsky, Lenin, Lukacs, Gramsci, The Modern Current. (concluded for those wishing to complete the course at the graduate level.) Prerequisite, junior or senior standing.

British Empire and Commonwealth

16:159 British Empire. 3 a.h.

American Revolution and the evolution of colonial institutions to 1861. Prerequisite, junior or senior standing.

16:160 British Empire*. 3 a.h.

16:161 The Colonial Period in American History. 3 a.h.

Foundation and growth of English colonies in North America during the 17th and early 18th centuries: colonial and imperial political history before 1715; economic and cultural history, 1620 to 1715. Prerequisite, junior or senior standing.

16:162 The American Revolutionary Period, 1740-1789. 3 a.h.

Political and military history of the colonies, 1712-1776; imperial background; creation of the federal system and adjustment of government and politics to the social and economic conditions of the new nation.
16:163 United States in the Middle
Period, 1789 to 1840 3 h.
Development of the early republic in the American era, with emphasis on political and social history.
Prerequisite, junior or senior standing.

16:164 United States in the Middle
Period, 1860 to 1877 3 h.
Conflict of nationalism and sectionalism culminating in the Civil War and Reconstruction.

16:165 Recent American History
1877 to 1920 3 h.
Emergence of industrial and urban America. Reorganization of the American economy, social and political responses, the "new" immigration, the politics of Progressivism, imperialism, and World War I. Prerequisite, junior or senior standing.

16:166 Recent American History
1920 to Present 3 h.
United States since World War I. Social and political changes in the 20th century, the adjustment to the Great Depression, World War II and the Cold War, the "Revolution," and other themes of the 1950s and 1960s. Prerequisite, junior or senior standing.


16:168 The Contemporary U.S., 1940 to Present 3 h.

16:169 The Revolutionary Generation 3 h.
How the American Revolution (and did not) produce change in political, governmental, economic, and social life. Some development into the 18th century. Prerequisite, junior or senior standing.

16:170 The Northeast, 1716 to 1850 2 or 3 h.
Transition from social and political order of the colonial period to that of mechanization and industrialization. Pennsylvania, New York, New England. Prerequisite, junior or senior standing.

16:171 The Frontier in American History 3 h.
The challenge of "free land"; expansion, territorial systems, Indian affairs, migrations, communications, economic growth. Prerequisite, junior or senior standing.

16:172 The Frontier in American History* 3 h.
Patters of exploitation; fur trade, mining, lumbering, grazing, intensive agriculture. The frontier mind. The West in the 20th century. Prerequisite, junior or senior standing.

16:173 American Economic History:
The Developing Economy 3 h.
Aspects of the developing American economy through the second third of the 19th century, emphasizing the emergence of a national economy; the emergence of regional specialization and the beginnings of industrialization; expansion of productive factors. Prerequisite, junior or senior standing.

16:174 American Economic History:
The Mature Economy 3 h.
Problems of the maturing economy with an emphasis on the changing distribution of economic power; the emergence of economic concentration and monopoly power in industry; the response of organized labor and government to concentrated corporate power; problems of stability and depression in a concentrated economy. Prerequisite, junior or senior standing.

16:175 American Foreign Relations
1775 to 1890 3 h.
Ideas, economic interests, and political considerations affecting the foreign relations of the United States. The political and diplomatic conceptions of American foreign policy toward Europe, Latin America, the Pacific Islands, and Eastern Asia. The historical development of isolationism, territorial and commercial expansionism, the Monroe Doctrine, neutrality, and diplomacy during the Revolutionary and Civil Wars. Prerequisite, junior or senior standing.

16:176 American Foreign Relations
Since 1895 3 h.
Development of America as a great world power; overseas expansion and hemispheric solidarity, the balance of power, international organization, the peace movement and military preparedness, moral isolationism, the pursuit of national self-interests, the Spanish-American War, two world wars, and the Cold War. Prerequisite, junior or senior standing.

16:177 American Intellectual History
1830 to 1865 3 h.

16:178 American Intellectual History
Since 1865 3 h.

16:179 Topics in American Social History 3 h.
Prerequisite, consent of instructor.

16:180 History of Iowa
2 or 3 h.
Geology and climatology, archeology and Indians. French discovery and exploration, Spanish land grants and frontiers. Settlement, the canal wars, the Black Hawk War, the Civil War, emphasizing the constitutional and political phases. Prerequisite, junior or senior standing.

16:181 History of Iowa*
2 or 3 h.
Transportation and communication, agriculture and industry, journalism, theater and burlesque, music and drama, foreign and group settlements, and the religions, educational, social, and political history from pioneer days to the present.

16:182 Puritanism in the Shaping of America 3 h.
A study of "the last representatives of the medieval ambition to synthesize imperial ambitions in the United States.

16:183 The Genius of American Institutions 3 h.
Characteristics which define the peculiar genius of institutions in the United States.

16:184 Afro-American History
1619 to 1860 cr.arr.
Readings in selected aspects of black life with emphasis on the operation of slavery as a social system. Prerequisite, consent of instructor.

16:185 Afro-American History
1860 to Present cr.arr.
A continuation of 16:184, with emphasis on the evolution of the ghettos and its operation as a social system. Prerequisite, consent of instructor.

16:186 The Religious and Democratic Traditions of the United States 3 h.
Historical examination of what is commonly called "the church-state dispute," and an analysis of various methods and approaches of opposition toward religion, issues of religious freedom, and liberal vs. conservative arguments on matters pertaining to religion. Same as Religion 28:190.

Latin American History

16:153 History of Latin America 3 h.
Survey from the discovery of America to wars of independence, Spanish conquests and post-conquest institutions. Prerequisite, junior or senior standing.

16:154 History of Latin America* 3 h.
Political, economic, and social history of Latin American republics in the 19th and 20th centuries.

16:155 Latin America in the Atlantic World: 1760 to 1850 2 or 3 h.
Bilingualism, institutional modernization under the Bourbons, revolutions for independence, and liberalism, reform in Latin America, studied comparatively within a
Far Eastern History

15.151 History of East Asia to ca. 1800 3 s.h.
- East Asia from beginning until the early 19th century and
- Asian areas connected with Chinese and Japanese civilizations.
- Emphasis on development of political institutions and
cultural traditions. Not open to freshmen. Same as
Asian Studies 15.171.

15.152 History of Modern East Asia* 3 s.h.
- Continuation of 15.151 to recent times, but may be taken
as an independent unit. Emphasis on modernization and
relations with the West. Not open to freshmen. Same as
Asian Studies 15.172.

15.153 History of China to ca. 1840 3 s.h.
- Origin and development of Chinese civilization through
the early Qing period. Emphasis on political, economic,
and social trends. Prerequisite: junior or senior standing.
Same as Asian Studies 15.225.

15.154 History of Modern China* 3 s.h.
- Political and social development of China, 1840 to present,
Emphasis on Western impact and Chinese response. Prereq.
Prerequisite: 15.153 or 15.152 or equivalent; graduate students
by permission of instructor.

15.155 History of Japan to 1857 3 s.h.
- Japanese history from the beginning through the Tokugawa
period. Emphasis on the development of feudal systems,
culture, and economic growth. Prerequisite, junior or senior standing.
Same as Asian Studies 15.227.

15.156 History of Modern Japan* 3 s.h.
- Continuation of 15.155 to recent times, but may be taken
as an independent unit. Modernization and emergence
of Japan as a world power. Prerequisite, junior or senior standing.
Same as Asian Studies 15.250.

Primarily for Graduates

15.211 Seminar: Medieval Society and
Institutions of Continental Europe, 1500-1700
15.212 Seminar: Medieval Society and
Institutions* credit
15.215 Readings in Reformation History credit
15.217 Seminar: The Reformation credit
15.218 Readings in Early Modern History 3 s.h.
15.221 Seminar: Early Modern Europe 3 s.h.
15.222 Seminar: Early Modern Europe* 3 s.h.
15.233 Seminar: 17th and 18th Centuries credit
15.235 Seminar: Early Modern England, 1450 to 1715 credit
15.236 Readings: Early Modern England, 1450 to 1715 credit
15.237 Readings in Comparative Topics in
European History, 1500-1700 3 s.h.
15.238 Readings in Early Central and
Eastern European History, 15th to Mid-18th
Centuries credit

Historical Studies: Comparative Studies in
Political and Social Institutions: as well as
individual developments within
Empires, Prussia, Polish-Lithuanian commonwealth, Rus-

m

3 s.h.

s, Mongol-Turkic state system. Prerequisite, consent of
instructor; qualified undergraduates apply.

15.235 Seminar: Revolution and
Modern European Intellectual History credit
15.236 Readings in Modern Europe credit
15.237 Readings in Modern European History credit
15.238 Readings in Comparative Intellectual
History credit

Problems common to Germany, Great Britain, and the
United States since ca. 1830.

15.245 Readings in European Diplomatic History credit
15.246 Seminar: Modern Intellectual History 3 s.h.
15.247 Seminar: Russian History credit
15.248 Readings in Russian History credit
15.249 Readings in German History credit
15.250 Seminar: Modern Germany credit
15.251 Readings in Modern England credit
15.252 Seminar: Modern England credit
15.254 Seminar: Legislative Behavior Same as Public Science 10.200.
15.255 Seminar: Political Parties and
Leadership credit

Same as Political Science 10.444.

15.257 Seminar: American Foreign Relations credit
15.258 Seminar: American Foreign Relations credit
15.259 Seminar: British Empire and
Commonwealth credit
15.260 Seminar: British Empire and
Commonwealth credit

15.261 Readings in American Colonial History credit
15.262 Readings in American Colonial History credit
15.263 Seminar: American Colonial History credit
15.264 Seminar: American Colonial History credit
15.265 Seminar: The American Middle
Period credit
15.266 Readings in the American
Middle Period credit
15.267 Readings in the Western
Movement credit
15.268 Readings in American
Foreign Relations credit
15.269 Seminar: Recent American History, 1877 to 1920 3 s.h.
15.270 Readings in Recent American History, 1877 to 1920 3 s.h.

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HOME ECONOMICS

17:10 Principles of Nutrition 3 a.h.
Relation of nutrition to health; food preferences; functions of minerals in the body, guides for good nutrition, and composition of foods.

17:32 Art in the Home 3 a.h.
Application of art principles to the selection, arrangement, and design of residential architecture and its furnishings.

17:34 Growth and Development of the Young Child 3 a.h.

For Undergraduates and Graduates

17:102 Experimental Food I 3 a.h.
Experimental study of factors affecting the properties of foods. Prerequisities: 17:11.

17:133 Textile Design I 3 a.h.
Creative problems in fabric designs: block printing, rug hooking, silk screening, stenciling, and batik. Lecture and studio projects. Prerequisites: Art 12:1 and 12:3 or consent of instructor.

17:104 Experimental Food II 3 a.h.
Continuation of 17:102.

17:105 Administration of Family Resources 3 a.h.
Philosophy, goals, and principles of home and family management; use of time, energy, money, and other resources with emphasis on group dynamics in making decisions.

17:106 Family Housing 3 a.h.
Basic sociocultural and aesthetic principles of residential environments.

17:107 Survey of Interiors I 4 a.h.
Development of the home furnishing from Egyptian period to 1900. Correlation with architecture and culture of the period.

17:108 Survey of Interiors II 2 a.h.
Development of contemporary home furnishings. Correlation with architecture and culture of the 20th century.

17:109 Costume Design 3 a.h.
Techniques of design and illustration, Historical and current aspects of costume. Prerequisites: Art 20:3, 17:2, or consent of instructor.

17:110 Advanced Clothing 3 a.h.
Materials, designs, and construction techniques used in tailored garments. Prerequisites: 17:1, 2, 109. Second semester.

17:111 Clothing Economics 3 a.h.
History and analysis of the ready-to-wear industry; production and distribution; patterns of clothing consumption; industry statistics from trade and government sources. Prerequisites: Economics 60:1, 2, or consent of instructor.

17:112 Textile Design II 3 a.h.
Design and execution of handwritten fabrics through experiment with color, fibers, and basic weave. Prerequisites: 17:11 and Art 12:1 or consent of instructor.

17:114 Interior Decoration 3 a.h.
Analysis of basic functions of functional design problems for residential interiors. Prerequisites: Art 12:5, 13:3, and 161.

17:115 Directed Studies in Related Art cr.arr.
Advanced study of interior or textile design. Prerequisites: senior or graduate standing and consent of instructor.

17:118 Nutrition 3 a.h.
Principles of human nutrition. Prerequisites: Chemistry 241 and a course in human physiology or consent of instructor.

17:119 The Science of Nutrition 3 a.h.
Principles of human nutrition with special reference to food taboos. Prerequisite: Biochemistry 60:1 or 125, consent. Physiology 12:15.

17:120 Advanced Nutrition 3 a.h.
Continuation of principles of human nutrition. Introduction to nutrition research. Prerequisites: 17:118 or 119. Physiology 12:15, Biochemistry 60:11, or consent of instructor.

17:121 Seminar: Home Economics 2 to 4 a.h.
Exploration covering professional scope of home economics, its origin, development, philosophy. Current facts influencing career in higher education. Orientation to graduate study and research.

17:122 Honors Seminar: Home Economics 2 to 4 a.h.
Review of the literature in the area of interest. Open to both majors and nonmajors.

17:123 Meal Management 3 a.h.
Lectures on marketing of food, government protection of foods, and world food problems. Laboratories are concerned with selection of foods and management of meal production. Prerequisites: 17:13 or 12 and 17:19 or 118. Economics 60:1 recommended.

17:125 Institution Management I 3 a.h.
Quantity food production and service. Equipment selection, maintenance, and layout, Observation and practice in the women's residence halls and University schools. Prerequisite: 17:123 or consent of instructor.

17:126 Institution Management II 3 a.h.
Quantity food purchasing. Organization and management of food service units. Observation in University Hospitals. Prerequisite: 17:12 or consent of instructor. Therapeutic use of diet in metabolic disturbances and in certain diseases. Given in the Department of Nutrition, University Hospitals, to meet requirements of American Dietetic Association for students in dietetics. Prerequisite: Biochemistry 60:3 or consent of instructor.

17:129 Workshop: Current Topics in Home Economics and Nutrition 3 a.h.
Recent developments in food and nutrition with discussion of scientific principles on which they are based. Summer session only.

17:135 Physical Growth and Nutrition 3 a.h.
Physical growth and nutritive requirements from infancy to adulthood.

17:140 Textile Economics 3 a.h.
Economics and industrial history of textiles. Current developments in problems of domestic production and marketing. Prerequisites: Economics 60:1 or consent of instructor.

17:143 Family Economics 3 a.h.
Principles of family financial planning. Prerequisite: Economics 60:1 or equivalent of instructor.

17:161 Advanced Textiles 3 a.h.
Textile finishes dye, and dyes: their classification, structure, and methods of application. Laboratory quantitative analysis of textile fibers. The use of textile testing equipment and evaluation of the physical and chemical properties of fibers, yarns, and fabrics. Prerequisites: 17:14.

Prerequisites: minor or graduate standing and consent of instructor.

17:165 Material and Methods in Family Life Education 3 a.h.
Philosophy of family life education. Theories and methods of presenting family life education materials in grade or subject matter, and in youth and adult schools. Same as Education 71:526. Not open to first semester juniors.
HOSPITAL AND HEALTH ADMINISTRATION

HOSPITAL AND HEALTH ADMINISTRATION

Director of Program, Gerhard Hartman
Office, 311 Westlawnp

The Graduate Program in Hospital and Health Admin-
istration leads to the Master of Arts and Doctor of Philo-
osophy degrees. As hospital and health administration em-
bodies many facets of scientific preparation, the student has primary identification with the College of Medicine and the School of Commerce, but utilizes the facilities and resources of the entire University.

There are many significant phases of hospital and health administration which present problems profoundly differ-
ent from those usually confronted in business, education, or government. Certain vital aspects of hospital and health administration pose policy, procedural, technical, and public relations problems which are unique; it is prob-
ably for these reasons that this program was originally instituted.

Programs of Study

Master of Arts. The Master of Arts program consists of a minimum of 50 on-campus semester hours of academic work during four semesters and the completion of a thesis during the second year of study. A new class is admitted each semester. After the degree has been awarded, the student is offered the opportunity to undertake a post-
graduate assistantship in a carefully selected hospital or health institution under the direction of a qualified ad-
ministrator.

While the curriculum stresses the conceptual unity and generic nature of the administrative decision-making proc-
tess, the courses offered by the program are designed to acquaint the student with the institutional environment of contemporary hospital and health organization. Ad-
movement of administrative problems which are unique to health admin-
istration are stressed. Techniques of motivating personnel, orga-
nization, and supervision are considered. The course work is intended to prepare the student to enter hospital and health administration as a post-
graduate assistant in the capacity of an executive or ad-
ministrative trainee. The student's representation on page 13 of the program booklet obtained from the de-
partment office illustrates the progression of the grad-
uate's continued development.

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 admin-
istration with the intention of teaching and engaging in research.

Students may pursue doctoral study directly after comple-
tion of the bachelor's degree or the master's degree, whether in hospital administration or another appropriate field. Students have been accepted with and without pre-
vious hospital operational experience. These students who expect to continue their training through the doctoral degree may file a joint program for the master's and doctor's degrees. The master's examina-
tion may be combined with the comprehensive exami-
nation for the Ph.D. degree for these candidates.

Requirements for Admission to Master's or Doctoral Program

A bachelor's degree from an accredited university or college is required for admission to the Graduate Program in Hospital and Health Administration. Candidates are selected on the basis of a thorough evaluation of their un-
dergraduate academic record, personal qualifications, ex-
erience, and their desire and aptitude for a career in hospital and health administration. A minimum academic grade-point average of 2.5, based on an A grade being 4, on all college courses is required for admission to the master's program. Candidates for admission to the doctoral program are required to take the Graduate Record Examination (GRE) or the Test of English as a Foreign Language (TOEFL). There is no specification of major fields of study that must be taken, but the candidate's undergraduate level must be compatible for a year of graduate study in the liberal arts and sciences. The program emphasizes the need for a broad background in business administration, business economics, accounting, economics, statistics, sociology or psychology, biology or chemistry, public speaking, and business organization and management are considered essential to the successful completion of this program.

STAFF

Professor: Gerhard Hartman, Assistant Professor: Roger Amstold, John H. Suharn,* John C. Gooding, Richard Owens, Fred H. Graham, Dennis D. Pfeiffer.

On leave.

COURSE DESCRIPTIONS

40:101 Fundamentals of the Modern Hospital 2 or 3 hrs.
Orienting to techniques and operation of all types of
modern hospitals and health organizations. Lectures and seminars.
40:102 Fundamentals of Modern Hospital and
Health Administration 2 or 3 hrs.
Continuation of 40:101.
40:103 Principles of Hospital and
Health Administration 2 hrs.
Emphasis on development of an understanding of human
relations and skills required for effective administration of
hospitals and health organizations. Lectures, seminars, and field trips.

80:104 The Hospital in Modern Society cr.arr. Develops conceptual skills required by the hospital administrator.
80:105 Administrative Aspects of Medicine 2 s.h.
Lectures and discussions to orient students to research problems peculiar to medical care administration.
80:108 Advanced Hospital and Health Administration 2 or 3 s.h.
Interpretation and utilization of subject matter in hospital accounting, statistics, public relations, personnel management, and community relations.
80:107 Seminar: Problems of Administrative Behavior in the Modern Health Organization 2 s.h.
Case method of instruction, role-playing, and similar approaches to develop student's administrative skills.
80:108 Problems of Administrative Behavior in the Modern Health Organization 2 s.h.
80:109 Current Developments in Hospital and Health Administration 2 s.h.
Examination of recent controversies, timely problem areas, and approaches to hospital and health-care administration are emphasized. Seminars, lectures, and field trips.
80:111 Thesis: Hospital and Health Administration cr.arr.
Original study, review, and written presentation of a research area in health-care administration.
80:120 Labor Relations in Health-Care Facilities 3 s.h.
Health-manpower structure, labor law for health-care facilities, conflict management, motivational and organizational theory of labor in the health-care area.
80:122 Financial Management of Health-Care Organizations 3 s.h.
Analysis of financial management problems indigenous to health-care facilities with emphasis on current and long-term financial requirements, administrative evaluation of financial alternatives, examination of costs, budgeting, rate establishment, and financial aspects of third party payers.
80:124 Health Care in America 3 s.h.
Evolution of governmental role in the health-care system.
80:165 Contemporary Health-Care Issues 3 s.h.
Prospectives in health and medical care are presented with special emphasis on community hospitals and the evolving role of hospital trustees, trustees, administrators, and others providing patient care services within the hospital setting.
80:203 Seminar: Hospital and Health Administration cr.arr.
80:203 Advanced Hospital and Health Organization and Management cr.arr. Comprehensive course covering all phases of hospital operation and planning.
80:204 Advanced Hospital and Health Organization and Management cr.arr.
80:205 Research: Hospital and Health Administration cr.arr.
80:206 Research: Hospital and Health Administration cr.arr.
80:207 Individual Study cr.arr.
80:208 Clinical Education in Hospital Administration cr.arr. and Health Administration cr.arr.
80:209 Clinical Education in Hospital Administration cr.arr. and Health Administration cr.arr.
Continuation of 80:208.
80:206 Medical Information for Hospital and Health Administrators 3 s.h.
Restricted to selected graduate students in hospital administration and related areas such as business administration, sociology, public health, and education.
ITALIAN
(See French and Italian)
JOURNALISM
Director of School, Malcolm S. MacLean, Jr.
Office, 205 Communications Center
Associate Director, Richard W. Budd
Office, 203 Communications Center
Undergraduate Study Bachelor of Arts
The School of Journalism wants its undergraduates to get a liberal education, emphasizing broad coursework in the humanities, the social sciences, and the natural sciences.
A major objective of the student in journalism is to get a real sense of crucial human problems so that as a responsible community he will be able to contribute to their solution. Through class activity and independent study, students gain an understanding of communication processes and learn to use the principles in communicating effectively.
Recognizing the vitally important role of communication in our society, the program helps the student develop a keenly critical approach to the institutions of his society, including especially the institutions of mass communication. Students are encouraged to experiment in their work; a major purpose is to develop values for thorough investigation, careful analysis, and creative thinking.
The School of Journalism also serves as a center for research in mass communication, seeks improvement in the quality of mass communication, and participates in the preparation of teachers of journalism and communication for colleges and high schools.
Prerequisites. All majors must meet the requirements of the College of Liberal Arts (see College of Liberal Arts).
Because students graduating from the journalism program should have the broadcast possible education to enter a wide variety of positions in communication, the school encourages students to seek a double major.
Courses required of all students in journalism are 181, 182, 183, 184, and 194. The courses 181 and 182 are given only in the fall semester. Thus, students entering journalism must start these two courses in the fall of either their sophomore or junior year. General journalism majors are required to take courses 181, 182, 184, and 185. General journalism majors are those students interested in the field of journalism and communication who cannot major in journalism orques in journalism, advertising, or school journalism. They usually do not take the courses 183-184 but substitute one specific course as worked out between the student and his advisor. General journalism students have a total of 34 required courses. Journalism majors and photojournalism students have a total of 22 required journalism semester hours, advertising majors have a total of 24 required journalism semester hours and 11 semester hours in business Administration. Students teaching students have a total of 24 required journalism semester hours.
Graduate Study

Master of Arts in Journalism, The School of Journalism provides a Master of Arts program which combines general and specialized courses 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 to candidates either with or without a thesis. Those who write a thesis must meet a minimum of 30 semester hours of graduate credit, of which a maximum of 5 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 semester hours must be in 18:180 Special Projects in Mass Communication. In both cases, at least 7 semester hours of graduate credit must be taken outside of the School of Journalism.

Doctorate in Mass Communications. The communication doctorate is an interdisciplinary degree giving opportunities for work in several departments. The central objective of the program is to develop scholars who will make significant contributions to teaching and research in communication. The program emphasizes development of understanding of theoretical and operational problems in communication. A student develops skills applicable to fields such as university teaching, media, advertising, public relations, mass communications research, national and international communication systems analysis, international relations, and public relations. The program requires ability to develop effective communication strategies. The program is designed around a small core of graduate work in communication, but encourages a student to construct an appropriate program to suit his needs within the framework of basic requirements for the doctorate.

STAFF


Associate Professors: Lester G. Benet, Richard W. Budd, Harry R. Carter, Jr., William J. Zima.

Assistant Professor: Joseph MacKown, Daniel E. Castello, E. G. Carver, Malcolm D. Salter.

Instructors: Charles F. Green, Richard P. Jones, Brent D. Ruben.

COURSE DESCRIPTIONS

Primarily for Undergraduates

19:1 Communication Core and Colloquium 1 3 s.h.

Role and function of communication in society; studies of persuasion, communication, and audience-communicator relationship; verbal communication; function and design of verbal (written) communication; analysis of messages; typology of message designs; historical perspective on professional communication (oral and written); Colloquium: distinguished speakers from on and off campus. Required for all sequences. Corequisite, 19:2. First semester.

19:2 Communication System Simulation and Technology Institute I 3 s.h.

Intensive experientially grounded study of processes involved in communication, interpersonal, and mass communication in a decision-making, problem-solving context. Focus on the role of technology, techniques, and technologies associated with interviewing, reporting, copywriting, copyediting, editing, production and photography for print, broadcast, and other media. Required for all sequences. Corequisite, 19:1. First semester.

19:3 Communication Core and Colloquium II 3 s.h.

The message: function and design of nonverbal communication; cross-cultural aspects; history of pictorial presentation (photography and motion picture), Legal and ethical problems of communication; aspects of privacy and defamation; development of communication ethics of communication. Colloquium: distinguished speakers from on and off campus. Required for all sequences. Prerequisites, 19:1, corequisite, 19:4. Second semester.

19:4 Communication System Simulation and Technology Institute II 3 s.h.


19:5 Communication Core and Colloquium III 3 s.h.

The mass media: a communication systems approach; historical and philosophical analyses of media growth; social and economic controls. Media responsibilities; press theories and regulatory devices (constitutional guarantees, FCC, press council, professionalism). Colloquium: distinguished speakers from on and off campus. Required for general journalism sequence. Prerequisites, 19:3; corequisite, 19:5. First semester.

19:6 Communication System Simulation and Technology Institute III 3 s.h.

Intensive experientially grounded study of processes involved in interpersonal, interpersonal, and mass communication in a decision-making, problem-solving context. Emphasis is on skills, knowledge, and techniques associated with audience analysis, editing, marketing, advertising, public relations, research, production, management, personnel, ethics, law, time communication and social order in print, photo, and broadcast. Required for general journalism sequence. Prerequisites, 19:4, corequisite, 19:6. First semester.

19:7 Communication Core and Colloquium IV 3 s.h.

Case studies of media performance. This section will be devoted to an in-depth study of a current public issue raising mass media economics, historic and political and social issues concerning the media, and a general view of the development of the mass media. Colloquium: distinguished speakers from on and off campus. Required for general journalism sequence. Prerequisites, 19:6; corequisite, 19:7. Second semester.

19:8 Communication System Simulation and Technology Institute IV 3 s.h.


19:15 Communication: Concepts and Perspectives 3 s.h.

A general overview of communication. Open to freshmen and sophomores. An intensive study of major issues in the study of communication. Emphasis is on the role of human interaction. Students will explore themes through the classroom and group study and how these affect the development of mass communication processes; verbal communication, nonverbal communication, communication within social organizations, and the role of communication institutions in society. All levels.

19:91 Radio Production/3 s.h.

19:92 Radio Workshop/ 3 s.h.

19:96 Honors Seminar/1 s.h.

Extensive reading, preparation of papers, discussion of mass communication problems. Open only to Honors students. May be repeated to a maximum of 4 semester hours. Second semester.

19:98 Reading for Honors/1 to 3 s.h.

1:03 and discussion topics upon a problem selected by the student in mass communication. May be repeated. No credit for Honor students only. May be repeated. Both semesters.
19:105 Magazine Article Writing 2 s.h.
Fact writing. Preparation of articles aimed at mass markets. Practical analysis of markets and of effective magazine writing styles. All sessions.

19:113 Supervision of School Publications 3 s.h.
Journalism in the high school curriculum. Methods of conducting classes, editorial training, and mechanical aspects of all phases of school publications. Prerequisite: consent of instructor. First semester. All sessions. Same as Education 73:113.

19:114 Newspapers in the Classrooms of a Free Society 0 or 2 s.h.
Same as Education 73:120.

19:115 Typography 2 s.h.
Fundamentals of printing processes: type, its production, design, differentiation, and use; composition and copyfitting; layout, paper; machinery for typesetting and printing; reproduction processes. Critical standards. Laboratory. Prerequisite, consent of instructor. All sessions.

19:118 High School Advisers Workshop 0 or 1 s.h.
Same as Education 73:231.

19:119 Promotional Concepts 3 s.h.
Analytical study of marketing communication and human behavior. Special emphasis on the behavioral aspects of advertising and personal selling. Same as Business Administration 65:135. Prerequisite, 65:231 or consent of instructor. All sessions.

19:120 Advertising Theory and Planning 3 s.h.
Advising as a promotional force; emphasis on the theory, planning, and resulting strategy and tactical decisions. Prerequisite, junior standing or above. Same as Business Administration 65:137. All sessions.

19:123 Advertising Communication 3 s.h.
Theories of communication and human behavior as they apply to advertising layout. Laboratory situations are designed to give the student creative experience. Prerequisite, junior standing or above. Same as Business Administration 65:137. All sessions.

19:125 Advertising Problems 3 s.h.
Advertising as a many-sided thing—a social and economic institution, a business, a marketing function, and a form of mass communication. Prerequisite, 19:120 or Business Administration 65:137. Second semester.

19:127 Elements of Television 3 s.h.
Same as Speech 36:127. Preregistration advised.

19:130 Photojournalism I 2 s.h.
Communication through pictures. News values in pictures; technical qualities in photography. Use of photography as a communication medium in advertising, public relations, and editorial journalism. Exposure to professional photography in the context of photojournalism. Laboratory. Prerequisite, junior standing in journalism and/or consent of instructor.

19:130 Photojournalism II 2 s.h.
Continuation of 19:130. Study of photography as a communications tool for all forms of the mass media. Laboratory assignments. Prerequisite, consent of instructor. Second semester.

19:131 Photography Workshop 2 s.h.
Advanced photographic reporting. Open to journalism majors only. Individual instruction in planning and executing photography assignments and evaluation of student work. Laboratory may include work on campus publica-

19:132 Introduction to Broadcasting 3 s.h.
Same as Speech 26:106.

19:133 Practicum in Human Communication 3 s.h.
Seminar focusing on interpersonal and intergroup communication. Opportunity to participate in and design individual and group communication experiences which illustrate communication concepts. Examine various analytic approaches which may be useful in understanding the behaviors observed. Prerequisite, consent of instructor. All sessions.

19:134 Communication Systems Design 1 to 4 s.h.
Rebuilding real life systems and then attempting to model those systems in order to determine which elements varied in what work one could produce beneficial changes in the real life system. Prerequisite, consent of instructor. All sessions.

19:137 Radio-Television News 2 s.h.
Reporting, writing, editing, and presenting news for radio and television. Selection of broadcast news to other news media. Ethical and legal problems peculiar to broadcast journalism, including Section 313 and "fairness doctrine." Trends and prospects for emerging journalistic forms and responsibilities of practitioners. Prerequisite, consent of instructor. All sessions.

Advanced study and practice in WUTW newsroom. Covering basics and reporting news, writing and editing original copy, using recorders. Laboratory practice in television production and experiment with techniques. Production of news background and documentary programs. Prerequisite, 19:137 and consent of instructor. All sessions.

19:141 Law of Mass Communication 2 s.h.
Law which governs and protect privileges and duties, and responsibilities of mass media. Constitutional law, libel, privacy, and governmental regulations pertinent to the press. Prerequisite, junior standing or above. All sessions.

19:148 Advertising Media 2 s.h.
Marketing strategy and tactics involved in the process of creating advertising campaigns. Prerequisite, 19:120 or Business Administration 65:137.

19:151 Advertising Sales and Promotion cr.arr.
Preparation and analysis of sales promotional material. Development of sales promotion materials. May be repeated to a maximum of 4 semester hours. Prerequisites, 19:120 or Business Administration 65:137 and consent of instructor. All sessions.

19:155 Journalism Practicum cr.arr.
Internship course open to students working for or ex- pecting to work for local newspapers, magazines, radio and television stations, freelance, etc., during the semester. Provides a forum for discussion of student work with review and analysis by appropriate specialist. Credit may be repeated for a total of 6 semester hours. Prerequisite, consent of instructor. Journalism majors must have completed 128, except for summer session enrollment. Newsroom must have completed requisite re- quirements. All sessions.

19:159 Mass Media and the Great Issues 3 or 4 s.h.
Major concern with citizen evaluation of major current issues and problems, and impact of the mass media on problem coverage, social planning, and social change. Open to freshmen and to seniors. Summer sessions.

19:165 Communication of Social Issues 2 s.h.
Critical analysis and review of performance of the mass media. Development of criteria for judging. A study of
19:168 Seminar: Special Topics in Journalism 3 s.h.
Prerequisites, junior standing or above and consent of instructor. First semester and summer session.

19:169 Seminar: Special Topics in Communication 3 s.h.
Continuation of 19:168. Prerequisite, consent of instructor. Second semester.

19:170 History of Books and Printing 2 s.h.
Historical survey of books and collateral forms; their physical, technical, and cultural qualities, from primitive archetypes to contemporary and possible future developments. Second semester.

19:171 History of Mass Communication 3 s.h.
Open to seniors. Study and research in development of mass communication media in America and their interrelationship with society. Prerequisite, junior standing or above. All sessions.

19:172 Graphic Design and Production 2 s.h.
Traditional and contemporary practices and standards in editing, illustration, layout, paper, coloring, binding, distributing books, magazines, news-epapers; copyright; the trade. First semester.

19:173 Cinematography Techniques 3 s.h.
Same as Speech 36:123. Prerequisites advised.

19:174 Cinema Production 3 s.h.
Same as Speech 36:136.

19:175 Fundamentals of Public Relations 2 or 3 s.h.
Current public relations practices as related to business, institutions, and associations. Utilization of research results and evaluation of procedures. Examination of mass media and media selection. Emphasis on position of public relations practice in society. First semester. All summer.

19:176 Case Studies in Public Relations 2 or 3 s.h.
Public relations problems of business, institutions, and associations with evaluation of actual and/or proposed methods of solution. Examination in depth of selected case studies of significance. Prerequisite, 19:175. Second semester.

19:177 Comparative Foreign Communication Systems 3 s.h.
Comparative communication systems in major countries and world areas; sociopolitical, economic, cultural, and historical perspectives. The Communist countries, the Western democracies, and Africa, Asia, and Latin America are covered. Prerequisite, junior standing or above. First semester.

19:180 Special Projects in Mass Communication 1-2 s.h.
Research and extended readings to fit the special needs and interests of the student. Course is to all students in good standing with permission of instructor. All sessions.

19:181 Advanced Television Production 3 s.h.
Same as Speech 36:181.

19:183 Current Magazine Practice 3 s.h.
Role of the magazine in America today; organization of a magazine; various magazine staffs and publishing operations; analysis of editorial and advertising content; identifying mass and group audiences. First semester. Prerequisite, junior standing.

19:187 Picture Editing 3 s.h.

19:200 Introduction to Master's Study 2 s.h.
Principles and methods of scholarship, good writing. Journalism education, the field of journalism. All sessions.

19:201 Master's Seminar 2 s.h.
Communication theory, research methods, and research design for master students. All sessions.

19:205 Practicum for Master's Candidates 3 s.h.
Practical laboratory practice. Registration is in one of nine sections: 1) newspaper journalism, 2) magazines, 3) public relations, 4) radio, 5) television, 6) advertising, 7) journalism education, 8) photojournalism, or 9) research. All sessions.

19:211 Seminar: News-Editorial Problems 2 s.h.
Ethical problems affecting news gathering presentation, and publication. Second semester.

19:214 Seminar: Research in the History of Mass Communication 3 s.h.
Comprehensive training in research and preparation of articles on history of mass communication from general study to final publication. The historical method in communication research. Prerequisite, 19:171 or equivalent. Second semester.

19:218 Communication in Authoritarian Societies 2 s.h.
Contemporary comparative analysis of the concept, theory, function, structure, organization, and role of communication systems in authoritarian and communist countries. Communications are examined in their socio-political, economic, and cultural perspectives and contexts. First semester.

19:219 Communication in the Developing Countries 2 s.h.
Contemporary comparative analysis of the location, structure, and role of the communication systems of the developing countries of Africa, Asia, and Latin America. Emphasis is on communication in national development. Second semester.

19:220 Communication Systems of the Western Democracies 2 s.h.
Contemporary comparative analysis of the concept, theory, structure, organization, and role of communication systems in the libertarian societies of the Western democracies. In their social, political, economic, cultural, and historical settings. Summer session.

19:231 Problems in International Communication 3 s.h.
Socioeconomic and political factors affecting international communication and relations in the context of world affairs; communication systems in national development; international and cross-cultural communication structures and theory; images and values; mass persuasion; laws and agreements; information research and reporting, fact and effect, censorship, and language and literacy. Second semester. Prerequisite, consent of instructor.

19:232 Seminar: Advertising 2 s.h.
Advanced study of advertising, stressing research and theory. Prerequisite, graduate standing and consent of instructor.

19:233 Seminar: International Communication 3 s.h.
Advanced study and research in theory and problems in political, economic, and cultural mediation and cross-cultural communication. Concepts, values, structure, function, performance, and effect within the context of social, economic and political environments, cultural diff-
letters

118:101 Masterpieces of Western Literature in Translation 2 s.h.
118:102 Masterpieces of Western Literature in Translation 2 s.h.
106:101 European Drama in Translation 2 s.h.
106:102 European Poetry in Translation 2 s.h.
106:103 European Novel, 1580 to the Present 1 s.h.

Same as English 8:146.

Library Science

Director of School, Frederick Weissman
Office, 852 Jessup Hall

The basic aim of the School of Library Science is to prepare qualified college graduates for professional careers in librarianship. The Master of Arts in Library Science is the accepted preparation for professional positions in public, school, college and university, and special libraries. The school offers this degree in a 28-month-hour program, a full calendar year course of study which covers all phases of the profession and gives the student an opportunity to specialize in his major field of interest.

Library Facilities

The University library system consists of a main library and fourteen departmental libraries with a book collection of approximately 1,000,000 volumes. There is also a 50,000 periodical rack containing 4,000 publications. The library science education is continually expanding the already strong collection of materials in library science and related fields. (See Libraries.)

In addition to the University Libraries, students have access to a variety of libraries in Iowa City and nearby communities for special purposes: the State Historical Society Library in Iowa City, the Iowa City and Cedar Rapids public and school libraries, Cos, Cornell, and Ginnell College Libraries, and by arrangement, the Herbert Hoover Presidential Library in West Branch, Iowa.

Undergraduate Study

There is no undergraduate major in library science. Undergraduate students may enroll in the five library science core courses: 21:352 Information Science (1), 21:353 Cataloging and Classification, 21:354 Selection of Library Materials, 21:356 History of Libraries and Librarianship, as well as 21:352 Children's Literature, 21:356 History of Children's Books, and 21:358 Librarianship for Adolescents. If later accepted in the graduate program, students will be allowed to substitute advanced library science courses for those already taken to meet course requirements for their degree.

Master of Arts in Library Science

Admission requirements. Applicants for admission to the M.A. program must:

Admission requirements. Applicants for admission to the M.A. program must:
Certification in School Librarianship

Students who desire certification as school librarians in addition to teacher certification may either earn the M.A. in Library Science as described above, or earn a school librarian's certificate. This is a 36-semester-hour baccalaureate degree program which combines undergraduate and graduate coursework, and carries a more liberal policy toward transfer and correspondence credits than the M.A. program.

Admissions to certification program. This program is open to both upperclass undergraduates and graduate students. Undergraduates, however, will be unable to complete the program until after receiving their B.A. degree, because some of the courses are at graduate level. Graduate students must meet the admission requirements of the Graduate College. The program can be completed through summer terms.

Requirements for certification. The certification program requires the completion of 36 semester hours of coursework in which a grade-point average of 2.0 for undergraduate work and 2.5 for graduate work must be earned. 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 advanced standing secondary school teaching certificate as specified by regulations of the Illinois State Board of Education. All candidates for certification must complete the following coursework requirements:

1. Required courses (18 semester hours):
   a. 221/201 References 1, 221/202 Cataloging and Classification, 221/30 1 Selection of Library Materials, 221/454 History of Libraries and Librarianship.
   b. One of the following library professional courses: 221/201 The Public Library, 221/301 The College and University Library, 221/360 School Media Center Administration.
   c. One of the following bibliography courses: 221/241 Bibliography of the Humanities, 221/242 Bibliography of the Social Sciences, 221/343 Bibliography of the Sciences.

2. Elective courses (15 semester hours):
   Most students will be expected to take the remainder of their elective hours in library science courses. However, when career objectives indicate, and with the consent of the advisor, the student may take elective hours in other university departments, especially in closely related areas such as computer science, education, individual, urban and regional planning, municipal government, etc.

Assistant requirements. Normally the program requires two semesters and one summer resident study; or in the case of students attending summers, a minimum of four summer sessions.

Thesis and nonthesis programs. The library school offers two plans for the M.A. The requirements are identical except that under the thesis plan 6 semester hours are earned for a research project; this work replaces two elective courses in library science. For the majority of the students, the nonthesis program with the additional coursework is recommended. Students with considerable library experience, strong undergraduate work in library science, and other qualifications in which they are especially interested may elect to write a thesis, with approval of the director.
functions and objectives of the media program, planning and evaluating programs and facilities, financing and budgeting, personnel management. Prerequisite, 21:154.
21:334 Library Services to Children
21:334 Library Services to Children
and Young Adults 3 s.h.
Roles, problems, and needs of library service in the elementary and secondary schools and of library service with children and young adults in the public library. Pre- requisites, 21:333 and cataloging instrument.
21:341 Bibliography of the Humanities 3 s.h.
Special reference works and selection aids in each of the major subject fields emphasizing the humanities. Included are general reference works of broad scope whenever pertinent. Subjects studied include fine arts, literature, music, philosophy, religion, and other closely related areas. Prerequisites, 21:340.
21:343 Bibliography of the Social Sciences 3 s.h.
Special reference works and selection aids in anthropology, business, economics, education, geography, political science, psychology, and other closely related areas. Prerequisites, 21:341.
21:344 Bibliography of the Sciences 3 s.h.
Special reference works and selection aids in each major subject field. Sources used in building and selecting collections and in providing information in the field. Periodical and serial literature and its use and control through abstracts and indexes. Prerequisites, 21:340, 21:344.
21:345 Introduction to Information Science 3 s.h.
An introduction to the methodology and techniques of information science and their application in all kinds of libraries. Includes a survey of current practices and problems relating to the processing, storage, and retrieval of information by manual, mechanical, and electronic means. Prerequisite, 21:154.
21:351 Advanced Reference 3 s.h.
Subject approach to major reference sources especially in the fields of law, medicine, business, and urban areas. A substantial amount of time is devoted to a study of city, state, United States, government documents, and the New York Public Library and methods of reference service. Prerequisites, 21:350, 21:351.
21:352 Advanced Cataloging 3 s.h.
21:359 Advanced Bibliography 3 s.h.
National and trade bibliographies of the world, with con- struction on those of the United States. Great Britain, France, Germany, and Russia, considered from the re- quisition and subject bibliography viewpoint. Prereq- uisites, 21:350.
21:355 Publishers and Publishing 3 s.h.
21:360 Problems in College and University Librarianship 3 s.h.
Development and evaluation of collections, personnel, buildings, and equipment. Field research in area aca- demic libraries. Prerequisites, 21:360.
21:361 Problems in Public Librarianship 3 s.h.
Critical evaluation of the ingredients of public library service: personnel, materials, buildings, Case studies, field research in area public libraries. Prerequisites, 21:360.
21:362 School Media Center Problems 3 s.h.
Seminar in the analysis of special problems encountered 21:151 Reference I 3 s.h.
Consideration of the landmark bibliographic and refer- ence works common to most library collections, including dictionaries, encyclopedias, periodicals, yearbooks, directories, and handbooks.
21:152 Cataloging and Classification 3 s.h.
Principles and rules of descriptive and subject catalog- ing, and the Dewey Decimal classification. Special emphasis on the use of catalog cards and the development of cataloging services.
21:153 Selection of Library Materials 3 s.h.
Criteria for evaluating and selecting print and nonprint materials; the use of limitations to evaluate selected aids and review media; relationships of educational media with library services; the social impact of selected materials; censorship, criticism, review, acquisition process, and collection development.
21:154 History of Libraries and Librarianship 3 s.h.
Librarianship as a profession. Development of library service from antiquity to the present with emphasis on library service in the United States and the library as a social institution. Overview of types of libraries to aid the stu- dent in selecting his field of specialization; current library trends and agencies.
21:162 Practicum in Libraries 3 to 6 s.h.
21:193 Literature for Adolescents 3 s.h.
Same as Education 73-193 and English 81:193.
21:201 Literature and Storytelling for Younger Children 3 s.h.
- Same as Education 73-201.
21:212 Library Services to Adults 3 s.h.
Planning and delivery of library services programs for adults aimed at adult learning and reading activities and adult reading interests. Books are read and discussed in the field of fiction and various nonfiction areas. Varied bibliographic and review sources are considered. Aspects of personal attention and services to individuals and collections and services for adults. Prerequisites, 21:153.
21:223 Multi-Media Concept in Libraries 3 s.h.
The role of the multi-media approach in providing printed materials in school, public, and academic libraries.
21:233 History of Books 3 s.h.
21:231 The Public Library 3 s.h.
21:232 The College and University Library 3 s.h.
History, objectives, and function of the library in higher education. Designed to supply knowledge of the internal organization and administration of academic libraries of several kinds and sizes. Problems of large-scale book se- lection, acquisition, and technical processes. Prerequisites, 21:154.
21:333 School Media Centers 3 s.h.
Administration 3 s.h.
Administration and organization of the media program at the individual school and system levels. Includes
The program of the undergraduate major in linguistics is to provide a broad foundation in linguistic theory and related disciplines, training in the descriptive analysis of languages, and intensive study of a specific language other than the student's native language. The major in linguistics is flexible enough to serve the needs and interests of a variety of students. Students who wish to prepare for college and university teaching careers in languages and linguistics, the undergraduate major in linguistics constitutes preparation for graduate work.

The Master of Arts program in linguistics provides graduate training in general linguistics for students from a variety of academic backgrounds who have an interest in languages and the theory of language. The program is adaptable to the needs of students who plan to pursue further graduate study in linguistics or related fields, of students who wish to teach at the community college level, or of students who wish to enter their undergraduate training in related fields (e.g., language teaching or anthropology) with specialized training in linguistics. Students in the graduate program are also open to qualified students who are taking courses in their fields.

The program of study leading to the Ph.D. degree in English with major in English linguistics combines a thorough foundation in linguistic theory and the methods of linguistic research with intensive study and research in the structure and history of the English language and some study of English and American literature. Normally the holder of such a degree would follow a career of teaching and research as a linguist in a university English department, but his training under this program might well lead him to other related directions.

The Ph.D. in Cultural Anthropology and Linguistics prepares the student for professional teaching and research in the linguistic and the nonlinguistic aspects of cultural behavior, and the nature of the relationship between them. The program consists of three years of course work and research, with two years of interdisciplinary courses, and in most cases, a period of field work.

Students majoring in other disciplines than linguistics which are concerned with language or with symbolic systems (e.g., for example, in the classical and modern literatures and literatures, speech science, anthropology, psychology, or mathematics) who are interested in complementing the study of their major subject--either the linguistics of the discipline which they are studying or the linguistic component of another field--are encouraged to seek the advice of students in linguistics who have interests in their programs should consult with the departmental advisor. In the special case, the approval of the departmental advisor is required, but the student should seek advice about appropriate courses for his particular needs.

Admission

Admission to a program for the B.A. or the M.A. in Linguistics by approval of the department of Linguistics. Interested students should consult with the chairman of the department in such programs and the program in the University. Students concentrating a major in linguistics will be required to pass a test in a language at the freshman year. Students who are majoring in areas other than linguistics but who are interested in including linguistics in their programs should consult with the chairman. In the special case, the approval of the departmental advisor is required, but the student should seek advice about appropriate courses for his particular needs.

Students who intend to pursue the Ph.D. in English with major in English Linguistics are admitted through the Department of English; those who wish to enter the Ph.D. program in Cultural Anthropology and Linguistics should consult the program advisor: Professor Jane Holm (Anthropology) and Robert Howren (Linguistics). Undergraduate major requirements. The course of study of the B.A. degree in linguistics consists of extensive study of a language other than the student's native language, a series of prescribed courses in linguistics, and a minimum number of courses in fields related to linguistics. In each semester of his senior year, the student is required to enroll in the one-semester-hour course 305:300 Survey of Current Research in Linguistics.

Language. At an appropriate time before completing his academic work for the B.A. degree, the candidate is required to demonstrate, in an examination given by the appropriate department, proficiency in one language other than his native language; this is based on the extent of practical mastery of the chosen language which, in the opinion of the department concerned, is adequate for the pursuit of graduate study in that language, whether or not the candidate intends to continue graduate study. Normally the examination in the candidate's primary field is replaced by the course, no credit is required for the course, and the course does not count toward the major or the minor. Normally the student with strong high school preparation in his chosen language would be able to meet this requirement in a shorter time than the student with little or no preparation pre-
Linguistics

Courses

1. Linguistics
101:200 Introduction to Graduate Study in Linguistics
101:256 Introduction to Diachronic
An approved sequence of courses in linguistic theory and analysis, including, each semester of residence, 103:350 Survey of Current Research in Linguistics (3.00)

2. English Language
6:205 Elementary Old English
6:260 Middle English Language and Literature
6:261 The Structure of English
6:288 History of British and American English
6:285 The Teaching of English as a Foreign Language

3. Literature
5:031 Havelock
At least one course in Chaucer
At least one course in Shakespeare
An approved sequence of courses in a literary period of the student's choice

4. Advanced courses in some other Indo-European language or languages, e.g., Gothic, Old Norse, Old French, Vulgar Latin

5. An approved program of courses outside of but related to the main program of study (for example, appropriate courses in history, philosophy, anthropology, etc.).

Communication examinations. The comprehensive ex-
amination for the degree consists of a written and an oral part.
In the written portion of the examination, the stu-
dent is examined on (a) general linguistics, (b) the structural study of English (including American dia-
lектs), (c) the history of the English language, and (d) the history period elected. The oral examination will
range over all these areas.

Observation: The examination should treat some topics in the history of English, in the structure of English at some level of historical development or in any of its
dialects, or in applied English linguistics.

Doctor of Philosophy in Cultural Anthropology and Linguistics

The entering candidate must demonstrate reasonable proficiency in a language other than his native tongue.
In the course of the program he must demonstrate com-
prehensive knowledge of a research tool (another language, statistics, systematic biology, etc.), pass a comprehensive ex-
amination in cultural anthropology, linguistics, and eth-
obotanical theory and techniques. The student must also
pass a dissertation course in linguistics required in the pro-
munity of Anthropological and American Indian, 103:115, Linguistic Analysis I, 103:115, Linguistic Analysis II, 103: 118, and a course in comparative linguistics or historical linguistics. Basic courses required in anthropology are 3 semester hours in the field of anthropological history, theory, or methods, Social Anthropology, 113:140, 3 sem-
ester hours of an additional course in cultural anthro-
pology dealing in social institutions, and 3 semester hours of an ethnographic area course. Language and Culture, 113:140(120), Field Methods in Ethnolinguisitics, 120:270(120, 120:270), and Ethnolinguistics Theory, 120:271(120, 120:280), are required interdisciplinary courses. By student option or to meet requirements set by staff evaluation and commit-
tee, the student shall add additional semester hours in

English- and cultural anthropology to complete a
minimum of three years of graduate academic work.

The thesis in the major field of the Ph.D. program need not have taken an undergraduate major in either
anthropology or linguistics. Unless a student has taken

the graduate equivalents, introduction to Graduate
Study in Linguistics, 103:350, and General Anthropology, 113:16, must be made up as deficiencies.
A student in the program may first take the M.A. degree in either
anthropology or linguistics before proceeding to the joint
Ph.D. program. Previous work in one of the two departments at
the M.A. level may be applied toward fulfilling the course
requirements in that division of the joint Ph.D. program.

STAFF


English Language: Robert W. Washab., William J. Moll.

Assistant Professors: Edwin Konwinski, Mateo Soga.

Instructors: Larry W. Martin, Joseph McElvain.

Interdepartmental faculty: John Y. Bowers (Speech), Virgil S. Creathch (Classical), James F. Cordis (Speech Physiology and Audiology), Rudolf Dosen (German), Arthur Flick (Computer Science), George Gerstner (Bantan), Ephraim S. Hadiemend (Computer Science), Kenneth Mold (Speech Pathology and Audiology), Richard O'Gorman (French and Italian), Richard M. Ruhe (German), Joseph Semple (Spanish and Portuguese).

Course Descriptions

103-10 English for Foreign Students

Training in spoken and written English for non-native speakers of the English language. 3.00

103-100 Introduction to Linguistics

A variety of topics in general linguistics. Same as English 6350. 3.00

103-110 Introduction to Language and Communication

Methods and research in the study of language and communication theory. Same as Speech 6366. 3.00

103-110 Articulatory and Acoustic Phonetics

Articulatory and acoustical phonetic theory, intensive prac-
tice in phonetic transcription. Same as English 8350. 3.00

103-113 Linguistic Analysis I

Phonological theory: procedures for analyzing and de-
scribing the phonological structure of languages. Same as English 8350. Prerequisites: 103:110 or equivalent. 3.00

103-112 Linguistic Analysis II

Principles and methods for analyzing and describing the
phonological structure of languages. Same as English 8557. Prerequisite: 103:100 or equivalent. 3.00

103-113 Linguistic Field Methods

Surveying and collection of language data in the field; theory and practical problems; extensive practice in eliciting data from informants. Same as English 8660. Prerequisites: 103:110, 111, 112. 3.00

103-114, 115 Introduction to Language

Data Processing 3.00 each Writing computer programs to process language data. No knowledge of linguistics or mathematics required. No prior knowledge of computers or programming is assumed. The course will focus on analyzing a problem, conceptualizing an explicit procedure to handle the prob-
lem, embodying the procedure in a computer program, and getting the program to run accurately. 3.00

103-120 Historical and Comparative

Linguistics 3.00

Principles of linguistic change, the comparative method and
the genetic classification of languages. Same as English 8556. Prerequisite: 103:100 or equivalent. 3.00

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103.215 Mathematical Linguistics 3 s.h.
Same as Computer Science 252C-257.

103.216 Dialectology 3 s.h.
Linguistic geography and the comparative study of dialects; structural and generative approaches to dialectology.
Same as English 8:261. Prerequisite: 103:100 or equivalent.

103.219 Field Methods in Ethnolinguistics 3 to 5 s.h.
Research methods in ethnolinguistics. Emphasis upon techniques of collecting field data, elicitation and analysis tools, and research design.
Same as Anthropology 113:276. Prerequisite, consent of instructors.

103.220 Ethnolinguistic Theory 3 s.h.
Cultural and linguistic dimensions of human communica-
tion. Same as Anthropology 113:271. Prerequisite, consent of instructor.

103.231 History of the German Language 3 s.h.
Development of the German language and dialects from prehistoric times to the present.
Same as German 19:214. Same as German 8:226. Prerequisite, one Old Germanic language.

103.240 Middle English Language and Literature 3 s.h.
Same as English 8:203.

103.245 Early Modern English Language and Literature 3 s.h.

103.250 Elementary Old English 3 s.h.

103.251 Old Norse 3 s.h.
Old Icelandic, with some consideration of Old Danish, Old Swedish, and Old Norwegian. Reading of selected texts. Same as English 8:206.

103.252 Middle High German 3 s.h.
Grammar of the High German literary language from the 12th to 16th centuries. Selected readings from literature of the period. Same as German 19:233.

103.253 Old High German 3 s.h.
High German dialects in their earliest recorded forms and cultural-political, and social influences exerted upon them from within and without the German-speaking area (9th to 11th centuries). Readings from literature of the period. Same as German 19:233.

103.254 Old Saxon 3 s.h.

103.255 Gothic 3 s.h.
Gothic and historical development of the Germanic languages. Introduction to comparative Indo-European linguistics. Same as German 19:247.

103.256 Old French 3 s.h.
Same as French 9:231.

103.257 Old French 3 s.h.
Same as French 9:232.

103.258 Old Provencal 3 s.h.
Same as French 9:235.

103.259 Old Provengal 3 s.h.
Same as French 9:236.
103:260 Old Spanish I 3 a.h.
   Same as Spanish 223-223.
103:261 Old Spanish II 3 a.h.
   Same as Spanish 323-323.
103:270 Experimental Phonetics 3 a.h.
   Scientific analysis of speech and voice; major laboratory
   instruments and techniques in current use are described
   and applied in laboratory exercises. Status of current
   knowledge is summarized and discussed. First semester:
   Spanish 201/202; American Speech Pathology and Audiology 321/322.
   Prerequisite: consent of instructor.
103:271 Experimental Phonetics 3 a.h.
   Continuation of 103:270, which is prerequisite.
   Same as Speech Pathology and Audiology 323/323.
103:272 Verbal Processes and Language Behavior 3 a.h.
   Fundamental variables affecting acquisition, transfer, and
   retention of verbal behavior, including the role of lan-
   guage structure and language habits. Same as Psychology 311/311.
103:274 Introduction to Psycholinguistics 3 a.h.
   Study of the relationships between linguistic structure
   and psychological variables affecting language use. Is-
   talled topics may include information theory and statistics
   of language, language universals, semantics, language
   acquisition, bilingualism, and animal communication.
   Same as Speech Pathology and Audiology 221/221. Fall semester.
103:275 General Experimental Phonetics 4 a.h.
   Survey of current research in linguistics 1 a.h.
   Weekly discussions by staff and students of current
   journal literature in the field of linguistics. Required
   of all graduate students in linguistics for each semester of
   residence.
103:512 Seminar: Problems in Linguistics 1 a.h.
   Intensive study of selected theoretical and practical prob-
   lems. Topic varies each year. Same as English 333/333.
103:280 Seminar: Psycholinguistics 3 a.h.
   Selected topics in psycholinguistics. Research and theory.
   May be repeated for credit. Same as Speech Pathology and
   Audiology 333/333. Prerequisite: consent of instructor.
103:531 Seminar: German Linguistics 3 a.h.
   Prose and poetry of the sixteenth and seventeenth cen-
   turies. Same as German 134/134.
103:240 Seminar: Modern German 3 a.h.
   Current problems. Same as German 134/134.
103:270 Seminar: Experimental Phonetics 2 a.h.
   Same as Speech Pathology and Audiology 333/333. Prereq-
   usites: 103:270, 271.
103:275 Seminar: Communication Research, Language
   Acquisition 2 or 3 a.h.
   Same as Speech 333/333.
103:387 Problems in English Linguistics 3 a.h.
   Directed research in the structure and/or history of the
   English language. May be repeated for credit. Same as
   English 387/387.
103:250 Special Projects 3 a.h.
103:400 Master's Thesis 3 a.h.

DIVISION OF MATHEMATICAL SCIENCES
Office, 109 MacLean Hall

Through its three departments, Computer Science, Mathematics and Statistics, the Division of Mathematical Sciences offers a variety of programs of study leading to

MATHMATICAL SCIENCES

the B.A., M.S., and Ph.D. degrees. The training provided contributes to the preparation of students for a wide variety of careers ranging from creative scientific re-

search to industrial technology. The division has a com-

prehensive undergraduate program, a minor program, and a professional program enabling students who seek a minor in mathematical sciences to plan a program which will lead (and may include) advanced work in one or more of the departments of the division. In addition, to satisfy the general require-

ments of the College of Liberal Arts, it is necessary that a student complete the requirements of one of the programs listed below. Credit may be transferred to other institutions, but transfer students must take at least six months of 8 semester hours' work in each division. Each undergraduate student who chooses mathematical sciences as a major subject will be assigned an advisor in the division who will assist him in the planning of his total program. Such students are exempted from the general education curriculum and shall choose electives according to their major. Those who plan to undertake graduate study in the mathematical sciences should satisfy the language requirements, which for most programs are French, German, or Russian. Such a student would do well to include a second of the three languages as an elective. The total program of each department begins in the (divisional) undergraduate program, so that a student who anticipates doing advanced work in one of the departments of the division should consult the following program descriptions.

Program A: Applied Mathematics

It is recommended that undergraduates who wish to concentrate in applied mathematics or who wish to do graduate work in this area satisfy the requirements of this program.

All students in this program must take 220:552 Elements of Group Theory, 220:553 Functions of Analysis, 220:570 Numerical Analysis, and three of the


Other courses in the sciences, in courses such as 220:533 and 220:540, and courses in computer science and programming are optional.

Program B: Computer Science

Students who plan to do graduate work in computer science should gain a broad background in several areas, each of which will lead to a specialization and/or consulting in computer science must complete the fol-

lowering courses in computer science: 220:552 Introduction to Computers and Programming I, 220:553 Introduction to Computers and Programming II, 220:540 Introduction to Programming and Data Struc-


In addition each undergraduate student must complete a four-course sequence in at least one field outside the division relevant to computer science. Possible such fields are, for example, engineering, physics, business administration, and economics. Since much supporting knowledge is required in the computer science, each student should be guided by his advisor. To the extent that the science system, each student should be recommended.

Program C: Mathematics Education

Students who are preparing for a career in high school teaching must take 220:552 or its equivalent before undertaking for Mathematics 103:120, 103:121, and 103:123, and 220:524. Teaching (Restratin 71:20, 212). They may be counted as a regular in mathematies, or at least 30

course equivalents must be completed in courses numbered 101-220. 220:120 and 220:123 may not be counted among the 30

course equivalents, and/or with a minor in mathematics which requires 34

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semester hours of courses numbered 225-39 or higher, including 225-59 and at least 4 semester hours of calculus. For special requirements for teacher certification, see College of Education.

Students are urged to select additional courses in each of the following fields at their program permits: algebra, analysis, applied mathematics, statistics, analysis, topology, and computer programming. For details on the Mathematics Education program are Dr. H. V. Price and Dr. H. Zevski.

Program D: Pure Mathematics

It will be recognized that undergraduates who wish to acquire a broad foundation in the theoretical aspects of mathematics or who plan to do graduate work in pure mathematics satisfy the requirements of this program.


Program E: Statistics, Probability, and Actuarial Science

Students concentrating in these fields will be required to complete the basic undergraduate courses 225-25, 225-28, or 225-28 or their equivalents. In addition they must earn a minimum of 16 semester hours in courses offered by the Division of Mathematical Sciences and numbered 100 or above. At least three courses offered by the Department of Statistics must be among these advanced undergraduate courses. Suggested courses for such students are the following. Theoretical Statistics and Probability: 225-153, 225-154, 225-158, 225-155; Applied Statistics: 225-165, 225-194, 225-157, 225-159; Actuarial Science: 225-154, 225-158, 225-173.

Program F: Special Program

Recognizing the over-accumulated number of disciplines in which mathematical concepts and techniques are important tools, and the inter-disciplinary work, the Division of Mathematical Sciences is willing to develop programs leading to a major (or minor) in mathematical sciences for those students who wish to explore mathematical sciences in an area outside of the division. The student is expected to receive approval of the Division of Mathematical Sciences for the course of study. The student is expected to acquire, in at least one area of mathematics, a depth of understanding equivalent to that obtained in the above programs. In addition, the student will be recommended to the student in some department outside of the division in which it is apparent mathematics is a useful tool. His knowledge of economics, linguistics, political sciences, and psychology.

COMPUTER SCIENCE

Chairman of Department, Gerard P. Woog
Office, 111 MacLean Hall

Computer science is a mathematically based discipline concerned with the study of information. Since the existence of the digital computer makes the execution of algorithms and the manipulation of information possible, computer science is concerned with the digital computer in a one-to-one way. Thus the computing scientist will be informed on engineering aspects of computer science with an emphasis on the applications of computer. 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. So as to provide the broadest possible background for the student, it is expected that the digital environment of the student be as varied and broad as the individual needs of the student. However, a certain core of courses should be generally 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 goal, then the student may be better served by taking his degree in that other area with a heavy concentration of courses in computer science.

Undergraduate Program

The requirements for the B.A. degree in mathematical sciences concentrating in computer sciences are stated as Program F in the description of the division. Students who intend to seek an M.S. or Ph.D. degree in computer science will be expected to have some preparation.

Tool Courses

In many disciplines a prerequisite to advanced study and research is a comprehension of the use of a digital computer. The faculty of this department endorses the study of computer science by graduate students so as to gain the necessary proficiency in the use of a computer. However, this department will not certify completion proficiency in the use of a computer. Instead, the department which supervises a graduate students will certify proficiency in the use of a computer. Instead, the computer user is not expected to have all the skills necessary for the use of a computer. However, the department which supervises the student will certify proficiency in the use of a computer.

Certain sequences of courses are recommended as a basis for gaining proficiency in the use of the computer.

Sequence 1

For students who need mathematical as well as computer training:

225-115, 105 Mathematical Fundamentals for Computer Users I and II, 3 semester hours each. These two courses, enrolling a college algebra prerequisite, cover computer programming in FORTRAN, algorithms of differential and integral calculus, numerical methods, matrix algebra, and other topics. The student is expected to acquire, in at least one area of mathematics, a depth of understanding equivalent to that acquired in these two courses.

Sequence 2

For students wishing to acquire a greater programming proficiency:

225-103, 104 Programs and Programming I and II, 2 semester hours each. These courses are identical in content with 225-59 and 57, except that the problems are more difficult and the course is designed to meet the needs of those who are not familiar with the computer use but have become important. The student is expected to acquire, in at least one area of mathematics, a depth of understanding equivalent to that acquired in these two courses.

Graduate Program

Although the plan of study of each advanced degree student is individually arranged to fit his needs, each student will be assigned a program committee, which will consist of three faculty members, one of whom will be the student's advisor. This committee will have a particular student's needs and interests in mind. The specific requirements for the M.S. and Ph.D. degrees shall be:
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 equivalency of the courses listed above in Program B of the Division of Mathematical Sciences, he may be expected to complete these courses prior to admission to graduate courses for which these are prerequisites.

Requirements. Upon admission, the chairmain 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:

1. For the M.S. candidate not intending to seek a Ph.D. degree:
   a. Computer Science
      221/222 Advanced Computer Organization 3 h.
      223/224 Programming Languages 3 h.
      225/226 Introduction to Computation Theory 3 h.
      227/228 Problems in Computer Science 3 h.
      Additional computer science courses 3 h.
      Mathematics
      231/232 Linear Algebra 3 h.
      235/236 Numerical Methods 3 h.
      237/238 Numerical Solutions of Differential Equations 3 h.
   b. Any one of the standard master's examinations offered by the mathematics or statistics department.
   c. The defense of the thesis will be required in addition to the comprehensive examination.

2. For the M.S. candidate intending to seek a Ph.D. degree:
   a. Computer Science
      221/222 Advanced Computer Organization 3 h.
      223/224 Programming Languages 3 h.
      225/226 Introduction to Computation Theory 3 h.
      227/228 Problems in Computer Science 3 h.
      229/230 Automata Theory I 3 h.
      229/230 Automata Theory II 3 h.
      Additional computer science courses 3 h.
      Mathematics
      231/232 Linear Algebra 3 h.
      235/236 Numerical Methods 3 h.
      237/238 Numerical Solutions of Differential Equations 3 h.
   b. Any one of the standard master's examinations offered by the mathematics or statistics department.
   c. The 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.

Requirements. Early in the student's work the chairmain of the department will appoint an advisor to the student. The student must satisfy the chairmain of four, with the advisor as chairmain, which will be the student's guidance committee. If the student's thesis director and the advisor are not the same person, the thesis director will become the chairmain of the guidance committee. The committee will then assist the student in drawing up a plan of study for his Ph.D. work. During the second semester of a student's enrollment in the doctoral program, the chairmain and faculty of the department will hold a formal review of each student's progress. At that time the department will make a prognosis of the student's success in completing the Ph.D. program.

The student will be expected to complete about 90 semester hours beyond the bachelor's degree, including a thesis. The student must not have a master's degree when he starts the Ph.D. curriculum, nor need he acquire one. However, it is considered to be the usual case that the Ph.D. student will 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 being important 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:

1. Programming, including programming, program design, application, programming, simulation, and numerical analysis.
2. Theory of computation, including automata theory, computational complexity, and formal language.
3. Mathematical foundations, including set theory, algebra, analysis, logic, and graph theory.
4. Computer science design, software theory, and hardware development.

Although the plan of study for each student will be drawn up by the student and his committee to fit his special needs, every student is expected to complete approximately half of his coursework in the first two years. Master's students must complete at least half of his coursework in courses numbered 200 or above. Finally, each student must complete 2 semester hours of 210/211.

P.H.D. comprehensive examination. A student is admitted to candidacy for the Ph.D. degree in computer science only after he has completed the comprehensive examination described below, provided he has been recommended by a committee of the computer science faculty. The comprehensive examination will normally take only one day when the student's program permits, and is as required by his plan of study. The written examinations, which may be followed by oral review, are as follows:

Part I: Programming Concepts
A three-hour examination, including all aspects of programming concepts, including the following topics:

212/213 Advanced Computer Organization
212/213 Programming Languages
214/215 Systems Programming
216/217 Compiler Construction

Part II: Mathematical and Engineering Foundations
A three-hour examination, including the following topics:

218/219 Mathematical and Theoretical Foundations
218/219 Numerical Analysis
218/219 Algebra
218/219 Analysis
218/219 Statistics

Part III: Mathematical and Engineering Foundations
A two-hour examination, including topics in decision theory, computation theory, and computer science.
Part II: Theory of Computation

A three-hour examination on the theoretical aspects of computer science which will cover material presented in the following courses:

22C:180: Automata Theory
22C:185: Advanced Automata Theory
22C:367: Mathematical Linguistics

Part III: Foundations

A. Three-hour examination in disciplines related to computer science, composed of three parts:

1. Algebra
2. Logic and set theory
3. Discrete mathematics
4. Numerical analysis
5. Electrical engineering
6. Operations research
7. Business administration
8. Linguistics
9. Other related areas as approved by departmental examiners

The level of difficulty of each examination in Part III will be such as could normally be handled by a student with three graduate courses in the given area, at least one of which is at the 200 level.

Part IV: Candidate's Specialty Area

An examination to be prescribed for the student. Descriptions of all the examinations are available at the computer science office. The examination is a significant original contribution to the field of computer science, and successfully defend it in an oral examination conducted by his committee. The thesis may be in any area of importance to computer science, approved by the committee.

When the student has, together with his advisor, identified the thesis which he will write, the student will present a thesis proposal to his committee. The proposal includes: the problem area, what others have done, what remains to be done, and what the student's contribution will probably be.

STAFF


COURSE DESCRIPTIONS

Primarily for Undergraduates

22C:7 Introduction to Computers and Programming I 3 s.h.
Computer architecture, machine language programming, algorithms, with emphasis upon programming with FORTRAN. Prerequisite: Mathematics 120 or upper level standing.

22C:8 Introduction to Computers and Programming II 3 s.h.
Hierarchical nature of software, variety of computer hardware, use of computer survey of languages, with emphasis on assembly language programming. Prerequisites: 22C:7.

22C:9 Programming with Business-Oriented Languages 3 s.h.
COBOL or other business-oriented language is studied with applications on computer. Prerequisite: 22C:7.

22C:31 List Processors and Data Structures 3 s.h.
Complex data structures and their machine manipulation. Survey of list processing languages with programming in LISP, SNOCOL, and LISP. Prerequisites: 22C:8.

22C:31 Computer Organization and Assembly Programming 3 s.h.
User-oriented functional description of hardware systems including traps and interrupts, channels, I/O devices, and the programming concepts related to these. Symbolic coding and assembly systems, macro definitions and generation, subprogram linkage, program segmentation, and hardware techniques used. Other projects to illustrate basic machine structure and programming techniques. Prerequisite: 22C:8.

For Undergraduates and Graduates

22C:100 Computers and Programming I 3 s.h.
Same as 22C:7 except that problems are selected from advanced areas of importance to the student. Prerequisite: advanced standing. Not open to students in the mathematical sciences division.

22C:101 Computers and Programming II 3 s.h.
Same as 22C:8 except that problems are selected from advanced areas of importance to the student. Prerequisite: 22C:100 or 22C:7 and advanced standing. Not open to students in the mathematical sciences division.

22C:107 Mathematical Fundamentals for Computer Users I 3 s.h.
FORTRAN programming, elements of analysis, numerical methods, matrix algebra, with applications, and error analysis for computers. For the mathematical sciences student only. Prerequisite: Mathematics 220.

22C:108 Mathematical Fundamentals for Computer Users II 3 s.h.
Continuation of 22C:107, which is prerequisite.

22C:122 Advanced Computer Organization 3 s.h.
Multilevel interrupt system, microprogramming, simulation, multiprogramming, scientific interfaces, parallel processing. Prerequisite: 22C:7 or 22C:8, and 22C:107 and 22C:108. Elective.

22C:123 Programming Languages 3 s.h.
Formal means of program specification, including formal languages, formal notations. Prerequisite: 22C:107.

22C:135 Introduction to Computation Theory 3 s.h.
Relationship between basic elements of the theoretical areas of computer science including logic design, finite state machines, formal and recursive functions, and Markov algorithms. Prerequisite: Mathematics 113-114.

22C:145 Artificial Intelligence 3 s.h.
Introduction to heuristic programming, machine learning, game playing, theorem proving, and expert systems. Prerequisite: 22C:135.

22C:191 Research for Thesis cr.arr.
For MS, candidates in computer science. Prerequisite, consent of advisor.

22C:193 Problems in Computer Science I 1 s.h.
The student will solve a set of problems of importance in computer science. Open only to computer science graduate students. Prerequisite: 22C:31 and 22C:158.

22C:197 Reading in Computer Science cr.arr.
Prerequisite, consent of instructor.
Primarily for Graduates

23C:201 Automata Theory II 3 s.h.
Advanced and current topics such as Kleene-Büchi in- reducibility, regular group complexity, cellular auto- mata, models for parallel computation, Hammarlin- Stearns' loop-free decompositions, universal algebra, and automata. Prerequisite: 23C:190 or consent of instructor.

23C:216 Systems Programming 3 s.h.
Analysis of the implementation of a modern operating system including storage allocation, scheduling and file interfacing, locking and time sharing, virtual machines, multiprogramming, scheduling, and device independence of input-output. Prerequisite: 23C:190.

23C:217 Compiler Construction 3 s.h.
Expression translation, statement recognition, code gen- eration, object code optimization, symbol table organiza- tions, memory organization, virtual memory, syntactic-directed translation via context-free grammars and other formal- isms, parsing algorithms, procedure grammar techni- ques, illustrative computer projects. Prerequisite: 23C:190.

23C:231 Advanced Theory of Computation 3 s.h.
Computable functions, algorithms, recursively enumer- ative and recursively productive sets and predicates, Turing machines and Universal Turing machines, decision problems, non- computable functions, multipurpose Turing machines, and real-time computation. Prerequisite: 23C:190.

23C:341 Theory of Algorithms 3 s.h.
Algorithms, normal algorithms, construction of normal algorithms, the universal algorithm. Prerequisite: 23C:295.

23C:257 Mathematical Linguistics 3 s.h.
Characteristics, decision problems, properties, and operations of phrase-structure, context-sensitive, context- free, and linear languages, and pushdown, stack, linear, boolean, and finite automata. Application to translation and natural language processing. Prerequisite: 23C:295.

23C:397 Seminar on Automata cr.arr.
Topics from automata theory, formal grammars and computation, immediate and context-free grammars, Turing ma- chines, and the complexity of computations on formal grammars. Prerequisite, consent of instructor.

23C:298 Seminar on Programming cr.arr.
Topics from programming languages, software engi- neering and time sharing, use of current hardware features. Prerequisite, consent of instructor.

23C:299 Reading and Research cr.arr.
Prerequisite, consent of advisor.

MATHEMATICS

Chairman of Department, Robert H. Oehme
Office, 120 Meehan Hall

The general purposes of the courses offered in the Department of Mathematics are to provide technical mathematical competence to students in other disciplines, to introduce students to mathematical concepts of im- portance in other disciplines, and to develop mathemat- ics as an independent intellectual discipline.

Such training leads to a variety of career opportunities in industry, government, research, and teaching.

Be aware that the courses offered are possible, ex- pected, and desirable. The student is strongly urged to seek the advice of individual staff members and advisors.

Undergraduate Program

The courses 23M:1 Basic Mathematical Techniques is designed for students who have a high school mathematical deficiency. A passing grade in this course will satisfy the liberal arts requirement in mathematics.

The courses 23M:1 to 23M:4 are primarily intended to give nonmajors facility in some of the tools of mathematics. Those students who require a greater depth of understanding of the concepts of mathematics should proceed in the sequences 23M:5-23M:8 or 23M:11 or in the sequence of the Basic Undergraduate program.

The sequence 23M:10 and 23M:11 is designed for those majors who have had some background in mathematics or literature of their disciplines and require a greater under- standing of these concepts than afforded by the courses 23M:1 to 23M:4 or for those students who wish to acquire some appreciation of mathematics or another discipline.

A student may not receive either credit or quality points for an elementary course if he has already com- pleted a higher-level course for which the elementary course, or its equivalent, is a prerequisite. Students who are anticipating taking upper-divisional courses in mathematics should begin their program with the highest-level course for which they have the neces- sary prerequisites. The department also strongly en- courages students to take advantage of the credit-by- examination program and the possibility of waiving prerequisites by examination. The interested student should consult the department for further details on these examinations or in assistance in arranging self- teaching independent study groups.

The requirements for an undergraduate major in mathematical sciences are described under Division of Mathematics.

Graduate Program

Work in this department at the graduate level is opti- mized roughly into six areas: algebra, analysis, geometry, topology, applied mathematics, and probability. Programs leading to the M.S. degree (with or without) and the Ph.D. degrees are available and are subject to the general rules and regulations of the Grad- uate College. Exceptionally bright candidates may be advised to apply for admission to the Ph.D. program. Aside from this they are flexible, and are advised within the first year to fit their plans as closely as possible for the student. Each new graduate student is assigned initially to a temporary area of study by the department. This adviser helps him in planning his pro- gram. When the student has identified the exact area of his interest, the temporary area of study is replaced with a specialization as approved by his advisor and his permanent member of the staff to serve as his advisor, and a formal relationship is established under the consent of the staff member.

A student who is admitted to candidacy for the Ph.D. degree in mathematics, a student must have completed work in undergraduate mathematics roughly equivalent to the program previously described for an undergraduate major in mathematics (30 semester hours of mathematics courses numbered 23M:200 or above). A student whose prepara- tion does not meet this requirement in the opinion of his initial advisor may be required to take certain additional courses to cover the deficiency.

Admission to candidacy for the Ph.D. degree is granted upon the recommendation of a faculty advisor and the approval of a departmental examining committee. Or- dinarily the Ph.D. candidate will be expected to demon- strate proficiency in at least one of the following lan- guages French, German, or Russian. This proficiency will be determined by the student's thesis advisor. Gradu- ate students are urged to acquire language knowledge prior to the earliest possible date.

Part of the requirements of both the M.S. and Ph.D. degrees is the demonstration that sufficient breadth and facility in the general area of mathematics appropriate to the degree being sought have been acquired by the student. In each case the student will be required to take a written examination (master's examination or Ph.D. qualifying comprehensive), testing him on both
ability to understand and use basic definitions, theorems, and techniques involved with certain prescribed topics that are fundamental to many areas of mathematics. Furthermore, any examination is available. The student and any area of mathematics students are urged to secure this information immediately.

It is advisable that the student's candidate closely demonstrates his ability to communicate his knowledge in a professional manner. This requirement can be satisfied in a variety of ways.

Various written and oral examinations are available. They are accepted on the basis of students' general qualifications. All graduate students are invited to apply. Those students who have taken the Graduate Mathematics Aptitude Test are requested to have a copy of their scores sent directly to the Department of Mathematics.

Master's degree programs. All master's degree programs are designed to provide a comprehensive background in mathematics. The minimum of 30 semester hours of graduate credit of which at least 12 must be in residence and on which a grade-point average of at least 2.5 must be earned. Eighteen (18) hours are offered each semester in the seven areas: algebra, analysis, applied mathematics, topology, statistics, computer science, and education. Each student will be examined in three of these areas. The set of three examinations which will be required for the student depends, of course, on the program he selects. (List of topics defining the scope of these examinations are available in the departmental office upon request.)

Subject to the guidelines listed below, a wide latitude of courses and activities is permitted. With the consent of the advisor the student may select a topic. In the event a thesis is included, a minimum of 6 semester hours taken via 2115 Individual Study may be counted toward the elective provisions in the programs below.

Program A: Pure Mathematics

1. Students in this program must take comprehensive examinations in algebra, analysis, and topology.

2. Required courses (15 semester hours):
   a. 2115.050 Introduction to Algebra I, 2115.051 Introduction to Algebra II, 2115.052 Introduction to Algebra III
   b. 2115.060 Introduction to Topology I, 2115.061 Introduction to Topology II, 2115.062 Introduction to Topology III
   c. 2115.071 Introduction to Theory, or any 200-level mathematics course.

3. Elective courses (45 semester hours):
   a. Electives to be selected, with the consent of the candidate, professor of the advisor's background, and need to prepare for the examinations.

   b. Students must take comprehensive examinations in algebra, analysis, and topology.

   c. 2115.100 Differential Equations, 2115.101 Linear Algebra, 2115.102 Elementary Abstract Algebra, 2115.150 Numerical Methods, 2115.175 Fourier Series and Partial Differential Equations

   d. 2115.055 Introduction to Algebra I, 2115.056 Introduction to Algebra II

   e. 2115.060 Introduction to Topology I, 2115.061 Introduction to Topology II

   f. Electives to be selected, with the consent of the advisor, department, student's background, and need to prepare for the examinations.

Program B: Applied Mathematics

1. Students must take comprehensive examinations in algebra, analysis, and topology.

2. Required courses (15 semester hours):
   a. 2115.100 Differential Equations, 2115.101 Linear Algebra, 2115.102 Elementary Abstract Algebra, 2115.150 Numerical Methods, 2115.175 Fourier Series and Partial Differential Equations

   b. 2115.055 Introduction to Algebra I, 2115.056 Introduction to Algebra II

   c. 2115.060 Introduction to Topology I, 2115.061 Introduction to Topology II

3. Elective courses (45 semester hours):
   a. Electives to be selected, with the consent of the advisor, department, student's background, and need to prepare for the examinations.

   b. Students must take comprehensive examinations in algebra, analysis, and topology.

   c. 2115.100 Differential Equations, 2115.101 Linear Algebra, 2115.102 Elementary Abstract Algebra, 2115.150 Numerical Methods, 2115.175 Fourier Series and Partial Differential Equations

   d. 2115.055 Introduction to Algebra I, 2115.056 Introduction to Algebra II

   e. 2115.060 Introduction to Topology I, 2115.061 Introduction to Topology II

   f. Electives to be selected, with the consent of the advisor, department, student's background, and need to prepare for the examinations.

Program C: Mathematics with Education Option

1. Students must take comprehensive examinations in algebra, analysis, and topology.

2. Required courses (15 semester hours):
   a. 2115.055 Introduction to Algebra I, 2115.056 Introduction to Algebra II
   b. Any two of 2115.055 Introduction to Topology I, 2115.056 Introduction to Topology II, 2115.150 Linear Algebra, 2115.100 Introduction to
22MM.3 Mathematical Techniques II 3 s.h.
Formerly 22MM-4. Solutions of right and oblique triangles, subsets of the plane, graphing, inequalities, distance in the plane, circles and lines, an introduction to general linear programming. An intuitive introduction to derivatives, applications of derivatives. Primarily intended for those students who need some technical competence in these topics. Prerequisites, 22MM.2 or two years of high school algebra and one year of high school geometry.

22MM.6 Matrix Algebra
Elementary manipulations of matrices and determinants, rank and nullity of matrices, systems of linear equations, linear transformations from the plane, introduction to eigenvalues and eigenvectors. An introduction to mathematical ideas with emphasis on their application to solve practical problems. Students who need some technical competence in the use of matrices. Prerequisites, 22MM.3 or three years of high school mathematics.

Survey Courses
22MM.10 Fundamentals of College Mathematics I 4 s.h.
Formerly 22MM-1a. Introduction for general liberal arts students to some of the main concepts of mathematics. Elementary set theory and logic; real number systems; algebraic operations in the real number system; equations, line segments and angles, introduction to analytic geometry. Prerequisites, two and one-half years of high school mathematics or 22MM.7.

22MM.11 Fundamentals of College Mathematics II 4 s.h.
Formerly 22MM-1b. Continuation of 22MM.10, introduction to trigonometry, limit processes; an introduction to calculus (at least for polynomials). If time warrants, topics from: matrix theory, complex numbers, or additional topics in calculus. Prerequisite, 22MM.10.

Basic Undergraduate Courses
22MM.20 Elementary Functions 3 s.h.
Formerly 22MM-3. Functions, relations, coordinate systems, graphs of algebraic equations; properties and graphs of exponential, logarithmic functions, properties and graphs of logarithmic functions and exponential functions; inverse trigonometric functions. Properties of lines and circles. Prerequisites, two years of high school algebra and one year of high school geometry or 22MM.3. Not intended for students who have had high school analytic geometry.

22MM.25 Calculus I 3 s.h.
Formerly 22MM.8. Fundamental concepts, methods, and techniques of single variable differential and integral calculus. Prerequisites, three and one-half years of high school mathematics including an introduction to analytic geometry or 22MM.29.

22MM.26 Calculus II 4 s.h.

22MM.27 Introduction to Linear Algebra 4 s.h.
Formerly 22MM.130. An introduction to vectors and vector spaces, matrix theory and linear transformations. This material is partially oriented toward multivariable calculus. Prerequisites, 22MM.25.

22MM.28 Calculus III 4 s.h.
Fundamental concepts, methods, and techniques of multivariable calculus. An introduction to ordinary differential equations. Prerequisites, 22MM.26 and 22MM.27.

22MM.29 Coordinate Systems, Techniques of Calculus and Linear Algebra 1 s.h.
The use of the computer as an aid to understanding the concepts and techniques of calculus and linear algebra. This course is open to students concurrently enrolled in 22MM.28, 22MM.27, or 22MM.35. Up to four hours credit may be assigned; one credit hour for each of the above four courses.

22MM.35 Engineering Mathematics I 5 s.h.
Formerly 22MM-16. The real line, integers, rationals, inequalities, functions, 22MM.35 and 22MM.36. Elements of vector algebra. Scalar and vector products. Lines and planes, derivatives, higher-order derivatives, rates of change, maxima and minima of functions of a single variable. Mean value theorem, curve sketching, polar coordinates, parametric curves. Multivariate integral, volume, curve length, area, work. Prerequisite, high school trigonometry.

22MM.36 Engineering Mathematics II 5 s.h.

22MM.37 Engineering Mathematics III 3 s.h.

22MM.38 Engineering Mathematics IV 3 s.h.

Elementary Topics of General Interest
22MM.50 Elements of Group Theory 3 s.h.
Formerly 22MM.51. Sets, relations, functions, permutation groups, cyclic groups, structure of finitely generated abelian groups. Equations will be placed on illustrative blackboard, but the presentation will be constructive.

22MM.55 Fundamental Properties of Spaces and Functions 3 s.h.
Formerly 22MM.22. Elementary topology, elementary set theory, properties of euclidian and metric spaces. Equations will be placed on illustrative blackboard, but the presentation will be constructive.

22MM.70 Euclidean Plane Geometry 3 s.h.
Formerly 22MM.41. Axiomatic treatment of the foundations of euclidian plane geometry. Prerequisites, 22MM.25 or equivalent.

22MM.80 Theory of Arithmetic 3 s.h.
Formerly 22MM.72. Enrollment limited to candidates for an elementary teaching certificate. Structure of the real number system. Prerequisite, 22MM.1 or equivalent.

Undergraduate: Upper Division
22MM.100 Differential Equations 3 s.h.

22MM.103 Foundations of Mathematics I 3 s.h.
Formerly 22MM.35. Intuitive set theory, a construction of the real number system, cardinal arithmetic, transfinite numbers, axiom of choice, and well-ordering theorem.

22MM.104 Foundations of Mathematics III 3 s.h.
Formerly 22MM.35. Informal logic, informal axiomatic theories, and Boolean algebras. Prerequisite, 22MM.103.

22MM.105 Applications for Analysis 4 s.h.
Continuity, uniform convergence, power series, implicit and inverse function theorems. Vector analysis, Green's
MATHMATICS

22M:160 Differential Geometry and

Tensor Analysis 3 s.h.

Formerly 22M:141. Space curves, differentiable manifolds, vector and tensor fields, integration of forms, covariant differentiation and the intrinsic geometry of surfaces. Prerequisite, 22M:26 or 22M:38 or 22M:50 or consent of instructor.

22M:161 Differential Geometry 3 s.h.

Formerly 22M:142. Differential geometry, minimizing properties of geodesics, rigidity theorems, Gauss-Bonnet formula, generalizations of Cauchy-Riemann equations, and the elementary theory of Lie groups may also be covered. Prerequisite, 22M:111 or consent of instructor.

22M:165 Topics in Geometry 2 or 3 s.h.

Formerly 22M:143. Selected topics from euclidean, non-euclidean, projective, or metric geometry. Prerequisite, consent of instructor.

22M:167 Theory of Graphs 3 s.h.

Formerly 22M:139. Numerical functions on a graph, classification and structures of graphs, minimization of Boolean functions, planar graphs, various applications including transport theory and analysis of electrical circuits. Prerequisite, consent of instructor.

22M:170 Numerical Methods 3 s.h.

Formerly 22M:155. Numerical processes and machine computations. Attention to algebraic and transcendental equations, spectral values of matrices. Prerequisite, 22M:26 or 22M:38 or consent of instructor.

22M:171 Numerical Solutions of

Differential Equations 3 s.h.

Formerly 22M:156. Application of numerical methods to the analysis of ordinary and partial differential equations. Prerequisite, 22M:26 or 22M:38.

22M:172 Fourier Series and Boundary

Value Problems 3 s.h.


22M:173 Transform Calculus 3 s.h.


22M:195 Supervision of Mathematics 3 s.h.

Formerly 22M:171. Philosophy and objectives, curricu-

lar problems, review and evaluation of current literature, special methods. Prerequisite, 22M:50 or consent of instructor.

22M:197 Individual Study and Honors in

Mathematics 1 to 3 s.h.

Prerequisite, consent of advisor.

22M:199 Readings in Mathematics cr.arr.

Formerly 22M:197. Qualified graduate students who are not mathematics majors may receive up to 3 semester hours credit each for 22M:26, 22M:38, and 22M:50 or up to 2 hours credit for 22M:4, 22M:50, and 22M:59 by registering for this course. Prerequisite, consent of department.

Core Graduate Courses

22M:200 Introduction to Topology I 3 s.h.

Formerly 22M:124. Set theory, metric spaces, topologi-

cal spaces, convergence, content of measure, compactness, and locally compact spaces. Prerequisite, 22M:117.

22M:201 Introduction to Topology II 3 s.h.

Formerly 22M:125. Connectedness and local connected-

ness, components, simplexes, metric spaces, separation, Baire theorem, products (finite or countable), identification of quotient topologies, uniformity, and uniform convergence in metric spaces. Prerequisite, 22M:200 or equivalent.

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Topics of Interest to Graduates

22M:315 Abstract Set Theory 3 s.h.
A completely axiomatic approach to the theory of sets, ordinal numbers, and cardinal numbers. Prerequisite, graduate standing or consent of instructor.

22M:320 Introduction to Mathematical Logic I 3 s.h.
Propositional calculus, 1st-order predicate calculus. Godel completeness theorem, formal elementary number theory, and Godel incompleteness theorem. Prerequisites, graduate standing or consent of instructor.

22M:321 Introduction to Mathematical Logic II 3 s.h.
Construction of formal number theory, arithmetic hierarchy, Post theorem, formal recursive functions. Turing machines, recursive functions, a type systems, and word problems. Prerequisites, 22M:320.

22M:326 Introduction to Algebraic Topology 3 s.h.

22M:328 Topics in Algebra 3 s.h.
Selected topics, including measure theory, integration, geometry, and topology. May be repeated. Prerequisite, consent of instructor.

22M:330 General Topology I 3 s.h.
Topological spaces, open and closed sets, product and quotient spaces, metrization theorems, compactifications, uniform spaces, function spaces and uniform spaces. Prerequisites, 22M:320.

22M:355 Point Set Topology 3 s.h.
Axiomatic study of topological properties of regular Hausdorff spaces satisfying the second notion of countability. Prerequisites, 22M:321.

22M:360 Topics in Point Set Topology 2 or 3 s.h.
Selection from topology of the plane, topology of euclidean n-space, metrizable spaces, selected topics in topology. May be repeated by consent of instructor. Prerequisites, consent of instructor.

22M:370 Theory of Functions of a Complex Variable 3 s.h.
Cauchy's theorem, series expansions, analytic continuation, types of singularities. Prerequisites, 22M:316 or consent of instructor.

22M:380 Topics in the Theory of Functions of a Complex Variable 3 s.h.
Riemann surfaces, analytic functions, conformal mapping, univalent functions; spherical integrals; growth theorems. May be repeated by consent of instructor. Prerequisites, 22M:370.

22M:390 General Topology II 2 or 3 s.h.
Uniform spaces, function spaces, topological groups, topological vector spaces, rings of continuous functions. Prerequisite, 22M:320.

22M:391 Hilbert Space 3 s.h.
Bounded operators in Hilbert space, diagonalization of completely continuous normal operators, spectral theorem for a bounded Hermitian operator. An Introduction to unbounded operators. Prerequisites, 22M:320 and 22M:316 or 22M:310.

22M:392 Integration Over Locally Compact Spaces 3 s.h.
Measure and integration over locally compact topological spaces, regular Borel measures, Riesz-Nikodym theorem, differentiation, and Fourier transforms. Prerequisites, 22M:310.

22M:393 Functional Analysis I 3 s.h.

22M:394 Functional Analysis II 3 s.h.
Banach algebras, spectra in Banach algebras, representation of Banach algebras, algebras of operators. Prerequisite, 22M:393.

22M:395 Abstract Harmonic Analysis I 3 s.h.
Theory of Fourier analysis in the setting of locally compact topological groups. Haar integration measures, locally compact groups, Haar measure, and the group algebras of a locally compact group. Prerequisite, 22M:322.

22M:396 Abstract Harmonic Analysis II 3 s.h.
Continuation of 22M:395, with emphasis on Abelian locally compact groups. The character group, the general Fourier transform, and the Pontryagin duality theorem. Prerequisites, 22M:322 and 22M:395.

22M:397 Topics in Topological Dynamics 3 s.h.
Selection of topics from the theory of group actions on topological spaces, principally periodicity and its generalizations. May be repeated with consent of instructor. Prerequisites, 22M:304.

22M:398 Ordinary Differential Equations 3 s.h.
Existence, unique solution, and stability of solutions; oscillation and comparison theorems; plane autonomous systems: Poincare-Bendixson theory. Prerequisites, 22M:320 or consent of instructor.

22M:399 Topics in Ordinary Differential Equations 3 s.h.
Nonlinear boundary value problems; Caratheodory existence theory; quasilinear differential equations; stability theory. May be repeated by consent of instructor. Prerequisites, 22M:311 or consent of instructor.

22M:321 Calculus of Variations 3 s.h.
Differential equations of a curve which minimizes a specific definite integral; further properties of a minimizing curve and sufficient conditions for a minimum; general extremal problems and their general simple boundary problems. Prerequisites, 22M:311 or consent of instructor.

22M:322 Topics in the Calculus of Variations 3 s.h.
Variations of the integrand. Prerequisites, 22M:321.

22M:323 Partial Differential Equations 3 s.h.
Single integral problems of Riemann type; multiple integral problems; existence theorems for variational problems. Prerequisites, 22M:321 and consent of instructor.

22M:324 Potential Theory and the Calculus of Variations 3 s.h.
STATISTICS
theorems. Cauchy-Kowalewski theorem, classification of equations (hyperbolic, elliptic, parabolic). Applications. Solutions of second-order linear equations. Prerequisite, ZIM.118 or consent of instructor.

22M:334 Partial Differential Equations 3 s.h.
Hyperbolic, parabolic equations. The Cauchy problem for the general hyperbolic system. The maxi-

22M:338 Topics in Linear Algebra 3 s.h.
Linear transformations of vector spaces, geometry based on bilinear forms, products of vector spaces, infinite di-

22M:339 Commutative Algebra 3 s.h.
Ideal theory in commutative rings, field extensions, inte-

22M:330 Theory of Groups 3 s.h.
Homomorphism, abelian groups, Sylow theorems, permu-

tation groups, automorphisms, free groups, composition series, solvable and nilpotent groups. Prerequisite, ZIM.268.

22M:331 Representation of Finite Groups 3 s.h.
Structure of the group algebra of a finite group, linear representations, reducibility at representations, character relations, equivalence of representations. Prerequisite, ZIM.268 or equivalent.

22M:332 Topics in Semigroup Theory 3 s.h.
Ideal theory and congruence theory in semigroups, a partial structure theory of semigroups; relationships bet-

22M:335 Topics in Nonassociative Algebra 3 s.h.
Structure theory of various classes of algebras and the relationship between algebras and geometries. Prerequisite, ZIM.268 or equivalent.

22M:340 Homological Algebra 3 s.h.
Chain complexes, products, groups of homomorphisms, categories, functors, homology functors, projective and injective modules, derived functors, torsion and extension functors, homological dimension. Prerequisite, ZIM.268 or equivalent.

22M:345 Algebraic Topology 3 s.h.
Stable homotopy groups, homology and cohomology theory, simplicial complexes. Prerequisite, ZIM.345.

22M:347 Topics in Algebraic Topology 3 s.h.
Homology theory of non-compact manifolds, homological algebra. May be repeated by consent of instructor. Prerequisite, ZIM.345 or consent of instructor.

22M:352 Theory of Probability 3 s.h.
Basic concepts; distribution and characteristic functions; convergence theorems; conditional expectations; stochastic processes. Prerequisite, ZIM.211.

22M:355 Metric Geometry 3 s.h.
Metric topology, convexity, isometries, euclidean and spherical spaces, metricization theorem, Baire category theorem, Ascoli's theorem. Prerequisite, ZIM.200 or consent of instructor.

22M:356 Topics in Metric Geometry 3 s.h.
Topics selected from geometric functional analysis, fixed-point theory. Prerequisite, ZIM.268.

22M:360 Foundations of Mathematics I 3 s.h.
Introduction to the theory of models, including descrip-
tions of first-order theories from abstract algebras, com-
plete theories, undecidable theories, definability, and Beth's theorem. Prerequisite, consent of instructor.

22M:361 Foundations of Mathematics II 3 s.h.
Continuation of the theory of models or topics in recur-
sions theory. Prerequisite, ZIM.260.

22M:370 Numerical Methods in Linear Algebra 3 s.h.
Solutions of linear systems, eigenvalue problems, invers-

equations, numerical analysis. Prerequisites, ZIM.270 and ZIM.268 or consent of instructor.

22M:371 Numerical Solutions of Partial Differential Equations 3 s.h.
Numerical methods of various types, partial differential equations, initial and boundary value problems. Prere-

requirements, ZIM.111 and ZIM.268 or consent of instructor.

22M:389 Seminar: Algebra 3 s.h.
Prerequisite, consent of instructor.

22M:390 Seminar: Algebraic Geometry 3 s.h.
Prerequisite, consent of instructor.

22M:391 Seminar: Logic and Foundations of Mathematics 3 s.h.
Prerequisite, consent of instructor.

22M:392 Seminar: Algebraic Topology 3 s.h.
Prerequisite, consent of instructor.

22M:395 Seminar: Analysis 3 s.h.
Prerequisite, consent of instructor.

22M:396 Seminar: Functional Analysis 3 s.h.
Prerequisite, consent of instructor.

22M:398 Seminar: Numerical Analysis 3 s.h.
Prerequisite, consent of instructor.

22M:399 Reading and Research 3 s.h.
Prerequisite, consent of advisor.

STATISTICS
Chairman of Department, Robert V. Hogg
Office, 110 MacLean Hall

Statistics has become a highly developed and significant discipline in its own right and an indispensable research tool in many areas of science. The program of the statisti-
cation department reflects both of these aspects. It seeks to instruct students in the theory and application of statistical techniques, to acquaint them with the role played by these techniques in the progress of science and tech-
nology, and to teach them for research is probability, sta-
pysics, econometrics, and their applications to other sciences. Career opportunities are plentiful in government, industry, and teaching.
225:157 Correlation Methods 3 s.h.
Same as Education TP:304. Prerequisite, 225:149 or 225:120 or equivalent.

225:158 Design and Analysis of Experiments 4 s.h.
Models in analysis of variance, single factor multiple comparisons, ranking and selection, multiple factors, crossed, and nested experiments, incomplete block designs, Latin squares and hypercubes, mixed models, balanced and unbalanced experiments, split plot experiments, confounding, fractional experiments, analysis of covariance, regression as industrial and Management Engineering 36:202. Prerequisites, 225:120, 225:123, 225:154 or equivalent.

225:159 Design of Experiments 3 or 4 s.h.
Same as Education TP:304. Prerequisite, 225:149. Offered for 3 semester hours only in the summer session.

225:160 Applied Statistical Decision Theory 3 s.h.
Same as Industrial and Management Engineering 36:203. Prerequisite, 225:120 or 225:123.

225:162 Regression Analysis 3 s.h.
Same as Industrial and Management Engineering 36:203. Prerequisite, 225:120 or 225:123.

225:164 Introduction to Probability I 4 s.h.
Adaptive probability models, conditional probability and independence, random variables, expectation and special distributions. Corequisites, Mathematics 225:115.

225:165 Introduction to Probability II 4 s.h.

225:167 Introduction to Stochastic Processes I 3 s.h.
Wiener, Poisson, and normal processes, generalizations of the Poisson process, renewal processes and stationary processes. Applications selected from the physical, biological, and management sciences. Prerequisites, 225:115.

225:168 Introduction to Stochastic Processes II 3 s.h.
A continuation of 225:167. Markov chains both discrete and continuous parameter, with references to branching, queueing, queuing systems, birth and death processes, and queuing and traffic models.

225:170 Introduction to Nonparametric Statistics 3 s.h.
One sample procedure; efficiency, testing, point and interval estimation. The essential problem of sample problems, problem of ties. Prerequisite, 225:154.

225:172 Topics in Statistics 3 s.h.
Problems selected by the instructor for their relevance, basic ideas in probability and statistics will be applied to building models of real systems, making scientific inferences, and management decisions. Prerequisite, 225:120, 225:123, or 225:154.

225:177 Numerical Analysis for Actuaries 3 s.h.
Introduction to the calculus of finite differences, interpolation, numerical differentiation, numerical integration, Numerical Analysis, Mathematics 225:28 or 225:38.

225:178 Graduate Studies

Continuation of 225:177, including graphing, interpolation, adjusted average, difference equations, curve-fitting methods of graduation, and methods of testing graduation.

225:179 Advanced Mathematics of Finance 3 s.h.
Compound interest, annuities certain, bonds, depreciation, sinking funds, and the determination of yield rates. Prerequisite, Mathematics 225:28 or 225:38.
FRESHMAN-SOPHOMORE

General
In order to take advantage of advanced placement, students who have had prior ROTC training at other institutions or prior active military service in any of the armed forces of the United States should provide information of such training to the ROTC unit of registration. Students may transfer from military science to aerospace military sciences or vice versa.

Upon registration for the freshman year, each student is tested in English, mathematics, and general science. Uniforms are worn one hour a week while attending leadership training classes.

ROTC at the University is voluntary.

Army
The freshman program consists of four hours of instruction each month—two hours of classroom activity and two hours of leadership training. During the first semester of the sophomore year, cadets take a leadership course offered by the psychology department. During the second semester, cadets attend one hour of regularly scheduled classroom activity each week. For both semesters of the sophomore year, cadets attend leadership training classes which meet for two hours twice a month. Cadets may receive elective courses in the broad area of effective communications such as English composition, public speaking, and other courses, as part of the curriculum for the freshman and sophomore years.

Air Force
All freshmen and sophomore Air Force ROTC cadets attend one hour of regularly scheduled classroom activity and one hour of corps training each week.

JUNIOR-SENIOR

General
Enrollment in advanced training is open to selected students who have completed a basic military training course and who have met the academic requirements of the University. Students must complete the field training course during their two-year program and be physically qualified for a commission. They agree to serve a minimum of two years in the United States Army. Junior and senior year students receive a subsistence of $250 per month.

Successful completion of the ROTC program all freshmen are eligible for a reserve commission in the armed forces in which training was received. Those designated Distinguished Military Students may apply for regular commissions.

The newly commissioned ROTC officer may normally delay his active duty to pursue a graduate degree.

Army
The junior and senior years at this University are under a general military science program which allows commissioning in any of the military branches of the Army with specialisation open to over 340 fields. During their last two years Army ROTC cadets at the U of I take University courses of their choice from the following broad areas: social sciences, physical education, business, arts, and applied sciences to fulfill approximately one-half of the military science classroom requirements. Army reserve officers are obligated to serve on active duty for only two years after commissioning. Cadets who successfully complete the ROTC flight training program earn a three-year active duty obligation following completion of the Army Aviation active duty course of instruction.

Air Force
The Air Force Professional Officer Education Program is a new program designed to provide education that will develop skill and attitudes vital to the career of a profes-

MILITARY

Microbiology
CG 1350 Microbiology 5.5h
PS 159 Microbiology 5.5h

Other courses in Microbiology to total

Mathematics
MTH 254 Mathematical Techniques II 3.0h

Electives to meet the degree requirements from the following:

Mathematics
MTH 254 Analytic Geometry 3.0h
MTH 258 Calculus 4.0h

Biology
BIO 217 Microbiology 3.0h

Chemistry
CH 131 General Chemistry I 3.0h
CH 132 General Chemistry II 3.0h
CHE 1620 Intermediate Chemistry Laboratory II 2.0h

Geology
GEO 1120 Fundamental Geology 1 or 4.0h
GEO 1125 Geology Seminar 2.0h

As Honors program is available to superior students majoring in microbiology for the bachelor's degree.

MILITARY SCIENCE AND AEROSPACE MILITARY STUDIES

Reserve Officers Training Corps
Head, Department of Military Science
Robert S. Kubhy, Lieutenant Colonel, U.S. Army
Office, 3 Armory Building

Head, Department of Aerospace Military Studies
John T. McCabe, Colonel, U.S. Air Force
Office, 1 Armory Building

The Departments of Military Science and Aerospace Military Studies select and prepare students to become officer in the United States Army and the United States Air Force while earning their college degrees. Students receiving credit in these deans are members of the Reserve Officers Training Corps.

Under the ROTC Visitation Act of 1964 the Department of Military Science and Aerospace Military Studies offer two programs of the study, a four-year program and a two-year program. Successful completion of either of the programs results in a reserve or regular commission as an officer in the armed services.

Four-Year. This program for undergraduates covers four years of ROTC instruction and training.

Two-Year. This program is for students having two years of undergraduate work, graduate work, or a combination remaining on campus. They receive credit for the freshman and sophomore years of ROTC by successfully completing a period of field training.

Field Training. In the two-year program, students must successfully complete six weeks of field training at a military installation to be eligible for enrollment in the professional course. The two-year period of the ROTC.

In the four-year program, Army students complete six weeks of field training while Air Force students complete four. This training is conducted at a military installation upon completion of the first year of the professional course, normally between the junior and senior years for undergraduate students. Emphasis is on development of leadership.

Field training pay rates are: four-year program—50 per cent of base pay of a Second Lieutenant; two-year program—base pay of a private or a basicSimilar. Students are paid six cents a mile travel to and from installation where training is conducted.
Analysis. Functions and responsibilities of junior officers. Students taking this 3 h. will register for M.71.

23:24 Applied Leadership and Management 1 s.h. Second semester. Introduction to operations and basic tactics, functions, duties, and responsibilities of junior officers.

Military Science III (Junior)

23:85 Advanced Leadership and Management 3 s.h.
First semester. Case studies of leadership problems common to small units, military teaching techniques, fundamentals of educational psychology applicable to instruction, techniques in planning, preparing, and evaluating instruction; small-unit tactics and communications; leadership development and training through practical exercises.

23:86 Advanced Leadership and Management 2 s.h.

Military Science IV (Senior)

23:87 Theory and Dynamics of the Military Team 2 s.h.
First semester. Study of combat operations and the various military teams; analysis of selected leadership and management problems involved in management, military tactics, and administrative programs; staff operations; applied leadership and management.

23:88 Theory and Dynamics of the Military Team 2 s.h.
Second semester. Continuation of above.

Army Flight Training

23:55 (first and second semesters) 2 s.h.
Thirty-six hours of ground school on navigation and weather; 20 hours of actual flight time. Upon completion of course, students qualify to take examination for FAA private pilot's license.

Air Force ROTC

AEROSPACE MILITARY STUDIES

Freshman and Sophomore Years

General Military Education Program

Aerospace Military Studies 100 (AS 100) Freshman Year

Aerospace Military Studies 200 (AS 200) Sophomore Year

Freshman Year

23:11 Organization and Mission of the USAF 1 s.h.
First semester. A study of the doctrine, mission, and organization problems involved in the United States Air Force, U.S. Strategic Offensive and Defensive Forces; their mission, function, and employment of nuclear weapons; civil defense.

23:21 Defense of the United States 1 s.h.
Second semester. Aerospace defense; missile defense; U.S. general purpose and special support forces; the mission, resources, and operation of tactical air forces, with special attention to limited war; review of Army, Navy, and Marine general purpose forces.
MUSEUM TRAINING

Sophomore Year

23:31 U.S. Military in World Affairs 1 s.h.
First semester. Defense policies; theories of general war; nature and content of limited war; policies and strategies of the Soviet Union and China; and the role of alliances in U.S. defense policies.

23:41 Military in the United States 1 s.h.
Second semester. Defense organization and decision-making; organization and function of the Department of Defense; role of the military in the United States: national policies; the elements and process of defense decision-making.

Junior and Senior Years

Professional Officer Education Program
Aerospace Military Studies 300
Aerospace Military Studies 400

Junior Year

23:51 Growth and Development of
Aerospace Power 3 s.h.
First semester. Develops professional communication skills through study of development and employment of military air power, past, present, and future. AS 300.

23:61 Growth and Development of
Aerospace Power 3 s.h.
Second semester. Develops future airpower techniques leading up to and including astro-aeronautics and space operations; includes U.S. space program, vehicles, and systems plus a general survey of space science. AS 400.

Senior Year

23:70 The Professional Officer 3 s.h.
First semester. Air Force leadership at the junior officer level including its theoretical, professional, and legal aspects. Attention devoted to developing communications skills needed by junior officers. AS 400.

23:90 The Professional Officer 3 s.h.

23:95 Aerospace Military Studies Flight
Instruction Program 2 s.h.
Flight instruction for qualified cadets. 36 hours of ground school includes navigation and weather instruction. Flight phase encompasses 35 hours of flight instruction by Iowa City Flying Service. Completion of course qualifies students to take examination for an FAA private pilot's license.

MUSEUM TRAINING

Head of Department, Walter C. Thietje
Office, 10 Mackbride Hall

The department offers courses which give the student a comprehensive knowledge of modern museum work. They are elective college work, counting as credit toward a B.A. or B.E. degree. The major in general science is recommended for students preparing for museum work as a profession. As graduate work, museum training may be credited as a minor on a master's degree or on a P.H.D. In special cases where a student can furnish evidence of experience, fitness, and ability, it is possible to major in museum methods for a master's degree. The museum-casting techniques as taught are of value not only to the museum worker, but for example, in premedical and preprofessional students and to art students. Courses are offered for science teachers who wish some training in the mounting of birds and mammals and in the preparation of other classroom material.

STAFF
Assistant Professor: Walter C. Thietje.
Instructor: George D. Schrimmer.

COURSES DESCRIPTIONS

For Undergraduates and Graduates

24:101 Museum Techniques 1 or 2 s.h.
Preparing and mounting birds, mammals, and fishes. Collecting, mounting, and exhibiting museum materials, including habitat group work. No prerequisite.

24:102 Museum Techniques 1 or 2 s.h.
Continuation of 24:101, but may be taken as an independent unit.

24:103 Museum Accessory Work 1 or 2 s.h.
Techniques used in preparation of classroom teaching materials and museum exhibits accessories. Instruction in design and modeling materials and reproduction of fossils, artifacts, and biological specimens. Applications to premedical and geology students. No prerequisites.

24:104 Museum Accessory Work 1 or 2 s.h.
Continuation of 24:103, but may be taken as an independent unit.

24:105 Anatomical Modeling 1 or 2 s.h.
Modeling and casting various forms of mammals and birds. Primarily for students of museum work. Courses arranged for presessional and presessional students useful to surgeons and to造型 in preparation of plaster casts, molds, models, and plastic models. No prerequisites.

24:106 Anatomical Modeling 1 or 2 s.h.
Continuation of 24:105, but may be taken as an independent unit.

24:110 Special Museum Technique on
Individual instruction in any of the techniques offered in the preceding courses.

24:111 Special Museum Technique on
Continuation of 24:110, but may be taken as an independent unit.

Primarily for Graduates

24:201 Advanced Museum Techniques 1 or 2 s.h.
Detailed presentation of the principles set forth in courses 24:101 and 24:102 with special attention to the requirements of the individual. Prerequisites, first-year zoology, geology, or botany and consent of instructor.

24:202 Advanced Museum Techniques 1 or 2 s.h.
Continuation of 24:201, but may be taken as an independent unit.

24:203 Museum Laboratory Methods 1 or 2 s.h.
Advanced laboratory and accessory work to acquaint the student with efficient laboratory methods and procedures. Prerequisites, first-year course in zoology, geology, or botany and consent of instructor.

24:204 Museum Laboratory Methods 1 or 2 s.h.
Continuation of 24:203, but may be taken as an independent unit.

24:305 Advanced Anatomical Modeling 1 or 2 s.h.
Continuation of the course in clay modeling with emphasis on the technical problems. Prerequisites, first-year zoology, geology, or botany and consent of instructor.

24:306 Advanced Anatomical Modeling 1 or 2 s.h.
Continuation of 24:305, but may be taken as an independent unit.

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**Director of School, Jilson Voxman Office, 119 Music Studio Building**

The objectives of the School of Music are to offer a sound musical training to its students at both the undergraduate and graduate levels and to provide a limited number of courses for the nonmajor. At the undergraduate level, the curricula offer all qualified high school graduates a basic introduction to music. At the graduate level, the curricula provide advanced study, primarily designed for those preparing for teaching careers in the secondary schools or for graduate work in music. 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. Please write the Director of the School of Music for details. In addition, all transfer students must take the Advisory Examination in music theory (see Graduate Degrees below).

The School of Music offers two undergraduate degrees: the Bachelor of Arts (B.A.) with a major in music and the Bachelor of Music (B.M.). Curricula for the two degrees are identical with the following exceptions: credit for the B.A. may not count more than 50 semester hours in music toward the 128 semester hours required for graduation in the College of Liberal Arts; candidates for the B.M. may count more than 50 semester hours in music toward the 128 semester hours required for graduation in the College of Liberal Arts and, in addition, have only 8 semester hours requirement in foreign language. Students wishing to obtain a teaching certificate may select either degree; however, the B.M. is preferred since it permits extra courses in music to be taken.

Candidates for either the Bachelor of Arts degree in music or the Bachelor of Music degree must complete the following music requirements:

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<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
</tr>
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<tbody>
<tr>
<td>25-102</td>
<td>25-103</td>
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<tr>
<td>25-105</td>
<td>25-106</td>
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</tbody>
</table>

*Note: Hours taken in the School of Music should not exceed 50% of the total required for graduation.*

### Music Education Programs

**I. For general requirements for teacher certification at the College level:**

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<tr>
<th>Course Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>25-102</td>
<td>25-103</td>
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<tr>
<td>25-105</td>
<td>25-106</td>
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</tbody>
</table>

*Note: Hours taken in the School of Music should not exceed 50% of the total required for graduation.*

**II. In addition to S.A. or B.M. requirements in music, liberal arts, and education, certification to teach music in Iowa schools requires the satisfactory completion of:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>25-102</td>
<td>25-103</td>
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<td>25-105</td>
<td>25-106</td>
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</tbody>
</table>

*Note: Hours taken in the School of Music should not exceed 50% of the total required for graduation.*

*All courses taken in the School of Music are approved by the Iowa State Board of Education.*

### Graduate Degrees

The following graduate degrees are offered in the School of Music: Master of Arts (with or without thesis), Master of Fine Arts, and Doctor of Philosophy. Each applicant must meet the general requirements for admission to the Graduate College (see Graduate Degree Requirements).
MUSIC

College, take the Graduate Record Examination Ap¬
titude Test and the Graduate Record Aptitude Test in music history and literature and in music theory (harmony, counterpoint, and form), which are given each session on the two days (excluding Sunday) before or after the commencement of the session. Only app¬
licants for these tests is available from the Doctoral Office of the College. All advanced students expect¬
ing major in performance must audition in person or by sub¬
mitting a recording representative of their current perfor¬
mancc.

Master's Degrees

Master of Arts. The Graduate College requires a min¬
umm of 24 semester hours of credit toward the M.A. degree, at least 18 semester hours must be com¬
pleted in residence. As soon as possible in the first semes¬
ter 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 advisor. A Plan of Study ap¬
poved by the advisor and the departmental executive must be filed with the Graduate College during the semes¬
ter in which the degree is to be granted. After completing the curriculum requirements (see below), or in the semester in which he expects to complete them, the candidate must present himself for a final master's examination. This examination normally covers the areas of music theory, music history, and the major area of concentration. (Regulations of the Graduate College provide that, upon recommendation of the major area in music students proceeding to the doctoral level may sub¬
anstitute the comprehensive examination for the final master's examination. In such cases the comprehensive examination must be at high quality and sufficiently advanced to merit this recom¬
nendation.)

Areas of concentration for M.A. degrees are composi¬
tion, music history and literature, music education, music literature, music theory, and performance (includ¬
ing orchestral conducting). The master's programs are identical except that under the guidance of the advisor the candidate must elect the courses he wishes to take. These programs are the usual research type or the 5-semester program described in the previous section of this chapter. In the 5-semester program, one 5-credit, one 6-credit, and one 9-credit program are offered. The master's program must be completed within five years of the candidate's admission to the Graduate College. 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 re¬
quirements for each degree separately, including two full examinations with a minimum combined total of 42 semester hours of graduate credit. See Graduate College for further details.

Doctoral Degrees

The Graduate College requires a minimum of 72 semes¬
ter hours of graduate credit for the doctorate; two semes¬
ter hours of credit must be spent in full-time residence on campus at the University beyond the 36 semester hours of graduate work. As soon as possible in the first semester of residence, the candidate should begin the dissertation. The dissertation must be completed within five years of the candidate's admission to the Graduate College. In the dissertation, the candidate must present an original study or research that is a significant and original contribution to knowledge of the subject matter of the area of specialization. The dissertation must be approved by the candidate's committee of three examiners, one of whom is the candidate's advisor. The dissertation must be presented to the Graduate College for consideration prior to the candidate's graduation. In addition to meeting the comprehensive examination requirements, the candidate must present a minimum of 48 semester hours of graduate credit. The comprehensive examination is intended to evaluate the candidate's knowledge of the major area of specialization and to be held near the end of the candidate's dissertation. The comprehensive examination must be held within two semesters of the candidate's graduation. See Graduate College for further details.

All doctoral students in the Music Department are required to:

1. Elect an area of concentration for the dissertation.
2. Complete a comprehensive examination on the area of concentration.
3. Complete a major research study (dissertation) in the area of concentration.
4. Present a public lecture on the major research study.
5. Submit a manuscript for publication in a music journal.
6. Participate in the Music Department's Graduate Student Awards Committee.
7. Participate in the Music Department's Graduate Student Council.
8. Participate in the Music Department's Graduate Student Association.
9. Complete a minimum of 90 semester hours of graduate credit.
10. Complete a minimum of 30 semester hours of graduate credit in music history and literature.
11. Complete a minimum of 9 semester hours of graduate credit in music theory.
12. Complete a minimum of 6 semester hours of graduate credit in the major area of specialization.
13. Complete a minimum of 6 semester hours of graduate credit in the minor area of specialization.
14. Complete a minimum of 6 semester hours of graduate credit in the comprehensive examination area.
15. Complete a minimum of 30 semester hours of graduate credit in the major field of specialization.
16. Complete a minimum of 30 semester hours of graduate credit in the minor field of specialization.
17. Complete a minimum of 30 semester hours of graduate credit in the comprehensive examination area.
18. Complete a minimum of 90 semester hours of graduate credit.
19. Complete a minimum of 30 semester hours of graduate credit in music history and literature.
20. Complete a minimum of 9 semester hours of graduate credit in music theory.
21. Complete a minimum of 6 semester hours of graduate credit in the major area of specialization.
22. Complete a minimum of 6 semester hours of graduate credit in the minor area of specialization.
23. Complete a minimum of 6 semester hours of graduate credit in the comprehensive examination area.
24. Complete a minimum of 30 semester hours of graduate credit in the major field of specialization.
25. Complete a minimum of 30 semester hours of graduate credit in the minor field of specialization.
26. Complete a minimum of 30 semester hours of graduate credit in the comprehensive examination area.
27. Complete a minimum of 90 semester hours of graduate credit.
28. Complete a minimum of 30 semester hours of graduate credit in music history and literature.
29. Complete a minimum of 9 semester hours of graduate credit in music theory.
30. Complete a minimum of 6 semester hours of graduate credit in the major area of specialization.
31. Complete a minimum of 6 semester hours of graduate credit in the minor area of specialization.
32. Complete a minimum of 6 semester hours of graduate credit in the comprehensive examination area.
33. Complete a minimum of 30 semester hours of graduate credit in the major field of specialization.
34. Complete a minimum of 30 semester hours of graduate credit in the minor field of specialization.
35. Complete a minimum of 30 semester hours of graduate credit in the comprehensive examination area.
36. Complete a minimum of 90 semester hours of graduate credit.
further language requirements and levels of achievement.

VI. All doctoral graduate students shall be available for practice in a large and small concert (23-126) during the term of registration unless excused by their advisor.

Doctor of Philosophy
- A minimum of 42 semester hours of graduate credit is required in addition to the minimum of 36 semester hours of graduate credit in the major field.

Doctor of Musical Arts
- For the D.M.A. degree, the candidate must take an oral lecture examination and pass the general requirements for the Ph.D. in music. In addition, the candidate must pass the general requirements for the Ph.D. in music, complete a major recital or project, and complete the following requirements:
  1. A music minor in a different discipline from music.
  2. A major recital or project in the candidate's major field.

Doctor of Music Education
- The candidate must pass an oral lecture examination and complete the following requirements:
  1. A music minor in a different discipline from music.
  2. A major recital or project in the candidate's major field.

Doctor of Musical Arts in Composition
- The candidate must pass an oral lecture examination and complete the following requirements:
  1. A music minor in a different discipline from music.
  2. A major recital or project in the candidate's major field.

Doctor of Musical Arts in Conducting
- The candidate must pass an oral lecture examination and complete the following requirements:
  1. A music minor in a different discipline from music.
  2. A major recital or project in the candidate's major field.

Doctor of Musical Arts in Performance
- The candidate must pass an oral lecture examination and complete the following requirements:
  1. A music minor in a different discipline from music.
  2. A major recital or project in the candidate's major field.

Graduate Awards
- Qualifying graduate students are invited to apply for the following awards. Applications, inquiries and eligibility requirements should be directed to the Office of Academic Affairs.

Music for Nonmajors
- The Music for Nonmajors program is designed to introduce students to music as a subject of study and to highlight the importance of music in daily life. The program offers a variety of courses in music appreciation, history, theory, and performance. Nonmajors who wish to enroll in music classes should consult the Department of Music.

MUSIC

Read the entire text before responding.
<table>
<thead>
<tr>
<th>Course Description</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:11 Review Theory</td>
<td>cr.arr.</td>
<td>No graduate credit. Both seniors and summer.</td>
</tr>
<tr>
<td>25:15 Undergraduate Composition</td>
<td>cr.arr.</td>
<td>Prerequisite, permission of instructor. Both seniors.</td>
</tr>
</tbody>
</table>

For Undergraduates and Graduates

Music Education

Where dual numbers are indicated, students preparing for a Music Teacher Certificate should register under the Education number.

25:100 Class Voice | 1 s.h. | Open to music majors for secondary vocal study and to others by permission. |
25:101 Class Piano I | 1 s.h. | Open only to music majors for secondary piano study. |
25:102 Class Piano II | 1 s.h. | |
25:103 Class Viola | 0 to 2 s.h. | Open only to string majors for secondary viola study. |
25:104 Instrumental Techniques (Coronet, Clarinet, and Percussion) | 1 or 2 s.h. | Second semester. |
25:105 Instrumental Techniques | 1 to 3 s.h. | Same as Education 75:143. For prospective teachers in public schools. Fundamental wind instrument skills. First semester. |
25:107 Instrumental Conducting | 2 s.h. | Offered both semesters. |
25:108 Advanced Instrumental Conducting | cr.arr. | Prerequisite, elementary conducting skills. |
25:109 Choral Methods and Conducting | 3 s.h. | Same as Education 75:147. First semester. |
25:111 Choral Techniques | 2 s.h. | Same as 25:105 or 25:112, but without elements of composition. |
25:112 String Techniques and Methods | 2 or 3 s.h. | Same as Education 75:250. |
25:113 Method of Teaching Piano | 3 s.h. | |
25:114 Piano Teaching Laboratory | cr.arr. | |
25:115 Diction for Singers I | 3 s.h. | English and French. |
25:116 Diction for Singers II | 2 s.h. | German and Italian. |

25:120 Problems in Arranging and Orchestration | cr.arr. | 2.5 s.h. |
25:121 Arranging for Marching Band | cr.arr. | 2 s.h. |

Theory and Composition

25:145 Counterpointal Forces | 3 s.h. | Writing and analysis. Prerequisite, 25:2 or 25:11 or equivalent. |
25:146 20th-Century Harmony and Counterpoint | 3 s.h. | Lectures and writing. Prerequisite, 25:2 or 25:11 or equivalent. First semester. |
25:147 Tonal Forms | 2 s.h. | Prerequisites, 25:2 or 25:11 or equivalent. Both seniors and summer. |
25:148 Analysis of Music Literature | 1600 to 1750 | 3 s.h. |
Prerequisites, 25:21 or equivalent and 25:4 or equivalent. May be repeated. First semester. |
25:149 Analysis of Music Literature | 1750 to 1825 | 3 s.h. |
Prerequisites, 25:21 or equivalent and 25:4 or equivalent. May be repeated. Second semester. |
25:150 Analysis of Music Literature | 1825 to 1900 | 3 s.h. |
Prerequisites, 25:21 or equivalent and 25:4 or equivalent. May be repeated. Second semester. |
25:153 Studies in Jazz | cr.arr. | Prerequisite, a thorough knowledge of traditional harmony and counterpoint and at least junior standing. |
25:156 Composition Seminar | cr.arr. | Prerequisites, advanced writing and permission of instructor. |
25:157 Orchestration | 1 s.h. | First semester. |

History, Literature, and Research

25:158 Late 18th- and 19th-Century Composers | 3 s.h. |
25:159 Early 18th- and 19th-Century Composers | 2 or 3 s.h. |
25:152 Interpretation of German Art | cr.arr. | |
25:153 Interpretation of Non-German Art | cr.arr. | |
25:154 History of Organ Building and Design | 3 s.h. | Development of organ building; the history of actions and of stops, from the Renaissance to the present. Open
25:167 Church Service Playing I 2 s.h.
Service and hymn playing: accomplishment of chants and shared music, and improvisation of short two- and threepart hymn introductions. May be repeated for credit. Offered in alternate years; offered 1971-72.

25:168 Church Service Playing II 2 s.h.
Continuation of 25:167. May be repeated for credit. Offered in alternate years; offered 1971-72.

25:167 Organ Literature I 2 s.h.
Pre-Bach literature from the 15th through the 17th centuries. Open to all graduate music students and to others by consent of instructor. May be repeated for credit.

25:168 Organ Literature II 2 s.h.
Organ works of Bach and his contemporaries. Literature of the 18th and 19th centuries. Open to all graduate music students and to others by consent of instructor. May be repeated for credit.

25:167 Vocal Literature cr.arr.

25:170 Orchestral Literature cr.arr.

25:171 Piano Literature cr.arr.

25:172 String Instrument Literature cr.arr.

25:173 Wind Instrument Literature cr.arr.

25:175 Special Studies cr.arr.

25:179 Acoustics 3 s.h.
Physics of sound and music. Second semester.

Primearily for Graduates

Music Education

25:200 Seminar: Bond Problems cr.arr.

25:201 Methods of Teaching Voice cr.arr.
First semester and alternate summers.

25:203 Church Music I 3 s.h.
Liturgies and Hymnody: a survey of congregational worship practice.

25:204 Church Music II 2 s.h.
Church choir repertoire and materials.

25:207 Advanced Choral Conducting I 2 or 3 s.h.
Alternate semesters. Prerequisite, 25:108.

25:208 Advanced Choral Conducting II 1 to 2 s.h.

25:209 Advanced Instrumental Methods and Literature I 3 or 2 s.h.
Review of techniques, solo, ensemble, and study material for wind and percussion instruments. First semester.

25:210 Advanced Instrumental Methods and Literature II 2 or 3 s.h.

Theory and Composition

25:230 Fugue 3 s.h.
Prerequisite, mastery of the materials of counterpoint and harmony. Writing and analysis. Both semesters.

25:232 Variation Forms 3 s.h.

25:234 Practice Teaching in Theory cr.arr.

25:235 Methods of Teaching Theory cr.arr.
Second semester.

MUSIC

25:236 Methods and Techniques of Teaching Basic Musicianship cr.arr.
Techniques for teaching basic theory skills, interval, rhythm, melodic, and harmonic dictation, and selected keyboard skills.


25:241 History of Music Theory I 2 s.h.

25:242 History of Music Theory II 2 s.h.

25:243 Thorough Bass Realization I 2 s.h.
Practice in writing keyboard accompaniments in 17th- and 18th-century music.

25:244 Thorough Bass Realization II 2 s.h.
Practice in improving accompaniments at sight on the keyboard, from figured basses. Open to qualified students with sufficient keyboard proficiency.

25:250 Electronic Studio I cr.arr.
Nature, ears, and use of the equipment in an electronic music studio. Prerequisite, major in music and consent of instructor. First semester.

25:251 Electronic Studio II cr.arr.
Individual creative studies. Prerequisite, 25:250 or consent of instructor. May be repeated for credit. Both semesters.

25:255 Advanced Theory I 3 s.h.
Examination and evaluation of ideas of such theorists as Haydn, Pur, Haydn, Schenker, Hidi, Pelle. Developing bases for analysis.

25:256 Advanced Theory II 3 s.h.
Problems of musical perception. Examination of studies pertaining to music aesthetics, such as those of Lange, Meyer, Causer, Lefe-Stauss.

Musicology, Literature, and Research

25:301 Advanced History and Literature of Music I 3 s.h.
Style in Western music. First semester.

25:302 Advanced History and Literature of Music II 3 s.h.
Continuation of 25:301, but may be taken as an independent unit with permission of instructor. Second semester.

25:303 Medieval Music 3 s.h.

25:304 Renaissance Music 3 s.h.

25:305 17th-Century Music 3 s.h.

25:306 The Age of Bach and Handel 3 s.h.

25:307 Preclassical Composers 3 s.h.

25:308 The Classical Period 3 s.h.

25:309 19th-Century Music 3 s.h.

25:310 20th-Century Music 3 s.h.

25:311 Music of the Americas (U.S. and Canada) 3 s.h.

25:312 Music of the Americas (Latin America) 3 s.h.

25:313 Seminar: Major Composers 3 s.h.

25:314 Seminar: Genres of Music 3 s.h.

25:315 The Opera of Mozart 3 s.h.

25:316 The History of Musical Instruments 3 s.h.
Notes: Courses 25:303 to 25:316 are units in a series of intensive surveys of special areas in the history of music, with detailed analysis of representative works. Offered in rotation approximately every two or three years.

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MUSIC

25:318 Primitive Music 3 a.h.
25:319 Oriental Music 2 a.h.
25:321 Introduction to Graduate Study in Music 2 a.h.

Use of the music library; reference materials; bibliographic research problems and methods, with guest lecturers from various music subject areas. Required of all graduate students. First semester and summer.


Intensive bibliography, including additional materials in student's major field of concentration. Prerequisite: 25:321 or consent of instructor. Second semester and summer.

25:323 Musical Notation 1 or 2 a.h.
Musical palaeography: transcription and stylistic study of early vocal and instrumental notations and manuscripts. May be repeated for credit.

25:329 Musico logical Approaches 2 or 3 a.h.
Introduction to research. Bibliographical materials, literary resources, style analysis and criticism, and related fields. Study of special topics in groups and by individual investigation. May be repeated for credit. Prerequisite: consent of instructor.

25:330 Seminar: Musicology 2 or 3 a.h.
Continuation of 25:329. May be repeated for credit. Prerequisite: consent of instructor.

Problems of interpretation, especially in music of the 16th to 18th centuries.

Continuation of 25:331, but may be taken as an independent unit with permission of instructor.

25:334 Seminar: Vocal Performance cr.arr.

25:335 Seminar: Wind Instrument Performance cr.arr.

Both semesters.

Prerequisite, consent of instructor. Contemporary percussion literature and current styles, notation and techniques of performance and composition.

25:337 Seminar: Music Research and the Computer I 3 a.h.
Current applications of high-speed digital computers to research in music theory, history, and composition.

25:338 Seminar: Music Research and the Computer II 3 a.h.
Continuation of 25:337, with emphasis on individual projects. Prerequisite: 25:337 or consent of instructor.


25:341 Advanced Choral Literature I 2 or 3 a.h.
Mass, motet, and madrigal literature from the Renaissance through the 17th century. Alternate semesters.

25:342 Advanced Choral Literature II 2 or 3 a.h.
Cantata, oratorio, and Passion literature from the Renaissance through the 17th century. Alternate semesters.

25:343 Advanced Choral Literature III 2 or 3 a.h.
Twentieth-century choral music. Alternate semesters.
A fee of $30 per semester is charged for each course in applied music in the student's major field of performance. The course will consist of either individual or a combination of individual and class lessons (a minimum of one hour weekly) at the option of the instructor. Students electing the fee $30 courses in the same semester are assessed a fee of $30. All music majors are expected to attend seminars of the applied music courses for which they are enrolled.

A limited number of applied music fee exemptions are available in the first and second semesters (first not in summer sessions) to talented students who require aid for particular voice or instrument. For assignment of teachers and individual lesson hours, students should consult as follows:

<table>
<thead>
<tr>
<th>Voice</th>
<th>Mr. Stark</th>
<th>10 MB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piano</td>
<td>Mr. Simms</td>
<td>20 MB</td>
</tr>
<tr>
<td>Organ</td>
<td>Mr. Kragf</td>
<td>10 MB</td>
</tr>
<tr>
<td>Violin</td>
<td>Mr. Torgp</td>
<td>20 MB</td>
</tr>
<tr>
<td>Viola</td>
<td>Mr. Pricp</td>
<td>22 MB</td>
</tr>
<tr>
<td>Violoncelo</td>
<td>Mr. Wondi</td>
<td>15 MB</td>
</tr>
<tr>
<td>Cymbal</td>
<td>Mr. Jorcol</td>
<td>10 MB</td>
</tr>
<tr>
<td>Woodwind</td>
<td>Mr. Vooran</td>
<td>14 MB</td>
</tr>
<tr>
<td>Brass</td>
<td>Mr. Anderson</td>
<td>11 MB</td>
</tr>
<tr>
<td>Percussion</td>
<td>Mr. Davla</td>
<td>1 MB</td>
</tr>
</tbody>
</table>

The following courses are offered every semester:

| 25:12 | Voice 1 | cr.arr |
| 25:13 | Piano 1 | cr.arr |
| 25:14 | Organ 1 | cr.arr |
| 25:15 | Harp 1 | cr.arr |
| 25:16 | Violin 1 | cr.arr |
| 25:17 | Viola 1 | cr.arr |
| 25:18 | Cello 1 | cr.arr |
| 25:19 | String Bass 1 | cr.arr |
| 25:20 | Woodwind 1 | cr.arr |
| 25:21 | Brass 1 | cr.arr |
| 25:22 | Percussion 1 | cr.arr |
| 25:23 | Voice 2 | cr.arr |
| 25:24 | Piano 2 | cr.arr |
| 25:25 | Organ 2 | cr.arr |
| 25:26 | Harp 2 | cr.arr |
| 25:27 | Violin 2 | cr.arr |
| 25:28 | Viola 2 | cr.arr |
| 25:29 | Cello 2 | cr.arr |
| 25:30 | String Bass 2 | cr.arr |
| 25:31 | Woodwind 2 | cr.arr |
| 25:32 | Brass 2 | cr.arr |
| 25:33 | Percussion 2 | cr.arr |
| 25:34 | Voice 3 | cr.arr |
| 25:35 | Piano 3 | cr.arr |
| 25:36 | Organ 3 | cr.arr |
| 25:37 | Harp 3 | cr.arr |
| 25:38 | Violin 3 | cr.arr |
| 25:39 | Viola 3 | cr.arr |
| 25:40 | Cello 3 | cr.arr |
| 25:41 | String Bass 3 | cr.arr |
| 25:42 | Woodwind 3 | cr.arr |
| 25:43 | Brass 3 | cr.arr |
| 25:44 | Percussion 3 | cr.arr |

Ensemble

No fee is charged for ensemble. Courses may be repeated for credit, and are offered each semester. Permission for each is at the discretion of the instructor.

| 25:12 | Solo Roles | cr.arr |
| 25:13 | Old Gold Singers | 0 to 2 h |
| 25:14 | Opera Workshop | cr.arr |
| 25:15 | Chamber Orchestra | cr.arr |
| 25:16 | Collegium Musicum | 1 h |
| 25:17 | University Choir | 1 h |
| 25:18 | Piano Accompaniment | cr.arr |
| 25:19 | Piano Chamber Music | cr.arr |
| 25:20 | String Chamber Music | 1 h |
PHILOSOPHY

25:180 Woodwind Chamber Music cr.arr.
25:190 Brass Chamber Music cr.arr.
25:191 Oratorio Chorus 1 s.h.
25:192 Orchestra 1 s.h.
25:193 Marching Band
First semester,
25:194 Symphony Band and Haukaye Concert Band 1 s.h.
25:195 Percussion Ensemble 1 s.h.
Second semester,
25:197 Jazz Workshop 0 or 1 s.h.
Prerequisite, consent of instructor.

Summer Instruction
Chilmen may enroll for applied music courses during the eight-week summer session for total fees of $125.00 for one half-hour lesson weekly or $25 for two lessons.

NONDEPARTMENTAL COURSES

Institute of Gerontology
Director, W. W. Morris
Office, 202 Byington Road

STAFF
Associate Professor: H. Lee Janke

COURSE DESCRIPTIONS

0:101 Biological and Psychological Aspects of Aging 3 s.h.
Aging as a process; physiological changes with age; major theories of biological and psychological aging; psychological aging as determinant to integrity; the psychology of aging in historical perspective; changes in preconceived abilities with age; age and intellectual performance; learning theory and experimentation in relation to aging; age and achievement; personality factors and social behavior; developmental tasks in the middle and later years; age and mental illness; and criteria for successful aging.

0:102 Social Aspects of Aging 3 s.h.
Societal and cultural content of aging; demographic factors in relation to aging; status and role of the aged in American society; economic and political implications of an aging population; programs for health, medical care, income maintenance, and living arrangements for the later years; the changing family and intergenerational relationships; community planning and coordination in relation to aging people; and trends in continuing education for the middle and elder years and professional work opportunities in the field of aging.

0:120 Seminar: Selected Problems in Aging cr.arr.

NUCLEAR MEDICAL TECHNOLOGY

(See Interdisciplinary Program and General Science)

NUCLEAR SCIENCE AND TECHNOLOGY

(See College of Engineering, Departments of Mathematics, Chemistry, and Physics, Radiation Research Laboratory—College of Medicine, and Interdisciplinary Programs)

PHILOSOPHY

Chairman of Department, Panayot Botevicharov
Office, 274 English-Philosophy Building

The Bachelor of Arts Degree

The undergraduate program in philosophy provides the student with a basic knowledge of the basic material in philosophy and strengthens logical skills which are useful in a wide variety of fields. Undergraduate majors are required to take the following courses:

26:100 Introduction to Philosophy
26:102 Introduction to Ethics
26:104 Introduction to Philosophy of Science
26:112 Survey of Ancient Philosophy
26:113 Survey of Early Modern Philosophy

and two of the courses numbered from 26:116 to 26:118.

The student may elect up to a maximum of 12 additional semester hours in philosophy courses. The honors program in philosophy is open to students with a grade-point average of 3.5 or higher; qualified students who are interested in entering the program should consult with the chairman of the department.

The Master of Arts Degree

For students with adequate undergraduate preparation, the master's 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 to be given after two semesters of graduate study have been completed. It will ordinarily cover the following areas: History of Modern Philosophy, Logic and Philosophy of Science, and Metaphysics and Ethics. There is no foreign language requirement for the master's degree.

The Doctor of Philosophy Degree

The doctor's degree is granted primarily on the basis of achievement rather than on the accumulation of semester hours, but ordinarily will take four years to obtain. The master's comprehensive examination will then be taken to determine qualifications for PhD candidacy. In addition, the student must pass a comprehensive examination, as of Dr. Botevicharov, in the area of graduate study and after satisfactory performance of the foreign language requirement. The doctoral examination will ordinarily cover the following areas: History of Ancient and Medieval Philosophy, History of Modern Philosophy, Logic and Philosophy of Science, Metaphysics and Epistemology, and Ethics. For the PhD degree in foreign language, either French, German, Latin, or Greek, is required. Normally the student is expected to do his or her major work in French and German, the ETS examinations, are employed. The Department of Philosophy also provides opportunities for Latin and Greek. The fourth year of graduate study will be spent in writing a doctoral dissertation.

STAFF
Professor: Gustav Bergmann, Panayot Botevicharov
Associate Professor: Laird Adkins, Philip Cummins, Maltus Gress
Assistant Professor: John B cred, William Robinson, Frank Seavey

COURSE DESCRIPTIONS

For Freshmen and Sophomores Only

26:1 Elementary Ethics 2 s.h.

26:2 Elementary Logic 2 s.h.
Elementary study of valid and invalid reasoning. Some seminars.
PHYSICAL EDUCATION FOR MEN
23:249 Research: Logic and Epistemology cr.arr. May be repeated for credit.
23:251 Research: History of Philosophy cr.arr. May be repeated for credit.

PHYSICAL EDUCATION FOR MEN
Head of Department, Louis E. Alley

The curriculum in physical education comprises five programs: the required program in physical education skills; the program for graduate majors; the program for the endorsement of athletic trainers; and the program for the endorsement of athletic coaches.

Physical Education Skills
The required program in physical education skills is a part of the basic skills program of the College of Liberal Arts (see State Skills). Courses in physical education skills are designed to guide students in developing and maintaining a reasonable degree of physical fitness, in improving motor-skill-related skills related to athletic activities of a recreational nature, in participating intelligently in a wide variety of physical activities, and in correcting physical defects that respond to therapeutic exercise.

Students who have completed the physical education skills requirement may take additional skills courses by registering for elective Physical Education for Men 273.5, 273.7, or 273.8.

Programs for Undergraduate Majors
Undergraduate programs of study in physical education lead either to the B.A. degree or to the B.S. degree. The program of study leading to the B.A. degree is designed for those who wish to major in physical education and for educators and in the physical sciences as well. Completion of this program represents the first step toward the B.A. degree, with major emphasis on exercise physiology, adapted physical education and rehabilitation, or academic and kinesiology. By selecting appropriate electives, the student can complete the College, 277, or 

Course requirements for certification in physical education include:
27:134 Methods and Materials for the Elementary School Physical Education, or
27:345 Methods and Materials for Elementary School Physical Education, or
27:55 Social Forms of Dance.
27:55 Educational Psychology and Measurement.
27:312-3 Laboratory Practice in Elementary Physical Education.

Majors in teaching and coaching must apply to the Director of Admissions, 22, to be eligible to take the secondary education program. For details concerning application for admission and for certification requirements, see College of Education.

Special Physical Education Majors who wish to prepare for careers in special education, pre-vocational education, or therapeutic recreation should plan their program in consultation with the Director of Admissions, 22. For information on these programs, see the College of Education.

TP:500 Educational Psychology and Measurement.
75:145 Methods in Special Physical Education for Boys.
75:150 Methods in Special Physical Education for Girls.
75:151 Physiology of Exercise.
75:152 General Kinesiology.

Foundation courses in science.
4:1, 4:2 General Chemistry and Qualitative Analysis.
1:2, 4:2 General Organic Chemistry
253.3 College Algebra.
253.1 Trigonometry.
253.2 Analytic Geometry.
255.1 Calculus.

Requirements for B.S. Degree
For general requirements of the College of Liberal Arts for the B.S. degree, see College of Liberal Arts.

Teaching and Coaching, Majors who wish to prepare for careers in teaching physical education and in coaching athletic teams must satisfactorily complete the following:
Courses in physical education and related areas.
27:11 Introduction to Physical Education.
27:12, 27:21 Teaching of Recreational Sports.
27:36 Coaching of Track.
27:37 Coaching of Swimming.
27:38 Coaching of Wrestling.

One of the seven courses must be selected from:
27:103 Administration of Physical Education and Athletics.
27:105 Adapted Physical Education.
27:180 Secondary Foundations of Physical Education.
27:181 Secondary Foundations of Physical Education.
27:182 Human Physiology.
27:183 Human Physical Education.

Courses required for certification in physical education include:
27:124 Methods and Materials in Elementary School Physical Education.
27:145 Methods and Materials in Elementary School Physical Education, or
27:55 Social Forms of Dance.
27:55 Educational Psychology and Measurement.
27:100 Introduction to Secondary School Teaching.
27:312-3 Laboratory Practice in Elementary Physical Education.
27:312-3 Observation and Laboratory Practice in Elementary Physical Education.

All majors in physical education must meet the physical fitness requirements for physical education skills.

Requirements for B.A. Degree
In addition to the general requirements for the B.A. degree (see College of Liberal Arts), the student must satisfactorily complete:
Courses in physical education:
27:13 Introduction to Physical Education.
27:12 or 22 Teaching of Recreational Sports.
27:20 Human Anatomy.
27:39 Leadership Training.
27:305 Adapted Physical Education.

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### PHYSICAL EDUCATION FOR MEN

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP-143</td>
<td>Introductory to Statistics</td>
</tr>
<tr>
<td>63:181</td>
<td>Elementary Statistical Inference in Medicine</td>
</tr>
</tbody>
</table>

Electives may be selected from the following:

- TP-157 Advanced Anatomy and Kinesiology
- TP-157 Advanced Anatomy and Kinesiology
- TP-255 Advanced Physical Education
- TP-211 History of Physical Education
- TP-233 Applied Anthropology
- TP-237 Curriculum in Physical Education
- TP-231 Motor Learning
- TP-231 Motor Learning
- 104:311 Philosophy and Trends in Recreation

Certain courses in the Bachelor of Science major may be selected as electives in the Bachelor of Science major.

**General College Requirements**

- **Mathematics**
  - MATH 115 Calculus I
  - MATH 116 Calculus II
- **Science**
  - CHEM 110 General Chemistry I
  - BIOL 110 General Biology
- **Social Sciences**
  - ECON 110 Principles of Economics
- **Humanities**
  - HUM 110 Introduction to the Humanities

**Departmental Requirements**

- **General Education**
  - MATH 115 Calculus I
  - MATH 116 Calculus II
- **Science**
  - CHEM 110 General Chemistry I
  - BIOL 110 General Biology
- **Social Sciences**
  - ECON 110 Principles of Economics
- **Humanities**
  - HUM 110 Introduction to the Humanities

**University Thomas Requirements**

- **Mathematics**
  - MATH 115 Calculus I
  - MATH 116 Calculus II
- **Science**
  - CHEM 110 General Chemistry I
  - BIOL 110 General Biology
- **Social Sciences**
  - ECON 110 Principles of Economics
- **Humanities**
  - HUM 110 Introduction to the Humanities

**Electives**

- TP-143 Introductory to Statistics
- 63:181 Elementary Statistical Inference in Medicine

Electives may be selected from the following:

- TP-157 Advanced Anatomy and Kinesiology
- TP-157 Advanced Anatomy and Kinesiology
- TP-255 Advanced Physical Education
- TP-211 History of Physical Education
- TP-233 Applied Anthropology
- TP-237 Curriculum in Physical Education
- TP-231 Motor Learning
- TP-231 Motor Learning
- 104:311 Philosophy and Trends in Recreation

Certain courses in the Bachelor of Science major may be selected as electives in the Bachelor of Science major.

Writers comprehensive examination. The candidate for the M.A. degree with thesis must write a research paper in addition, must select four areas from each of the following groups:

**Group I**

- Anatomy and Kinesiology
- Exercise Physiology
- Mechanical Analysis of Sports
- Psychology of Motor Learning
- Time and Measurements in Physical Education

**Group II**

- Adapted Physical Education
- Administration of Physical Education
- Curriculum in Physical Education
- History of Physical Education

Candidates for the M.A. degree with thesis must take the written examination the semester or summer session preceding the semester or summer session in which the degree is granted.

Eligibility for oral examination.

- Satisfactory completion of the M.A. comprehensive examination
- Approval of thesis by Graduate Committee
- Completion of required (undergraduate and graduate) courses
- A grade-point average of 2.0 or higher on all graduate work attempted at this University
- M.A. thesis. The study paper leading to the M.A. degree, although a thesis is primarily designed as a terminal unit of advanced study in preparation for the administration, teaching, or teaching of physical education in the schools. A seminar paper is required in connection with the course work.

Undergraduate prerequisites. The undergraduate courses (as equivalent) together with elective courses in physical education and related areas sufficient to total 30 semester hours, are required. Any or all of these courses may be taken after the student has been admitted to graduate study in physical education. They should, however, be taken at the earliest opportunity.

**Semester Hours**

- **Undergraduate Courses**
  - Human Anatomy
  - Methods in Physical Education
  - Administration of Physical Education and Athletic Directorship
  - Intermediate Algebra (or equivalent)
  - Teaching of Recreational Sports (or equivalent)
  - Practice Teaching (or equivalent)
  - Elective in physical education and related areas

**Total 30**

**Semester Hours**

- **Human Anatomy**
- **Methods in Physical Education**
- **Administration of Physical Education and Athletic Directorship**
- **Intermediate Algebra (or equivalent)**
- **Teaching of Recreational Sports (or equivalent)**
- **Practice Teaching (or equivalent)**
- **Elective in physical education and related areas**

**Total 30**

Prerequisites must be completed before entering the program.
Requirements. The specific courses listed below, to-gether with elective courses in physical education and related areas sufficient in total to 30 semester hours, are re-quired for the M. A. degree without thesis.

27:105 Adapted Physical Education
27:203 Advanced Adapted Physical Education and Rehabilitation
27:117 Mechanical Analysis of Athletic Performance
27:217 Public School Curriculum in Physical Education
27:287 Advanced Measurement II
27:381 Seminar: Neuropsychology
27:384 Seminar: Neuropsychology
27:341 Scientific Principles of Physical Conditioning

Students who wish to qualify as elementary-secondary supervisors of physical education shall meet the above requirements for such certification. These students should consult their advisors concerning their specific courses that fulfill this requirement.

Written comprehensive examinations. Written examina- tions covering eight of the following areas (to be selected by the candidate) constitute the comprehensive examina-tion for the M.A. degree without thesis: adapted physical education; administration and supervision of physical educa-tion; anatomy and kinesiology; curriculum in physical education; history of physical education; mechanical anal-ysis of sports; exercise physiology; psychology of motor learning; recreations; and tests and measurements in physi-cal education. Candidates for the M.A. degree with-outhesis must take the written examination the semester or the summer session in which the degree is granted.

Eligibility for comprehensive written examination.
1. Acceptance of seminar paper by Department of Phys-ical Education for credit.
2. Completion of required (undergraduate and graduate) courses listed on degree program.
3. A grade-point average of 3.00 on all graduate work attempted.

Residence requirements for M.A. degree. Twenty-four semester hours of graduate credit must be earned in residence at this University. Six semester hours of graduate credit must be earned at another institution before the student may be admitted to the M.A. degree program. If the student is employed in an institution which offers an M.A. degree in physical education, the student must meet the requirements of the respective degree program before being admitted to the M.A. degree program at this University.

The student must complete a minimum of 36 semester hours of graduate credit, including 15 hours of electives in the area of specialization. The student must complete the written examination for the degree during the semester in which the degree is granted.

Eligibility for comprehensive examination.
1. Acceptance of dissertation by Graduate College.
2. Examination for M.A. degree completed and graded.
3. Evidence that the dissertation has been submitted for publication to a reputable journal.

Eligibility for comprehensive examination.
1. Degree program filed in Graduate College.
2. Evidence of good academic standing.
3. Completion of all requirements, if required.

Program Leading to Ph.D. Degree.
The program leading to the Ph.D. degree in physical education is designed primarily for the student with a com-prehensive background in the various areas in the field of physical education, a knowledge of the research techniques that may be applied to problems in physical education, and experience in research work at least equal to that experience in a physical education. A dissertation which must deal with a topic not yet studied by the student to a great degree, and which includes the research techniques selected by the student is required. The selection of a dissertation subject, its direction and supervision by a dissertation committee elected by the student is required. The dissertation must be submitted for publication to a reputable journal before the Ph.D. is granted.

The student is admitted to the program leading to the Ph.D. degree on the basis of the student's grade-point average in the M.A. or M.S. de-gree and his work on the Graduate Record Examination Aptitude Test. To be considered for admission, the stu-dent must have earned a grade-point average of 3.0 or higher in all graduate work undertaken.

Prerequisites. Completion of the undergraduate pre-requisites for the M.A. degree with thesis and the re-quirements for the M.A. degree with thesis are re-quired. After all of these requirements may be completed after the student has been admitted to graduate work in physical education. They should, however, be completed at the earliest opportunity. If the student has the M.A. degree without thesis, he must complete the equivalent of the comprehensive examination for the Ph.D. degree.

Requirements. The student must complete the core re-quirements and the requirements for at least one area of specialization.

Ph.D. degrees. At least 6 semester hours in electives (not completed earlier) for M.A. degree with thesis.
27-282 Selected Applications of Statistical Techniques or Five Advanced Statistical Methods 27-482 Seminar: Thesis II (482-D)
Requirements for specialization in measurement and statistics. Since the foreign language requirement differs for each area of specialization, contact the departmental office for details. All candidates not required to demonstrate pro-ficiency in a foreign language must satisfactorily complete the following courses or their equivalent: Data Processing or 27-180, 181-181 Introduction to Computers and Programming I and II.

Areas of specialization. In addition to the core require-ments, the student must complete 30 semester hours or more in one area of specialization. The areas of speciali-zation are:
Adapted Physical Education and Rehabilitation
Biomechanics
Exercise Physiology
Learning and Performance of Motor Skills
Measurement and Statistics

A minimum of two years teaching experience is re-quired for specialization in curriculum and administration.

Eligibility for comprehensive examination.
1. Degree program filed in Graduate College.
2. Evidence of good academic standing.
3. Completion of all requirements, if required.
4. A grade-point average of 3.00 or higher on all grad-uate work attempted at this University.

Acadamy
Anatomy

The doctoral degree is granted pri-marily 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 at this University. As a minimum, two semesters in residence, each of at least 9 semester hours each, must be spent in full-time residence on campus at this University. The student is not entitled to a degree if the number of semester hours of graduate study, beyond the first 24 semester hours of graduate study, is less than 12 semester hours of graduate study.

Thirty semester hours of graduate study (twenty-four earned in residence) earned at another institution may be applied to the degree. The student should have a back-ground in physical education in an area which is a specialty of such graduate study. The student should be in good academic standing at the time that the prospective student is accepted for graduate study by this University. This student must complete all the requirements for specialization in the dissertation and the dissertation must be submitted for publication to a reputable journal before the degree is granted.

If this Seminar, Thesis IV (Ph.D.) must be taken in residence during the semester in which the writing of the dissertation is begun and during the semester in which the dissertation is completed.

Financial support. Resources for student financial sup-port include teaching assignments, research assistant-hips, fellowships, and research assistantships in exercise physiology, teaching research fellowships, EDA fellowships for M.S. degrees, and tuition scholarships.
Endorsement for Athletic Trainers

Students who wish to be certified as trainers for athletic teams at the secondary school level as a minor part of their regular teaching duties must satisfactorily complete the following courses listed below. These courses listed below are:

- **27:120** Scientific Foundations of Physical Education
- **27:181** Scientific Foundations of Physical Education II
- **27:182** Laboratory in Athletic Training I
- **27:183** Laboratory in Athletic Training II
- **35** General Chemistry (or equivalent)
- **40** Principles of Animal Biology
- **40:113** Human Anatomy and Neuroanatomy

*Must follow 27:180*

Endorsement for Coaches

Students who wish to be certified for coaching athletic teams at the secondary school level as a minor part of their regular teaching duties must satisfactorily complete the courses listed below:

- **27:** One of seven coaching courses must be elected.
- **27:53** Human Anatomy
- **27:120** Administration of Physical Education and Athletics
- **27:181** Scientific Foundations of Physical Education
- **27:182** Scientific Foundations of Physical Education II
- **15:142** Observation and Laboratory Practice in High School (coaching only)

*May be waived on the basis of appropriate experience as a coach.
**May be taken either after or concurrently with 27:53.

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**STAFF**

Professors: Louis E. Alley, Donald R. Cassedy, Leon R. Smith.


Assistant Professor Emeriti: David A. Armbruster, Anna N. Albin, Richard K. Stamps.

Assistant Professor: Robert H. Allen, Frederic S. Beene.


*Department of Athletics

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**COURSE DESCRIPTIONS**

**Primarily for Undergraduates**

**27:5 Elective Physical Education for Men cr.arr.** Elective for students who have satisfied the requirements for physical education skills (see Basic Skills). Both semesters.

**27:6 Elective Physical Education for Men cr.arr.** Continuation of 27:5. Both semesters.


**27:8 Elective Physical Education for Men cr.arr.** Continuation of 27:7. Both semesters.

**27:11 Introduction to Physical Education 1 cr.** Orientation lectures on historical and educational aspects of physical education. First semester.

**27:19 Elementary Swimming** cr.arr. For students who cannot swim. Summer session only.

**27:20 Social Forms of Dance** 1 or 2 cr. Same as 28:20.

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**PHYSICAL EDUCATION FOR MEN**

**27:21 Teaching of Recreational Sports I 2 cr.** Techniques and methods of teaching and organizing groups for participation. First semester.


**27:25 Fencing** cr. First semester.


**27:32 Coaching of Gymnastics** 2 cr. Prerequisite: high school varsity experience or equivalent.

**27:33 Coaching of Football** 2 cr. First semester. Prerequisite: high school varsity experience or equivalent.

**27:34 Coaching of Baseball** 2 cr. Second semester. Prerequisite: high school varsity experience or equivalent.

**27:35 Coaching of Track and Field Athletics** 2 cr. First semester. Prerequisite: high school varsity experience or equivalent.

**27:36 Coaching of Basketball** 2 cr. First semester. Prerequisite: high school varsity experience or equivalent.

**27:37 Teaching of Swimming** 2 cr. Both semesters.

**27:38 Coaching of Competitive Swimming** 2 cr. Second semester. Prerequisite: high school varsity experience or equivalent.

**27:39 Coaching of Wrestling** 2 cr. Both semesters. Prerequisite: high school varsity experience or equivalent.

**27:40 Methods of Teaching Tennis** 1 cr. Summer session only.

**27:41 Coaching of Tennis** 2 cr. Prerequisite: high school varsity experience or equivalent.

**27:42 Administration of Intramural Athletics** 2 cr. Both semesters.

**27:53 Human Anatomy** 2 cr. Both semesters.

**27:58 Laboratory Practice in Special Physical Education** 3 cr. Prerequisites: Physiology 23:13 and 27:09. Laboratory experience in adapted physical education, exercise therapy, and corrective therapy. Both semesters.

**27:59 Laboratory Practice in Special Physical Education** 3 cr. Continuation of 27:58. Both semesters.

**27:57 Honors Seminar** 3 cr. Prerequisites: junior or senior standing, grade-point average of 2.8 or above, major in physical education or recreation.

**27:58 Honors Research Paper** 3 cr. Leadership experiences under staff supervision. Both semesters. Prerequisite: 27:57.

**27:59 Leadership Training** cr.arr. Consult instructor before registering.
27:201 Practical Problems of the Teacher-Counselor cr.arr.
27:203 Administration of Physical Education and Athletics 2 or 3 s.h.
Both semesters.
27:205 Adapted Physical Education 2 s.h.
Prerequisite, 27:203, Second semester.
27:129 Advanced Theory of Wrestling 1 or 2 s.h.
27:131 Advanced Theory and Techniques of Swimming and Diving 2 s.h.
27:136 Physical Education for High Schools 3 s.h.
Summer session only.
27:146 Intramural Programs in Schools and Colleges 2 s.h.
Summer session only.
27:153 Advanced Anatomy and Kinesiology 2 s.h.
Emphasis on preparation for teaching anatomy and kinesiology at undergraduate level. First semester.
27:157 Mechanical Analysis of Athletic Performance 3 s.h.
Prerequisite, 27:201 or equivalent. First semester.
27:159 Physical Education for Elementary Schools 3 s.h.
Same as Education 72:159.
27:167 Advanced Measurement in Physical Education I 2 s.h.
First semester.
27:180 Scientific Foundations of Physical Education I 4 s.h.
Physiology, exercise physiology, and growth and development.
27:181 Scientific Foundations of Physical Education II 4 s.h.
27:183 Laboratory in Athletic Training I 2 s.h.
First semester.
27:183 Laboratory in Athletic Training II 2 s.h.
Continuation of 27:183. Second semester.
27:199 Supervision of Physical Education for Boys 3 s.h.
Same as Education 72:199.
Primarily for Graduates
27:201 Problems cr.arr.
Consult Mr. Alley before registering. Both semesters.
27:205 Adapted Physical Education and Rehabilitation 4 s.h.
Prerequisite, 27:30 and 27:30. First semester.
27:307 Advanced Administration of Physical Education 2 s.h.
First semester.
27:211 History of Physical Education 2 s.h.
First semester.
27:213 Advanced Theory of Athletics 3 s.h.
Advanced theories of coaching football, basketball, baseball, and track and field athletics for graduate students who are well-grounded in coaching methods. Summer session only.
27:234 Applied Anthropometry 2 or 3 s.h.
27:237 Public School Curriculum in Physical Education 3 s.h.
Same as Education 73:237.
27:241 Scientific Principles of Conditioning 3 or 4 s.h.
27:247 Philosophy of Physical Education 2 or 3 s.h.
Prerequisite, consent of instructor.
27:251 Seminar: Mechanical Analysis of Human Movement cr.arr.
27:267 Advanced Measurement in Physical Education II 3 s.h.
Second semester.
27:301 Seminar: Nonthetics 3 s.h.
Required of students enrolled in 27-semester-hour program leading to M.A. without thesis.
27:306 Motor Learning I 3 s.h.
Major learning principles and practical implications for teaching.
27:310 Colloquium no cr.
Special lectures. Summer session only.
27:311 Orientation to Graduate Study no cr.
27:312 Seminar: Motor Learning II 3 s.h.
Students not having completed previous course in motor learning should first complete 27:306. Evaluation of research literature in motor learning and motor performance.
27:314 Learning and Performance of Motor Skills Laboratory 3 s.h.
Construct, evaluate, and utilize research equipment specifically related to the teaching and performance of motor skills. Test subjects and analyze and evaluate data obtained from experiments in the learning and performance of motor skills.
27:337 Seminar: Research in Physical Education Curriculum 3 s.h.
27:357 Seminar: Measurement in Physical Education cr.arr.
Required of candidates for M.A. with thesis. Should be completed during first 6 semester hours of graduate study. Opinions in selection of topics for research and in research procedure. Both semesters.
27:403 Seminar: Thesis III (Ph.D.) cr.arr.
Both semesters.
27:404 Seminar: Thesis IV (Ph.D.) cr.arr.
PHYSICAL EDUCATION FOR WOMEN

Head of Department, M. Gladys Scott
Office, 114 Women's Gymnasium

At the undergraduate level the Department of Physical Education for Women provides professional education in physical education and pre-physical therapy. It also cooperates on an inter-departmental level in recreation education. It administers a general major in health and physical education known as General Studies in Health, Physical Education, and Recreation. The dance curriculum may be oriented to dance teaching or to the arts, depending upon enrollment. Thus 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.

The teaching or physical therapy curriculum may lead to either the B.A. degree or the B.S. degree. The non-professional and dance curricula lead to the B.A. degree. Graduate work is also offered in the physical education, dance, and recreation fields. Curricula lead to the M.A. degree in physical education or dance, and to the Ph.D. degree in physical education.

The department offers courses in physical education skills as a part of the general requirements for all women in the College of Liberal Arts. Further, it promotes and advises a student-run recreational program open to both men and women.

Programs for Undergraduates

Physical Education Teaching Curriculum

28-10, 28, 32, 33, 34 Techniques or 12 to 16 h.
equivalent experiences

28-14 Structural and Applied Anatomy 3 h.

28-16 Kinesiology 2 h.

28-17 Corrections 2 h.

28-19 Orientation 1 h.

28-20 Social Forms of Dance 1 or 2 h.

28-25, 26, 32, 33 Teaching and Officiating Sports 4 to 6 h.

28-27, 28, 29, 30, 31 Dance 4 to 6 h.

28-27 First Aid (or Red Cross certification) 2 h.

28-28, 30, 31, 32 Sports Administration 2 h.

28-30, 31, 32, 33 Physical Education 4 to 6 h.

28-30, 32, 33, 34 Physical Education 4 to 6 h.

28-30 or 28-112 Rhythmic Analysis 6 h.

28-128 Dance Accompaniment 2 h.

28-131, 132 History of Dance 3 h.

28-135, 136 Beginning Chorography 4 h.

28-137, 138 Advanced Modern Dance 4 h.

In addition, the student must elect 15 semester hours of the following courses, or from others which may be offered later by the department or transferred from other institutions, and approved by the adviser for the student's program.

28-13, 14, 15 English (in addition to first course required above) 1 or 2 h.

28-13 Stage Movement 1 h.

28-14 Social Forms of Dance 1 h.

28-15 Folk and Square Dance 1 h.

28-27 Teaching of Social Forms of Dance 2 h.

28-28 Teaching of Social Forms of Dance 2 h.

28-31 Children's Dance 2 h.

28-131, 132 Dance in Education 4 h.

28-128, 129 Dance Production 4 h.

28-130, 131 Recitation in Dance 4 h.

Students desiring to teach in elementary or secondary schools must apply certification requirements to education, and must take 28-27 First Aid or hold Red Cross certification in first aid. Minimum electives above are reduced to 12 semester hours for these students, and a grade-point average of at least 2.5 must be maintained.

Pre-Physical Therapy Curriculum

28-13 Structural and Applied Anatomy 3 h.

28-14 Kinesiology 3 h.

28-21, 22, 23, 24 Techniques 3 h.

28-27 First Aid (or Red Cross certification) 2 h.

28-27, 30, 31, 32 Techniques 4 to 6 h.

28-27, 30, 31, 32, 33 Physical Education 4 h.

28-28, 29, 30, 31, 32, 33 Physical Education 4 h.

28-29 Physical Education Teaching Concentration for Elementary Education Majors

28-34 Structural and Applied Anatomy 2 h.

28-17 Biology 3 h.

28-27, 28, 29, 30, 31, 32, 33 Physical Education 2 h.

28-27, 28, 29, 30, 31, 32, 33 Physical Education 2 h.

28-30, 31, 32 Dance in Education 2 h.

28-30, 31, 32, 33 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.

28-30, 31, 32, 33, 34 Physical Education 2 h.
In addition, the student must write 9 semester hours of advanced course work in one science. It is recommended that some of the electives be taken from the following:

284:7 Techniques 3 or 4 s.h.
284:17 Correctives 3 s.h.
284:20 Recreational Craft 3 s.h.
284:61 Recreation Leadership 3 s.h.
284:113 Measurement 3 s.h.
284:128 Recreation for the Ill and Handicapped 2 or 3 s.h.

General Study in Health, Physical Education, and Recreation

The purpose of this program is to provide a background in health, physical education, and recreation, not as a preparation for a career in this field but as a broad social-service experience with material relevant to personal and family recreation and healthful living. Each student's program is planned with her adviser on the basis of the student's objectives in selecting this major.

Basic courses for all in the nonprofessional major are:

284:5, 7, 20, 25 or equivalent experience 7 to 8 s.h.
284:21, 25, 65 3 to 4 s.h.

Supplementary courses of 30 to 55 semester hours may be elected to complete a major of 55 semester hours. These elective hours should be chosen from the following fields:

art, dramatic arts, environmental health, home economics, music, physical education, psychology, recreation, or sociology. At least 15 of the 55 semester hours must be in courses for upper-level students (i.e., in the 300 series).

Honors in Physical Education for Women

To be eligible for Honors, the student must have at least a B average at the beginning of the junior or senior year when the Honors courses are taken. She must maintain the B average throughout the remainder of her college work.

To qualify for the B.A. or B.S. in physical education with Honors the student must:
1) Complete one of the curricula in physical education;
2) Satisfactorily complete any two of the following three courses: Honors Ratings, 284:26 Honors Project, or 284-25 Honors Seminar and include the presentation of a creative or experimental "Honors Thesis" as part of 284:24 or 25.

Graduate Study Requirements

M.A. degree. Awarded on completion of at least 30 semester hours of graduate work including thesis and in general field requirements for the master's degree and credit for the dissertation. Courses must be selected with the approval of the adviser in the field of specialization.

M.A. Thesis or Problems 0 to 4 s.h.
Dissertation 0 to 4 s.h.
Analysis of Human Motion 3 s.h.
Psychology of Physical Education 3 s.h.
HISTORY OF PHYSICAL EDUCATION 3 s.h.
Corrections 2 s.h.
"Measurement in Physical Education" Specializations. At least 30 semester hours are required in one area or in two related areas at the discretion of the adviser. Suggested areas:

Anatomy

Outdoor Education and Recreation

Curriculum

Correctives (Adaptable) 3 s.h.

Outdoor Education and Recreation

Psychology and History

Physical Education 3 s.h.

Curriculum

Motor Learning

Physical Education, 3 s.h.

Motor Learning 1 or 2 s.h.

Motor Skills 1 or 2 s.h.

Motor Skills 1 or 2 s.h.

SPECIALIZATION

Measurement and Research 1 or 2 s.h.

Motor Skills 1 or 2 s.h.

SPECIALIZATION

Supervision 1 or 2 s.h.

SPECIALIZATION

The dissertation should deal with some problem in the area of specialization.

Related field requirements. The student is required to complete at least 6 semester hours designated as more allied fields. This may be done in the form of a minor of approximately 10 semester hours which will be accepted jointly by the department and the department. It may consist of approximately 20 semester hours in one or more allied departments, which represent an area or field of concentration.

STAFF

Professors: Margaret G. Fox, M. Gladys Scott.

Assistant Professors: Norma F. Burton, Mary Dee Leslie, Virginia Petri, Jeanette Siebert.

Assistant Professor Emeritus: Miriam Taylor.

COURSE DESCRIPTIONS

Primarily for Undergraduates

28:5 Intermediate Physical Education 2 s.h.

Select. Open to those who have completed the requirements for physical education skills. May be repeated for credit.

28:6 Modern Dance 1 or 2 s.h.

28:7 Advanced Physical Education 1 s.h.

Select. Open to those who have completed the requirement for physical education skills. May be repeated.

28:8 Intermediate Modern Dance 1 or 2 s.h.

28:9 Plant 1 or 2 s.h.

Select. Open to those who have completed the requirement in physical education skills.

* A maximum of 5 semester hours may be counted in credit for graduation. Not required of those having undergraduate courses.
PHYSICAL EDUCATION FOR WOMEN

28:10 Ballet 1 or 2 a.h.
Prerequisites: 28:9 or equivalent experience.

28:11 Stage Movement 2 a.h.
Same as Speech 26:11. Theory and practice in movement for dramatic and other stage performances. Dance from Renaissance to the present time.

28:13 Intermediate Ballet 2 a.h.
Open to those who have completed 28:9 and 28:10 or the equivalent.

28:13 Advanced Ballet 2 a.h.
Open to those who have completed 28:12 or the equivalent.

28:15 Structural and Applied Anatomy 3 or 4 a.h.
Required of all students majoring or minorin in physical education. General human anatomy with emphasis on framework and factors influencing movement.

28:16 Kinesiology 3 a.h.
Prerequisites: 28:15. Mechanics of motor skills and posture.

28:17 Corrections 3 a.h.
Prerequisites: 28:12, Common abnormalities of spine and feet, developmental and preventive programs. Seminal work for functional conditions and athletic injuries.

28:18 Senior Life Saving and Water Safety Instructor's Course 1 or 2 a.h.
Leads to Red Cross Senior Water Safety Certificate or Instructor's Certificate. Register after consultation with instructor.

28:19 Movement Fundamentals 1 or 2 a.h.

28:20 Social Forms of Dance 1 or 2 a.h.
Folk, square, and social dance.

28:21 Technique 3 a.h.
Sports and aquatics.

28:22 Technique 3 a.h.
Gymnastics and sports techniques.

28:24 Technique 2 or 3 a.h.
Sports, aquatics, and dance.

28:25 Teaching of Sports 2 or 3 a.h.
Track, and elective activities.

28:25 Teaching of Sports 2 or 3 a.h.
Teaching team and individual sports. Third hour is official.

28:26 Teaching of Sports cr.arr.
Continuation of 28:25. Includes teaching of swimming.

28:27 Teaching of Social Forms of Dance 1 or 2 a.h.
Materials, methods, curriculum planning for dance in the secondary schools.

28:28 Teaching of Modern Dance 2 a.h.
Teaching of modern dance in the secondary schools and at college level.

28:30 Recreational Physical Education no cr.
Varied activities open to all students.

28:31 Officializing 1 or 2 a.h.
Officializing techniques for team sports.

28:32 Officializing 1 or 2 a.h.
May follow 28:31 or may be taken as an independent unit.

28:37 First Aid 2 a.h.
Standard and Advanced Red Cross courses. Leads to first aid certification on completion of requirements.

28:46 Problems in Weight Control 2 a.h.
Prerequisites, consent of instructor.

28:50 Rhythmic Analysis 2 a.h.
Form and analysis of music with application to movement.

28:71 Methods and Materials in Elementary School Physical Education 3 a.h.
Same as Education TE:141. For physical education majors only.

28:72 Methods and Materials in Elementary School Physical Education 2 or 3 a.h.
Emphasis on dance in the school program. Continuation of 28:71, but may be taken for credit without permission of instructor. Same as Education TE:142. For physical education majors only.

28:75 Laboratory Practice 3 a.h.
Required of major students in senior year. May be repeated. Same as Education TE:131 or 132 or TE:130 or 131.

28:76 Laboratory Practice 3 a.h.
Continuation of 28:75, but may be taken as an independent unit. May be repeated. Same as Education TE:135 or Education TE:182.

28:91 Independent Study cr.arr.

28:94 Honors Projects 3 a.h.

28:95 Honors Seminar 3 a.h.

28:98 Readings in Kinesiology 2 a.h.

For Undergraduates and Graduates

28:104 Health Education Workshop 2 a.h.
Same as Preventive Medicine 28:104.

28:105 First Aid and Care of Athletic Injuries 2 a.h.
Safety programs in sports. Scientific backgrounds for first aid and athletic training.

28:106 Fitness for the Individual 2 or 3 a.h.
Physiological processes in conditioning. Methods of achieving fitness, which and how needs.

28:107 Corrections 2 or 3 a.h.
Mechanics of posture and common abnormalities of spine and feet. Referred for functional conditions and athletic injuries. Prerequisites: 28:12 and 28:18 or equivalents.

28:108 Advanced Coaching 2 a.h.
Reading and discussion concerning teaching, coaching. and officiating procedures in the light of research findings pertaining to selected sports.

28:109 Intramural and Extramural Programs 2 a.h.

28:110 Workshop: Methods of Teaching Sports 1 to 3 a.h.
Emphasis on analysis of skills and teaching methods in related sports, aquatics, or gymnastics.

28:111 Children's Dance 2 a.h.
Dance for children of preschool to high school age.

28:112 Rhythmic Analysis of Dance 2 a.h.
Rotation, analysis, and compositional use of rhythm, and construction of percussion scores for dance. Style and techniques of baroque, romantic, and modern music for the choreographer.

28:113 Measurement 2 a.h.
Selection and administration of physical measurements and motor tests. Use of data.

28:114 History and Appreciation of Dance 3 a.h.
Origins and development of dance. Emphasis on changing

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P H Y S I C A L E D U C A T I O N F O R W O M E N

Dance

28:115 History and Appreciation of Dance 3 s.h.

Continuation of 28:114

28:116 Dance in Education 2 or 3 s.h.

Adaptation of dance forms to use at different levels of the elementary and secondary grades. Reading, discussion, laboratory sessions.

28:117 Workshop in Relaxation:

Theory and Practice 1 s.h.

Physiological and neurological bases of tension, technique of progressive and differential relaxation, implications for endurance, skill, and efficiency of motor performance.

28:118 Teaching of Beginning and Synchronized Swimming 2 s.h.

28:119 Methods and Principles 3 s.h.


28:120 Organization and Administration of Physical Education 2 s.h.

28:121 History of Physical Education 1 or 2 s.h.

28:122 Beginning Chorography 2 s.h.

28:124 Beginning Chorography 2 s.h.

28:125 Advanced Modern Dance 1 or 2 s.h.

Comprehensive reading on theory and philosophy of dance as an art. Practical study of techniques. Prerequisite, one semester of intermediate modern dance.

28:126 Advanced Modern Dance 2 s.h.

Continuation of 28:125, but may be taken as an independent unit.

28:127 Dance Production 2 s.h.

Practice in staging dance using resources of theatre. Advanced chorography, group and solo work.

28:128 Dance Production 2 s.h.

Continuation of 28:127, culminating in concert work.

28:129 Dance Accompaniment 2 s.h.

Music and rhythmic resources suitable for dance accompaniment, including use of percussion instruments and composition of percussion scores for dance.

28:130 Extracurricular Programs in Physical Education in High School 2 s.h.

28:134 The School Camp 2 or 3 s.h.

Organization, administration, leadership, and programming for the school camp. Integration into the school curriculum. Same as Education 71:138.

28:149 Elementary School Physical Education 3 s.h.

Materials, methods, curriculum planning. Opportunities for improving performance skills in all program areas as well as for teaching experience. Primarily for elementary education majors, junior standing or above. Same as Education 71:131.

28:150 Movement Exploration 2 s.h.

A problem-solving approach to the teaching of fundamental movements, rhythms, and activities included in the elementary school physical education program.

28:151 Seminar: Leadership in Extra-Curricular Activities 2 s.h.

28:160 Workshop: Elementary Physical Education 1 s.h.

28:170 Readings in Dance By permission only.

28:171 Dance Theatre 0 or 1 s.h.

Experience in a performing group.

28:172 Dance Theatre 0 or 1 s.h.

By permission only.

28:173 Advanced Choreography 2 s.h.

28:174 Advanced Choreography 2 s.h.

Solo, small, and large groups leading to concert work.

28:175 Theory and Criticism of Dance 3 s.h.

Philosophy of art and aesthetics as applied to dance, Plato to Sennett.

28:178 Theory and Criticism of Dance 3 s.h.

Continuation of 28:173.

Primarily for Graduates

28:201 Problems in Physical Education cr.arr.

Prerequisite, consent of instructor.

28:203 Seminar: Current Issues 3 or 4 s.h.

Problems in physical education and related areas.

28:205 Techniques of Research 3 or 4 s.h.

Selecting and defining a problem, method and design of studies.

28:206 Projects 3 s.h.

Cooperative work in planning and conducting investigative projects.

28:207 Advanced Corrections 2 s.h.

Organization and administration of the corrective program. Practice in individualization of exercise programs, techniques of relaxation. Prerequisite, 28:206 or equivalent.

28:208 Motor Learning for the Mentally Retarded 3 or 3 s.h.

Motor development and learning problems of the trainable and trainable retarded child; developmental and recreational skills desirable.

28:210 Design and Maintenance of Facilities 3 s.h.

Design, layout, construction, and maintenance of physical education facilities and areas.

28:212 Seminar in Evaluation 2 s.h.

28:213 Analysis of Human Motion 3 s.h.

Advanced biomechanical study with application to teaching methods and problems in sports, dance, body mechanisms, and conditioning.

28:215 Advanced Administration cr.arr.

Prerequisite, consent of instructor.

28:240 Motor Development of Children 3 s.h.

Neuromuscular pattern of growth related to motor learning.

28:241 Scientific Bases of Physical Education 3 s.h.

28:242 Seminar: Interrelationships of Physical Education and Health 2 s.h.

Health and safety aspects of physical education; research on health outcomes; current practices, and misconceptions on conditioning regimens, weight control, and school and public fitness programs.

28:243 Philosophical Bases of Curriculum Construction 3 s.h.

28:245 Supervision of Physical Education 3 s.h.

28:246 Seminar: Supervision 3 s.h.

Problems in supervision, open only to those with experience in supervision.

28:247 Philosophy of Physical Education 3 s.h.
PHYSICS AND ASTRONOMY

29:113 Physics of Sound and Music 3 s.h.

29:117 Optics 3 s.h.
Properties of lenses and simple optical instruments; phenomena of propagation, interference, diffraction, and polarization of light. See 29:128 for laboratory work.

29:118 Kinetic Theory and Thermodynamics 3 s.h.

29:127 Electricity and Electromagnetism 3 s.h.
Electrical circuits, measurements, and electronics. Introduction to electromagnetic fields. Two lectures and one laboratory each week. Prerequisites, 29:12 or 29:18 and Mathematics 22M:206 or 22M:226.

29:128 Electronics 3 s.h.
Characteristics of vacuum tubes and transistors. Design and study of analog and digital circuits. Two lectures and one laboratory each week. Prerequisite, 29:127 or equivalent.

29:129 Electricity and Magnetism 3 s.h.
Electrostatics, magnetic fields, and electromagnetic induction, and introduction to Maxwell's equations. See 29:132 for laboratory work. Prerequisite, Mathematics 22M:37 or equivalent.

29:130 Electricity and Magnetism 3 s.h.
Magnetic properties of materials, electromagnetic waves, applications, applications to wave guides and optics, plasma physics, and other selected topics. Continuation of 29:129, which is prerequisite. See 29:132 for laboratory work.

29:133 Advanced Laboratory 2 s.h.
Laboratory work in electricity, magnetism, and electronics: atomic, nuclear, and solid state physics; optics; spectroscopy. One laboratory period each week. May be repeated.

29:134 Laboratory 2 s.h.
Laboratory work in optical spectroscopy, solid state, nuclear physics, and cosmic rays. One laboratory period each week. May be repeated.

29:171 Methods of Theoretical Physics 3 s.h.
Functions of a complex variable, integration methods, linear vector spaces, and matrix algebra. Prerequisite, Mathematics 22M:28 or 22M:29.

29:172 Methods of Theoretical Physics 3 s.h.
Continuation of 29:171. Hilbert space, special functions, matrix transfer and matrices, dual spaces, and matrix algebra, Schrödinger equations, and Green's functions.

29:181 Atomic Physics 3 s.h.
Introduction to quantum theory and wave mechanics: atomic and molecular structure, and astrophysical structure. Prerequisite, Mathematics 22M:28 or 22M:29 or equivalent. See 29:128 for laboratory work.

29:192 Nuclear Physics 3 s.h.
Nuclear masses, charge, and stability, alpha, beta, and gamma ray spectra, nuclear energy levels and nuclear structure, nuclear reactions, the neutron, fission and fusion reactions, and the structure of the nucleus. Prerequisites, 29:131 or equivalent. See 29:132 for laboratory work.

For Undergraduates and Graduates

29:103 Reading in Physics 3 s.h.
Consult head of department before registering.

29:113 Physics of Sound and Music 3 s.h.

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Properties of lenses and simple optical instruments; phenomena of propagation, interference, diffraction, and polarization of light. See 29:128 for laboratory work.

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Magnetic properties of materials, electromagnetic waves, applications, applications to wave guides and optics, plasma physics, and other selected topics. Continuation of 29:129, which is prerequisite. See 29:132 for laboratory work.

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Laboratory work in electricity, magnetism, and electronics: atomic, nuclear, and solid state physics; optics; spectroscopy. One laboratory period each week. May be repeated.

29:134 Laboratory 2 s.h.
Laboratory work in optical spectroscopy, solid state, nuclear physics, and cosmic rays. One laboratory period each week. May be repeated.

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Functions of a complex variable, integration methods, linear vector spaces, and matrix algebra. Prerequisite, Mathematics 22M:28 or 22M:29.

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Introduction to quantum theory and wave mechanics: atomic and molecular structure, and astrophysical structure. Prerequisite, Mathematics 22M:28 or 22M:29 or equivalent. See 29:128 for laboratory work.

29:192 Nuclear Physics 3 s.h.
Nuclear masses, charge, and stability, alpha, beta, and gamma ray spectra, nuclear energy levels and nuclear structure, nuclear reactions, the neutron, fission and fusion reactions, and the structure of the nucleus. Prerequisites, 29:131 or equivalent. See 29:132 for laboratory work.
PHYSICS AND ASTRONOMY

29:153 Introductory Solid State Physics 3 s.h.
Phenomenological and theoretical properties of solids, classification of solids and crystal structures, electronic and vibrational processes in materials; thermal, optical, magnetic, and dielectric properties of solids. Prerequisites: 20:311 and Mathematics 22:357 or equivalent. See 28:135 for laboratory work.

29:154 Plasma Physics 3 s.h.
Physics of ionized gases including orbit theory, guiding center motion, adiabatic invariants; description of plasmas by field variables and distribution functions; theoretical wave phenomena, and interaction of waves with light. Hydrodynamics and MHD shock waves. Prerequisites, 29:130 and a knowledge of water analysis.

29:155 Plasma Physics 3 s.h.

Primarily for Graduates

29:205 Classical Mechanics 3 s.h.
Dynamics of simple and central forces; Lagrange's and Hamilton's equations; canonical transformations and Hamilton-Jacobi Theory. Prerequisites, Mathematics 22:357.

29:211 Mechanics of Continua 3 s.h.
Hydrodynamics, dynamics of ideal fluids, both incompressible and compressible; viscometric flow; the classical theory of elasticity. Prerequisites, Mathematics 22:357, 131, and 29:171, 172 or the equivalent.

29:212 Statistical Mechanics I 3 s.h.
The problem of Boltzmann; the H-theorem and general principles of classical statistical mechanical; specific heat theory and condensed gases; stochastic processes; Einstein-Rossi and Fermi-Dirac statistics and applications. Prerequisites, 29:118, Mathematics 22:357, 131, and 29:171, 172 or the equivalent.

29:213 Classical Electrodynamics 3 s.h.
Advanced, electro-magnetization, boundary value problems, Greens functions, Maxwell's equations, radiation theory, physical optics, and multiple reflection of radiation field. Prerequisites, 29:130, 149, 171, 172, or equivalent.

29:214 Classical Electromagnetics 3 s.h.
Special relativity, waves of charges in fields, theories of radiation, reflection, and special topics. Prerequisites, 29:213.

29:220 Individual Critical Study cr.arr.
An essay is to be written on a topic chosen in consultation with a member of the faculty. For readers for the Ph.D. degree without thesis in physics or astronomy.

29:245 Quantum Mechanics I 3 s.h.
Nonrelativistic quantum mechanics; Schrödinger wave mechanics, Hilbert space methods; perturbation theory; scattering; spin and angular momentum; identical particles and selected applications; introduction to relativistic theory. Prerequisites, 29:130, 171, 172.

29:246 Quantum Mechanics II 3 s.h.
Continuation of 29:245.

29:249 Advanced Nuclear Physics 3 s.h.
The phenomena of nuclear physics and their interpretation; nuclear properties of nuclei, nuclear moments, shell model, collective model, y transitions, Q decay, nuclear reactions, and other topics. Prerequisites, 29:191, 284, and 345, or permission of instructor. May be repeated. Prerequisites, 29:250 Advanced Nuclear Physics Continuation of 29:249.


29:265 Seminar: Theoretical Physics cr.arr.
Discussion of current research.

29:266 Seminar: Space Physics cr.arr.
Discussion of current research.

29:267 Seminar: Nuclear Physics cr.arr.
Discussion of current research.

29:269 Special Topics in Nuclear Physics cr.arr.
Special topics on one or more of the following topics: nuclear models, theory of nuclear reactions, weak interactions, and heavy ion reactions. Prerequisites, 29:246, 326. May be repeated.

29:271 Theoretical Solid State Physics 3 s.h.
Central principles of the quantum theory of solids; lattice dynamics, electronic properties, many-body effects, superconductivity, magnetism, and other topics; emphasis on the theory of elementary excitations. Prerequisites, 29:191, 289, 266.

29:272 Theoretical Solid State Physics 3 s.h.
Continuation of 29:271. May be repeated.

29:273 Relativity 2 s.h.
Relativistic formulation of mechanics and electrodynamics; Einstein's theory of gravitation. May be repeated.

29:274 Statistical Mechanics II 3 s.h.
Advanced topics in statistical mechanics. Content may vary from year to year. E.g., foundations of kinetic theory and nonequilibrium statistical mechanics or quantum statistical mechanics. May be repeated.

29:276 Special Topics in Quantum Mechanics 3 s.h.
Contemporary topics in quantum theory: field theory, dispersion relations, group theoretic analysis of fundamental particle classification schemes, Regge poles, and many-body problems. The topics discussed will vary from year to year. Prerequisites, 29:246, 289. May be repeated.

29:290 Solar-Terrestrial Physics 2 s.h.
Phenomena in the solar atmosphere, coronal and electromagnetic radiation in interplanetary space, the geomagnetic field and interplanetary magnetic fields; solar storms; auroras and the geomagnetically trapped radiation. May be repeated.

29:291 Research in Physics cr.arr.
Prerequisites, approval of advisor department.

29:290 Physics and Chemistry of the Upper Atmosphere 2 s.h.
Physics of neutral and ionized gasses, absorption of solar radiation in relation to the chemical composition of the atmosphere; electrical currents associated with daily magnetic variations and magnetic storms. May be repeated.

29:294 Advanced Plasma Physics I 3 s.h.
Statistical mechanics of plasmas; Liouville equation; Hpwck-Hund hierarchy; Fokker-Planck equation and relaxation processes; Balazs-Lenard equation; Vlasov equation and relaxation processes; nonlinear plasma waves and plasmas, nonlinear plasma waves and instabilities; fluctuations and relaxation processes; magnetohydrodynamics; recent papers. Prerequisites, 29:213 or consent of instructor. May be repeated.

29:295 Advanced Plasma Physics II 3 s.h.
Continuation of 29:294. May be repeated.

Physics and Chemistry of the Upper Atmosphere

See explanatory notes under Physics section.

Primarily for Undergraduates

29:11 General Astronomy 4 s.h.
Open to students. Descriptive lectures and laboratory work in elementary astronomy; study of all components
of the solar system; astronomical techniques. One lab-
course per week for observation with the telescope and
prediction work. Prerequisites, at least one year each of
high school algebra and geometry.
29:23 General Astronomy
3 a.h.
Continuation of 29:21. The astronomy, motion and
physics of the stars, systems of stars, interstellar matter,
and the universe. Prerequisites, same as 29:21.
29:24 Reading in Astronomy
cr.arr.
Consult head of department before registering.
29:24 Undergraduate Seminar
See Physics.
1 a.h.
29:29 Honors Thesis
cr.arr.
See Physics.
**For Undergraduates and Graduates**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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| 28:104      | Reading in Astronomy                | cr.arr.
|             | Consult head of department before registering. |
| 28:105      | General Astronomy                   | 4 a.h. |
|             | Abridged course offered only in the summer session and on Saturdays during the academic year. Prerequisites, same as 29:21. Primarily for secondary school and high school teachers of science. |
| 29:119      | Introduction to Stellar Astrophysics I | 3 a.h. |
|             | Fundamentals of astronomy and stellar spectroscopy; properties of visual, spectroscopic, and eclipsing binary stars, stellar atmospheres and interiors; stellar kinematics and dynamics; distance indicators and their application to the investigation of the structure of the galaxy and extragalactic systems. Prerequisites, 28:18 and Mathematics 22E:26 or 22E:36 or equivalent. Alternate years; will be offered 2019-20.
| 29:120      | Introduction to Stellar Astrophysics II | 3 a.h. |
|             | Continuation of 29:119. Prerequisites, 28:19 and Mathematics 22E:26 or 22E:36 or equivalent. Alternate years; will be offered 2019-20. |
| 29:121      | System Astrophysics                 | 3 a.h. |
|             | Planetary surfaces, interiors, and atmospheres; comets, meteors, and asteroids; the interplanetary environment; the moon; the origin and evolution of the solar system. Prerequisites, 28:19 and Mathematics 22E:26 or 22E:36 or equivalent. Alternate years; will be offered 1971-72. |
| 29:122      | Radio Astronomy                     | 3 a.h. |
|             | Current developments in radio astronomy; radio-frequency radiations from the sun, stars, planets, and interstellar matter; observational techniques. Prerequisites, 28:19. Alternate years; will be offered 1971-72. |
| 29:127      | Astronomical Laboratory             | 3 a.h. |
|             | Advanced laboratory work and observing with the 24-
|             | inch glass of the department's astronomical photography, photometry, and spectroscopy; laboratory work in data reduction, instrument calibration, and numerical com-
|             | putation. Prerequisites, 28:29 and consent of instructor. M.T. terms required. |
| 29:230      | Individual Critical Study           | cr.arr. |
|             | See Physics.                        |       |
| 29:232      | Theoretical Astrophysics            | 3 a.h. |
|             | Theory of stellar processes and the continuous spectra of stars; formation of absorption lines in the spectra of stars. Prerequisites, same as 29:21. Alternate years; will be offered 1971-72. |
| 29:233      | Theoretical Astrophysics            | 3 a.h. |
|             | Interstellar matter, nebulae, novae, and galactic radiation, Continuation of 29:232, which is prerequisite. Alternate years; will be offered 1971-72. |
| 29:234      | Stellar Structure and Stellar      | 4 a.h. |
|             | Evolution                           |       |
|             | Structure of stellar interiors; nuclear-processes and chemi-
|             | tal synthesis in stars and the evolution of stars. Prereq-
|             | uisites, consent of instructor. Alternate years; will be offered 1971-72. |

**POLITICAL SCIENCE**

Chairman of Department, Russell M. Ross
Office, 315 Schaeffer Hall

The program in political science deals with general principles of human behavior and organization which enable one to understand and explain political situations, events, and problems in the world around us. Both the undergraduate program and the graduate program which leads to the M.A. and the Ph.D. degrees, emphasize the formal and logical, rather than narrow specialization on restricted aspects of the subject. The facilities of the Laboratory for Political Research and the Regional Social Science Data Archive afford a unique opportunity for both undergraduate and graduate students to come in close contact 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 acquir-

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Requirements for a Major

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. The standard major is for all others, whether they are pursuing a four-year program or a special combined pro-

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Requirements for a Major

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courses offered by other departments which are cross-listed in political science.

B. Complete at least 12 semester hours of work (not including core courses) in one or more of the following departments: Economics, Geography, History, Philoso-

phy, Psychology, Sociology, or those courses in Chinese and Oriental studies which are cross-listed in any of the above departments. If the student earns all (2) semester hours of work in one department, the selection of courses need not have the prior app-

roval of the department. But if the student wishes to combine work from two or more departments, prior approval must be obtained. The completion of the above requirements fulfills the social science core requirement.

C. A grade-point average of at least 2.0 in all political science courses, and in all courses in a related de-

partmental area of concentration of 12 semester hours or more, selected as referred to in B above.

Plan B: The Teaching Major

Undergraduate seeking a teaching major must meet the following 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:

1. 30-1 American Government

2. Following four introductory courses:
   a) 20-1 Introduction to Political Behavior
   b) 20-2 Introduction to Political Theory
   c) 20-3 Introduction to Comparative Politics
   d) 20-4 Introduction to World Politics

3. Nine or more hours of work in political science offerings numbered 100 or above.

B. At least 18 semester hours of work, not including core courses or courses taken in lieu of those, chosen as follows:

1. The 18 semester hours may include:
   a) 4 semester hours of work in survey courses in political science, numbered 200 or above.
   b) 2 semester hours of work in basic courses (excluding those in American government and political theory).

2. Alternatively, the 18 semester hours may include:
   a) 4 semester hours of work in survey courses in political science, numbered 200 or above.
   b) 2 semester hours of work in basic courses (excluding those in American government and political theory) offered by any one of the following three de-

   partments: Economics, Geography, and Sociology.

C. Twelve or more hours in 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 their academic advisor at the time of registration or later.

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 min-

imum grade-point average of at least 3.5. Those desiring to be included in the Honors Program must maintain a grade-point average of at least 3.7 in the upper 60 hours of work. At the time of registration in the junior year, students must submit the following:

a) a letter of request to the departmental chairman
b) a brief statement of plans and purposes

The 60 hours of work must include:

- At least 30 semester hours of work (not including core courses) in political science, of which the student must maintain a grade-point average of at least 3.5. For graduate work honors the student must maintain the grade-point average just indicated; complete at least two courses at the graduate level, and pass the comprehensive ex-

amination in the field of political science, at the end of the senior year.

Students interested in seeking a B.A. degree with Honors should see the departmental honors advisor prior to the beginning of the junior year.

Graduate Study Requirements

Graduate students in political science must meet the general requirements of the Graduate College which are detailed in the University Catalog. In addition, the grad-

uate student is expected to be thoroughly familiar with and is held responsible for, the specific departmental requirements set forth in the Guide to Graduate Study in Political Science available in the office of the chairman of the department.

Admission requirements are fixed by the Graduate College. To be eligible for subsequent candidacy for a master's degree, the student shall be in good standing. The student seeking the award of an M.A. degree must main-

tain a grade-point average of at least 3.0 and submit a thesis. The student seeking a Ph.D. degree must show promise of scholarly distinction and achievements beyond that indicated by a minimum of 3.5 grade-point average.

Graduate study consists of work in courses, seminars, reading and research. Graduate students in political science may take for credit only those degree-qualifying courses offered specifically for graduate students, i.e., those courses numbered 50000 and above.

The M.A. Program

To obtain a master's degree, the student must com-

plete at least 30 semester hours of work with a grade-

point average of at least 3.0 and submit a thesis. The Graduate College requires for the maximum hours of work allowed. In addition, the student must meet the following specific departmental requirements:

Research load. At the master's level, a normal load is three courses or seminars (exclusive of "reading" or "research") each semester during the regular academic year. If all three of these are in political science, the student normally will register for 18 semester hours of credit each semester. He may register for 6 to 8 semes-

ter hours in the summer session, and complete his 30 semester hours of work for the M.A. degree in a twelve month period.

Courses outside the department. A master's student may take one course or seminar outside of the de-

partment for each semester or summer session except when officially approved by the departmental chairman. If courses or seminars taken outside the department are upper division electives, they may be considered in computing the grade-point average for the degree provided that they are approved in advance by the student's advisor and the departmental chairman. The depart-

ment chairman then submits the form requesting approval to the dean of the Graduate College, thus recommending the acceptance of the student's work backward.

Admission to candidacy. The student must apply for admission to candidacy for a degree prior to the beginning of the semester or summer session in which the degree is to be conferred. He may do so by submitting a Plan of Study, using forms obtainable from the departmental chairman and submitting it, through his advisor to the department chairman. The depart-

ment chairmen of the student's major and minor department will be notified of the admission application and will be requested to sign the Plan of Study.

Application for degree. A student who has been ad-

mitted to candidacy must be registered in at least one of the courses which will be taken during the semester in which he intends to graduate and at least 60 days in advance of the session at which the degree will be conferred. The necessary forms are obtained at registration or at the registrar's office.

After receiving the application for the degree, the regis-

ter's office sends an analysis of the graduation status of the student to the departmental chairman who notifies the student of the receipt. The student is responsible for checking the analysis to see that he has fulfilled all re-

quirements.

Master's thesis. The student beginning graduate work in political science will be required to take, during the spring semester in consultation with his advisor and will be ordinarily register for 6 semester hours of credit during the ensuing summer or fall semester to complete the thesis. However, provided that he is advised to continue. If the student has begun in the summer he will ordinarily register for 6 semester hours of credit during the fall semester and 10-12 hours during the spring semester. By completing the above thesis at the Graduate College, the candidate for a master's degree must arrange to take the oral examination covering both thesis and coursework, by a thesis com-
wishes to consist of one seminar or course professor, his advisor, and a third member chosen by them. The thesis committee will have a day and time for the examination which must be during the regularly scheduled graduate degree examination period. The thesis advisor will notify the departmental secretary concerning the day and time for the examination, and the secretary will reserve a room for the examination, notify members of the committee concerning the day, time, and place of the examination as the day approaches.

Satisfactory performance in the final oral examination completes the requirements for the M.A. degree. The thesis examining committee must, if the student desires to continue to Ph.D. work, make a recommendation as to whether or not the student may proceed.

Under no circumstances will more than 8 semester hours of credit for thesis grade-writing be credited in satisfying the 30-semester-hour minimum requirement.

The M.A. in municipal administration is Master's degrees of students who complete the program in this field carry the special designation M.A. in municipal administration. This program, which does not require a thesis, is designed for an academic and professional training. While strongly oriented toward cities, the council-manager form of government, it is not exclusively concerned with it. It is designed to prepare students for the municipal administrator's role of coordinating the physical, fiscal, and social aspects of community development. The program normally requires two years to complete, and includes an internship of from nine to twelve months. The B.A. or B.S. degree is required for admission. Undergraduate concentration in the social sciences, engineering, or accounting is helpful but not required. The required core-curriculum for the M.A. in municipal administration includes the following (a thesis is not required):

Sem. Hrs.
- 201 Municipal Government and Politics 3
- 203 Introduction to Public Administration 3
- 2032 Municipal Administration 3
- 2033 Financial Administration 3
- 2035 Public Administration 3
- 2041 Urbanization 4
- 30101 Introduction to Planning 3
- 30102 Planning, urban and regional 3
- 35082 Planning and Design 3
- 35083 Urban Design 3
- 50333 Internship 5 or more

Total a.h. 28

The Ph.D. Program

A student seeking a Ph.D. degree is expected to complete at least three academic years in residence in a graduate degree program. The M.A. degree is normally prerequisite to work toward a Ph.D. Students who have already earned a graduate degree will not be considered for Ph.D. candidates unless they have completed M.A. degree requirements. The student may apply to his advisor for a waiver of the requirement for an M.A. degree, and the advisor will present the application to the student's examining committee which will examine the student's previous academic record and make a recommendation to the departmental chairman.

Degree requirement: Within the first month of his Ph.D. work, the student must consult with the chairman of the department concerning the selection of his Ph.D. dissertation advisor and Ph.D. examining committee. The doctoral examining committee is composed of five members appointed by the chairman of the department. It consists of one member of the graduate faculty, for each of the four field of which the student is to be examined and a fifth member, normally a professor, with whom the student has had work. The student's thesis advisor is the chairman of the committee.

Tool requirements: Ph.D. programs will include a maximum of semester work. They must include 1 semester hours in the philosophy and methods of political inquiry. This requirement must be met by taking 30:320 Methods of Political Research and 30:500 Philosophy of Political Science.

The student seeking a Ph.D. degree must also demonstrate command of at least one foreign language or other tool of research, selected with the approval of his doctoral committee. If a foreign language is selected, he must pass proof of at least a reading knowledge of the language through an examination arranged with the relevant language department of The University of Iowa. In addition, an examination by a member of the departmental faculty must be required to determine the research adequacy of the student's background knowledge of the relevant language. This examination will be arranged with the relevant language department. The student's doctoral committee will specify the critical reading and critical research, and will set a date for the oral examination. In determining the time of the oral examination, the student's doctoral committee will specify the minimum of 6 semester hours which will be necessary. The first requirement set at this time before the student takes his comprehensive examinations.

Comprehensive examinations. The student must pass comprehensive examinations in four fields of study, at the end of his first year. Within the first month after the appointment of his Ph.D. examining committee, the student must also consult with the chairman of his committee concerning his 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 Science; Comparative Government; International Relations

Group C: Philosophy of Political Research; Methods of Political Research (consult the department's Guide to Graduate Study in Political Science concerning this field)

A student must offer at least one field in both Groups A and B.

Teaching and research training. Every Ph.D. candidate in political science must acquire at least one semester of special supervised training in teaching and use in research. This instruction is normally given in association with the student's service as a teaching or research assistant. Students who have already completed at least one year of teaching or research assistantships will be considered for advanced training in teaching. They may be assigned at any time. The student must take at least one semester of assignment at appropriate rates for any service they render in connection with the Graduate College.

A student seeking a Ph.D. degree should apply for admission to candidacy as soon as possible after the first term in the Graduate College before taking the comprehensive examinations. Students are assigned to comprehensive examinations after the completion of the second full year of graduate coursework. Comprehensive examinations are given regularly three times a year; during October, February, and May.

At the time he takes his Ph.D. Plan of Study or at any time prior to his comprehensive examinations, the student should request the departmental secretary to forward to the Graduate College a request for his comprehensive examinations on his behalf. Subsequently filling this request, an analysis of the graduate status of the student will be sent to the department. The department will notify the student by mail of the receipt of this analysis. The student must take the responsibility of checking the analysis to see that he has fulfilled all requirements and has removed any incomplete grades.

Doctoral candidates who wish to take the comprehensive examinations must apply to the chairman of the department of the office no later than two weeks before the beginning of the examination. The chairman of the examination area will then notify the student that the written examination in each area will be posted and any student expecting to take the examination must take it on the announced date.

At some time prior to his completion of the written comprehensive examinations, the candidate must consult with his thesis advisor concerning the time of his oral examination. The examining committee will fix a date and time for the oral examination. The student will notify the departmental secretary concerning the day and time for the examination, and the department will notify the committee and the candidate about the room reserved, and remind the committee concerning the day, time, and place.
of the examination as the day approaches. All written and oral examinations must be completed during the first quarter of the semester in which they are given.

Doctoral dissertation. The student must also write a doctoral dissertation. Within approximately three months following satisfactory completion of the written examinations, the student's advisor, under whose direction the dissertation is written, will forward the dissertation to the doctoral committee, and the student shall present the plan for his dissertation to the faculty and obtain its approval. He then must submit a complete draft of his dissertation to his advisor at least one month before the final copy is due at the office of the dean of the Graduate College.

As provided in the Manual of Rules and Regulations for the Graduate College, a candidate for a Ph.D. degree must file a degree application during the semester in which he intends to graduate and at least sixty days before the convocation. The application for the degree should be filed in the registrar's office at the University of Illinois, and the degree application forms are obtained at registration or at the University of Illinois office and self-service center.

After depositing the completed dissertation at the Graduate College, the candidate for a Ph.D. degree must concord with his thesis advisor concerning the time of his oral examination. The examining committee will fix a day and time for this examination. The thesis advisor will notify the departmental secretary concerning the day and time for the examination, notify members of the committee and the candidate about the room reserved, and remind the committee concerning the day, time, and place of the examination as the day approaches.

Not more than 30 semester hours of credit are granted for the preparation of dissertations, and students may not register for credit for research or study solely for the purpose of direct work on their dissertations.

Political Science as a Minor Field.

A graduate student from a department other than the Department of Political Science who includes a political science field in his Ph.D. program is required, except under extraordinary circumstances, to take at least 12 semester hours in political science courses approved in consultation with his advisor. Non-political science graduate students may be admitted in a minor field in the following courses in their Plan of Study.

30:101 Introduction to American Politics 3 s.h.
30:201 Methods of Political Research 3 s.h.
30:300 Philosophy of Political Inquiry 4 s.h.

STAFF
- Professor: Lane Davis, Donald Bruce Johnson, Hugh K. Keeler, Gerhard Lamesch, James H. Murray, Jr., Lee Rainey, Arthur A. Peterson, Russell M. Ross, John R. Schumacher, Peter O. Snow, Vernon Van Dyke, Sam W. Steele, Robert W. Mott.
- Associate Professors: George Robert Boyington, Milton G. Lodges, William A. Welsh.
- Assistant Professors: Justin Green, Galen A. tribe, Cheng Lim Ien, Robert L. Peterson, John E. McCorky.

COURSE DESCRIPTIONS

Introductory Undergraduate Courses

30:10 Introduction to American Politics 3 s.h.
- A survey of the American political system. The dynamics of national politics in their institutional setting. Fulfill the teacher's certification requirement. Open to freshmen and sophomores only.

30:10 Introduction to Political Behavior 4 s.h.
- Patterns and bases of political attitudes and behavior in public, organizational, and institutional settings. Laboratory exercises in elements of political behavior research.

30:11 Introduction to Political Theory 3 s.h.
- An advanced political science course emphasizing the theoretical treatment of significant problems in the various areas of political science.

30:12 Introduction to Comparative Politics 3 s.h.
- An advanced political science course emphasizing the comparison of political systems. Theoretical treatment of significant problems in the various areas of political science.

30:13 Introduction to World Politics 3 s.h.
- An advanced political science course emphasizing the study of the international relations of the major world regions and contemporary problems of international relations.

Advanced Undergraduate Courses

30:100 The American Political System 3 s.h.
- A survey of the American political system and the national and state governments. Includes discussion of the Constitution, state and local governments, and the role of political parties.

30:101 Municipal Government and Politics 3 s.h.
- The study of local government in the United States. An examination of the local government and the role of political parties in local government.

30:102 Local Government and Politics 2 or 3 s.h.
- An advanced political science course emphasizing the political behavior of local governments. Includes discussion of the role of political parties in local government.

30:103 Comparative State Politics 3 s.h.
- An advanced political science course emphasizing the political behavior of state and local governments. Includes discussion of the role of political parties in state and local government.

30:104 Political Parties 3 s.h.
- An advanced political science course emphasizing the role of political parties in American politics. Includes discussion of the organizational structure, functions, and activities of political parties in American politics.

30:106 American Public Policy 3 s.h.
- An advanced political science course emphasizing the role of political parties in American politics. Includes discussion of the role of political parties in American politics.

30:107 American Constitutional Law and Public Policy 3 s.h.
- The role of the Federal Supreme Court in the American political system. Includes discussion of the role of political parties in American politics.

30:108 Introduction to Public Administration 3 s.h.
- An advanced political science course emphasizing the role of political parties in American politics. Includes discussion of the role of political parties in American politics.

30:121 Municipal Administration 3 or 4 s.h.
- An advanced political science course emphasizing the role of political parties in American politics. Includes discussion of the role of political parties in American politics.

30:122 State Administration 3 or 4 s.h.
- An advanced political science course emphasizing the role of political parties in American politics. Includes discussion of the role of political parties in American politics.

30:123 Financial Administration 3 or 4 s.h.
- An advanced political science course emphasizing the role of political parties in American politics. Includes discussion of the role of political parties in American politics.
30:131 Foundations of Political Theory 3 s.h.
The major writers and intellectual trends in political thought from the pre-Socratics to the Enlightenment. Prerequisite: 30:131 or junior-senior standing.

30:132 Modern Political Theory 3 s.h.
The major writers and intellectual trends in political thought from the Renaissance to the 20th century. Prerequisite: 30:131 or junior-senior standing.

30:133 Contemporary Political Theory 3 s.h.
Current theory concerning democracy and related problems.

30:141 Government and Politics of Western Europe 3 s.h.
Political institutions and processes of selected Western European countries, including Great Britain, France, Germany, and Scandinavia. For the specific country or countries under specialization, consult the current Schedule of Courses. May be repeated with the consent of the instructor.

30:141 Introduction to the Government and Politics of the Soviet Union 3 s.h.
Internal system of government, politics, economics, and social order from the Revolution of 1917 to the present.

30:142 Government and Politics of the Soviet Union and Eastern Europe 3 s.h.
The Soviet political system, emphasizing changes in the post-Stalin period, with comparisons to East European systems.

30:143 Government and Politics of the Far East 3 s.h.
The functioning and the institutions of government in the countries of the Far East, with special attention given to the social, economic, and historical environments which condition them.

30:144 Introduction to Latin American Government 3 s.h.
Governmental institutions and major interest groups in Latin America; the general focus is upon the area as a whole.

30:145 Major States of Latin America 3 s.h.
Comparison of the political systems of selected major states in Latin America; historical background with emphasis on the contemporary political scene. May be repeated with the consent of the instructor.

30:147 Voting Behavior and Elections 3 s.h.
Determinants of voting behavior, correlates of political participation, and political apathy; political socialization processes and the nature and functions of elections.

30:148 The Legislative Process 3 s.h.
Conservative legislative processes and behavior focusing especially upon legislative system analysis, legislative institutionalization, the legislature and its environment, organizational constraints on legislative behavior, recruitment of legislators, the web of legislative interactions, and legislative voting behavior.

30:149 The Judicial Process 3 s.h.
The role of courts, lawyers, judges, and interest groups in the American and several foreign legal systems.

30:150 Problems of Comparative Politics 3 s.h.
Selected problems in the study of comparative politics. For specific subject consent current course schedule. May be repeated with the consent of the instructor.

30:160 International Politics 3 s.h.
Comparative political systems, analysis of international politics; forms and determinants of the interaction of states.

30:161 The United Nations 3 s.h.

30:162 American Foreign Policies 3 s.h.
Bolshevism, problems encountered, and means employed by the United States in its relations with other states and with international organizations. Prerequisite: 30:12 or consent of instructor.

30:163 Inter-American Relations 2 or 3 s.h.
The development and application of the Inter-American, especially with regard to selected Latin American nations; an examination of the organization and functioning of the Organization of American States and the current United States policy toward Latin America.

30:164 Problems of International Politics 3 s.h.
Selected problems in the analysis of international politics. For specific subject consent current Schedule of Courses. May be repeated with the consent of the instructor.

30:165 Human Rights 3 s.h.
Theory and practice in domestic and international efforts to define and implement human rights.

Honors and Independent Study

30:180 Independent Study 3 s.h.
Individual supervised special project. Registration permitted only with the consent of the faculty member concerned.

30:187 Honors Seminar 3 s.h.
An intensive examination of the major ideas and problems of a particular area of political science. Open to honors candidates in political science and others with consent of instructor.

30:188 Honors Seminar 3 s.h.

Core Graduate Courses

30:200 Introduction to Political Analysis 5 s.h.
Conceptual problems of political analysis. Types of explanation in contemporary political science.

30:201 Methods of Political Research 3 s.h.
Techniques of investigating selected questions of interest to political scientists. Uses of qualitative and quantitative data.

30:220 Administrative Theory and Behavior 3 s.h.
Literature and research on organizational and administrative theory, behavior, and politics.

30:230 Political Theory 3 s.h.
An introduction to the general theory of politics with emphasis on its relevance for the understanding and evaluation of contemporary politics.

30:240 Comparative Politics 3 s.h.
A graduate-level survey of current approaches to comparative politics.

30:250 American Political Systems and Behavior 3 s.h.
Review and analysis of the major literature of American politics, stressing comparative, systematic, and behavioral problems.

30:260 International Politics 3 s.h.
An introductory graduate-level course synthesizing various approaches in the study of international politics.
Honors in Psychology

The Department of Psychology has an Honors program open to students with a grade-point average of at least 3.5 in psychology courses and at least 3.2 overall. Students interested in enrolling such a program should consult their department's junior adviser before the beginning of the junior year, if possible.

Graduate Study

The department provides specialized training leading to the Ph.D. degree in the following major areas: the psychology of learning and motivation; physiological psychology; social psychology; and clinical psychology and personality. Most graduate students are encouraged to concentrate their coursework in one of these major divisions. Students may also specialize in areas which are not reflected in the normal titles given to the department's divisions; e.g., neuroendocrine, perception, psychophysics, human engineering, quantitative methods, verbal processes, clinical and developmental neuropsychology, etc.

The aim of the department is to provide training that will enable the individual to make original contributions as a scholar, investigator, teacher, and in the application of his psychological knowledge to the solution of important practical problems.

The graduate waiting programs in the areas of learning and motivation, physiological, and social psychology encompass much of what has traditionally been described as experimental psychology. The clinical programs also place considerable emphasis upon laboratory research and carefully controlled experimentation.

Admission requirements. It is recommended that students who plan to take graduate work in the department have had undergraduate training in psychology (e.g., experimental psychology and statistics), along with extensive work in the natural sciences, mathematics, and the social sciences. A foreign language is not required. Applicants should take the Graduate Record Examination (G.R.E.) at least two months prior to the date they wish to take the examination. Applicants should take the Graduate Record Examination (G.R.E.) at least two months prior to the date they wish to take the examination.

Admission requirements. It is recommended that students who plan to take graduate work in the department have had undergraduate training in psychology (e.g., experimental psychology and statistics), along with extensive work in the natural sciences, mathematics, and the social sciences. A foreign language is not required. Applicants should take the Graduate Record Examination (G.R.E.) at least two months prior to the date they wish to take the examination.

The doctoral program is designed to teach students the methods used in psychological research. The Ph.D. degree requires at least 2 years of full-time study, or an equivalent amount of part-time study, and a substantial amount of original research. The Ph.D. degree is awarded upon successful completion of a doctoral dissertation.

In addition to satisfying the general graduation requirements, including a minimum of 24 hours in the Department of Psychology, and one year of residence in the University, the student must also complete the following courses: 1) one semester of advanced study in psychology; 2) a minimum of 2 years of full-time study, or an equivalent amount of part-time study, and a substantial amount of original research. The Ph.D. degree is awarded upon successful completion of a doctoral dissertation.

The doctoral program is designed to teach students the methods used in psychological research. The Ph.D. degree requires at least 2 years of full-time study, or an equivalent amount of part-time study, and a substantial amount of original research. The Ph.D. degree is awarded upon successful completion of a doctoral dissertation.

In addition to satisfying the general graduation requirements, including a minimum of 24 hours in the Department of Psychology, and one year of residence in the University, the student must also complete the following courses: 1) one semester of advanced study in psychology; 2) a minimum of 2 years of full-time study, or an equivalent amount of part-time study, and a substantial amount of original research. The Ph.D. degree is awarded upon successful completion of a doctoral dissertation.

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In addition to satisfying the general graduation requirements, including a minimum of 24 hours in the Department of Psychology, and one year of residence in the University, the student must also complete the following courses: 1) one semester of advanced study in psychology; 2) a minimum of 2 years of full-time study, or an equivalent amount of part-time study, and a substantial amount of original research. The Ph.D. degree is awarded upon successful completion of a doctoral dissertation.
A minimum of 38 semester hours must be completed for the degree. There is no thesis requirement. The program ordinarily consists of 30 semester hours of basic required courses plus a minimum of 8 semester hours of electives. The required courses are selected from those that constitute the core program for all graduate students, while the electives are chosen in the light of the student's vocational objectives in consultation with his advisor.

A departmental action on the student's application for the M.A. degree will be taken after completion of the specified coursework with a minimum grade-point average of 2.7, and satisfactory performance on a written and/or oral examination covering the area of specialization.

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, personality, and social psychology.

In the areas of clinical and counseling psychology, the department maintains a close relation with the research and training activities of the University Counseling Service, Office of Student Affairs, University Hospital, Graduate College, and the Speech and Hearing Clinic, Reading Clinic, VA Hospital, Child Development Center, and several mental hospitals and clinics. In addition, the department operates a psychology clinic for the training of students and for the conduct of research.

STAFF


Affiliated Staff: John K. Knott.

Clinical Assistant Professors: Arthur Cantor, Eugene Gerren.

Clinical Assistant Professors: June J. Anderson, Patrick A. Boudreyre.


* COURSE DESCRIPTIONS
For Undergraduates Only
33:1 Elementary Psychology 3 s.h.
Recommended for B.A. majors in psychology and students taking B.A. or B.S. degrees with majors other than psychology. Basic procedures in study of behavior and the elementary principles of behavior. Either this course or 33:1 is a prerequisite to all other courses in psychology except 33:17 and 33:18. (Either but not both 33:1 and 33:1 may be accepted to the science core requirements and 33:1 may be offered for a degree. Same topics as 33:1, but with additional discussions and greater emphasis on the manner in which the experimental method is applied to the analysis of behavioral events. Either this course or 33:1 is a prerequisite to all other courses in psychology, except 33:17 and 33:18.

33:12 Psychological Adjustment 3 s.h.
Basic principles of psychology in relation to the developmen t, maintenance, and modification of personality adjustment.

33:15 Introduction to Social Psychology 3 s.h.
Research relating the behavior of individual human organisms to factors in the social environment. Socialization, socialization, attitudes, development and change, social influences on perceptual and conceptual processes, and social interaction. Contributions by sociologists and anthropologists.

33:17 Educational Psychology and Measurement 3 s.h.
Same as Education TP:75.

33:19 Psychology in Business and Industry 3 s.h.
Principles of behavior as they relate to problems of personnel selection and training, industrial fatigue, and worker efficiency.

33:43 Psychological Measurement 3 s.h.
Concepts and procedures basic to the definition and determination of behavioral variables considered in the context of standardized psychological test procedures.

33:45 Current Research in Psychology 3 s.h.
Representative research recently reported in psychological journals or new in progress in major psychological laboratories. Updated to include studies employing new or improved methods of obtaining and analyzing experimental data.

33:61 Special Readings and Projects cr.arr.
For undergraduate majors in psychology. Prerequisites: recommendation of a staff member and approval of head of the department.

33:85 Honors Seminar in Psychology 3 s.h.
Supervised literary research leading to an oral presentation and written paper on a substantive issue in psychology. Admission by invitation of the departmental honors advisor.

33:99 Honors Thesis Research 3 s.h.
Supervised original research project, leading to a written thesis and oral defense. Open only to Honors students.

Advanced Courses
General, Historical, and Theoretical Psychology
33:105 General Semantics 3 s.h.
Same as Speech Pathology and Audiology 33:5.

33:131 General Psychology 4 s.h.
Same as 33:5, but includes additional assignments. Recommended for mature students who have not had an elementary course in psychology and who need additional basic work.
31:134 History of Psychology 3 s.h.
Major systematic views and theoretical issues in psychology.

31:141 Differential Psychology 3 s.h.
Individual differences in behavior phenomena and interpretation of the nature of these phenomena. Prerequisite: 31:143.

31:231 Systematic Approaches to the Study of Behavior 2 s.h.
Review of major concepts and parametric problems identified with diverse strategies and behavioral inquiry.

31:233 History and Systems of Psychology 3 s.h.
Structuralism, functionalism, humanistic psychology, behaviorism, Gestalt, and psychoanalysis. Same as Philosophy 26:230.

31:233 Foundations of Operationsism and Measurement 2 s.h.
Philosophy and methodology of psychology.

31:234 Philosophical Problems of the Social Sciences 2 s.h.
Same as Philosophy 26:232.

31:235 Laboratory Techniques I 3 s.h.
Basic skills essential to design, construction, and use of laboratory apparatus. Lectures and laboratory. Prerequisite: consent of instructor.

31:236 Laboratory Techniques II 3 s.h.
An introduction to digital logic and real-time computing applications in experimental psychology. It is assumed that the student has an elementary background in electronics and computer programming. This course begins with “black-box” design of control and data-acquisition systems using electronics and digital solid state switching devices. Following a general introduction to real-time computing principles, specific instruction of students is provided in the programming and operation of the PDP-8, a family of computers for use in behavioral laboratories. Prerequisite: 31:233.

31:281 Seminar: Symbolic Processes 3 s.h.
Same as Speech 38:281, Speech Pathology 3:531. Prerequisite: 31:200 or equivalent.

31:542 Seminar: History of Neuropsychology 2 s.h.
Selective review of development of knowledge and concepts of behavior relations from antiquity to the present day.

Quantitative Methods and Psychometrics

31:124 Mathematical Approaches in Psychology 3 s.h.
Introduction to applications of mathematics to psychology. A variety of areas will be considered such as scaling and data theory, decision-making, signal detection theory, mathematical learning theory, and sequential processes. Prerequisite, one semester of calculus; recommended, 31:132.

31:135 Introduction to Statistical Methods 3 s.h.
Same as Education TP:143 and Statistics 23:142.

31:136 Statistical Inference in Behavioral Science 3 s.h.
A second course in statistics emphasizing concepts and techniques of statistical inference relevant to research in the behavioral sciences. Topics include basic design and an introduction to the analysis-of-variance, Chi-square, and non-parametric statistical techniques. The course also introduces the student to multiple correlation and regression analysis.

31:147 Techniques of Attitude Scaling 2 or 3 s.h.
Individual projects optional. Prerequisites, 21:12 and 31:143.

31:543 Statistical Analysis I 4 s.h.
Concepts and techniques as used in the investigation of relations, planning and analysis of single and multiple variable experiments; simple correlation techniques and regression analysis. Prereq: 31:143 or equivalent and consent of instructor.

31:544 Correlation Methods 3 s.h.
Same as Education TP:346 and Statistics 225:317. Prerequisites, 31:143 and Education TP:345 or equivalent.

31:245 Quantitative Methods in Psychology 3 s.h.
Mathematical methods necessary for the understanding and analysis of data in psychology. Applications will be considered; short review of calculus.

31:546 Statistical Analysis II 4 s.h.
Similarly for psychology majors. Continuation of 31:245, to include partial and multiple correlation, multiple regression analysis, and the planning and analysis of more complex investigations and experiments. Prerequisites, 31:245 or equivalent and consent of instructor.

31:547 Applications of Multivariate Analysis 3 s.h.
Application of theory of multivariate analysis, emphasizing correlational matrices using elementary matrix algebra and geometric concepts in investigating psychological problems. Prerequisites, 31:546 or consent of instructor.

31:548 Mathematical Models in Psychology 3 s.h.
Stimulus sampling theory and linear operator theory. Emphasis on application to problems in learning, motivation, and related areas, including concept identification, retention, and impression formation.

31:549 Psychophysics and Scaling 3 s.h.
Review and analysis of various mathematical models in perception and psychophysics. Both contemporary and historical psychology models are covered, with special emphasis on signal detection theory.

31:550 Computer Simulation of Psychological Processes 3 s.h.
An introduction to the rationale, techniques, and evaluation of computer simulations as applied to behavioral problems. Includes a survey of existing simulations and experiments in computer development. Prerequisites, Computer Science ECE:7 and 31:201.

31:558 Seminar: Experimental Psychology 2 s.h.
Selected problems in application of mathematical models to animal and human behavior.

31:541 Seminar: Mathematical Models in Perception and Psychophysics 2 s.h.
Various mathematical models in perception and psychophysics. Detailed study of literature and models in signal detection theory.

31:543 Seminar: Statistical Analysis cr. 4
Prerequisite, consent of instructor.

Experiment Methods

31:120 Experimental Psychology I 3 s.h.
The logic and application of experimental methods to the analysis of behavioral phenomena. Includes an overview of some of the major problem areas of experimental psychology. Prerequisite, 31:143.

31:121 Experimental Psychology II 3 s.h.
Detailed study of a major problem area in experimental psychology. Various sections under the same course number deal with different problem areas, such as learning and memory, social behavior, sensory processes, and intraindividual behavior. May be repeated for credit when topics vary. Prerequisite, 31:120.
Learning, Motivation, and Sensory Functions

31.125 Psychology of Learning 3 s.h.
Theoretical and experimental bases of learning in animal and human behavior. Prerequisite: 31.143 or consent of instructor.

31.132 Motivation 3 s.h.
Recent contributions to motivational research with a critical examination of their methodologies and implications of contemporary theory.

31.133 Perception 3 s.h.
Recent developments in experimental approaches to perception.

31.135 Operant Behavior Analysis 3 s.h.
An introduction to the methodology, concepts, and results of operant approaches in the experimental analysis of behavior in laboratory and clinical settings. Prerequisite: 31.131, 31.163, or equivalents.

31.221 Motivation and Emotion 3 s.h.
Concepts of motivation and emotion and of research bearing on their functions as determinants of behavior.

31.222 Conditioning and Learning 3 s.h.
Methodology, results, and interpretation of conditioning and simple learning experiments with humans and animals.

31.223 Information Processing in Psychology 3 s.h.
Examination of information processing research. Use of theoretical analysis of complete behavior. Theoretical concepts including information theory, mechanical models, and computer simulation are reviewed and applied to selected empirical topics such as short-term memory, attention, pattern recognition, problem-solving, choice reaction time, and skilled performance.

31.224 Sensory Processes 3 s.h.
 Modalities through which information is obtained regarding the organism's external environment.

31.225 Verbal Processes and Language Behavior 3 s.h.
Fundamental variables affecting acquisition, transfer, and retention of verbal behavior, including the role of language structures and language habits.

31.226 Perception 3 s.h.
Selected experiments and theories.

31.227 Contemporary Theories of Behavior 3 s.h.
A brief review of the history of learning theory followed by a critical examination of the attitudes, methodology, concepts, problems, and representative results from each contemporary approach to infrhuman behavior as neo-Learning theory, behavior theory, analysis, ethology, information processing, and behavior genetics. Prerequisite: 31.163.

31.271 Psychobiology 3 s.h.
Same as Speech Pathology and Audiology 5/64.

31.272 Psychobiology Laboratory 2 s.h.
Same as Speech Pathology and Audiology 2/36s.

31.320 Seminar: Motivation 2 s.h.
Theoretical and experimental treatments of selected topics in the areas of reinforcement, punishment, conflict, emotion, and frustration.

31.321 Seminar: Behavior Theory 2 s.h.
Selected theory and data concerning systematic problems in infrhuman behavioral analysis. Prerequisite: 31.227 and consent of instructor.

31.322 Seminar: Verbal Processes and Problem Solving 2 s.h.
Experimental findings and theoretical interpretations in the fields of verbal learning, language behavior, concept formation, and problem solving. Prerequisite, consent of instructor.

31.333 Seminar: The Role of Memory in Behavioral Processes 2 s.h.
Contemporary theoretical views concerning the nature of human memory including a discussion of recent research findings which bear on these viewpoints.

31.334 Seminar: Classical Conditioning 2 s.h.
Method, theory, and empirical outcomes in classical conditioning and their relation to instrumental learning.

31.339 Seminar: Perception 2 s.h.
Current experimental work in visual perception. Prerequisite, 31.226 or consent of instructor.

Physiological Psychology

31.125 Brain Function and Learning 3 s.h.
Survey of physiological psychology with emphasis on sensory and motor systems and integrative processes of the nervous system.

31.227 Introduction to Physiological Psychology 3 s.h.
Major facts and principles.

31.238 Neuroendocrinology and Behavior 3 s.h.
Development of behavioral concepts as they relate to neuroendocrinological and neuroendocrinatory aspects of thirst, hunger, and sex. Prerequisite, 31.227.

31.329 Neural Mechanisms and Learning 3 s.h.
Information processing in brain, electroencephalography, sensory and motor coding, integrative functions, sleep, waking, and attention as related to behavior. Prerequisite, 31.227 or consent of instructor.

31.330 Biochemistry and Behavior 3 s.h.
Biochemistry of the central nervous system with special emphasis on chemical systems affecting brain function and behavior, and alterations in chemistry and behavior produced by drugs, insulin, and genetic abnormalities. Prerequisites, 31.227, 31.238, or consent of instructor.

31.331 Behavioral Pharmacology 3 s.h.
Behavioral analysis of drug action in experimental animals including man, with special emphasis on physiological and biochemical mechanisms. Prerequisite, 31.229 or consent of instructor.

31.332 Seminar: Chemical Influences on Behavior 2 s.h.
Selected topics on the relations between brain chemistry and behavior. Prerequisite, consent of instructor.

31.335 Seminar: Brain Mechanisms and Behavior 2 s.h.
Selected topics on nervous system control of behavior.

31.336 Seminar: Physiological Psychology 3 s.h.
Selected topics on the anatomical and neurophysiological bases of behavior. Prerequisite, consent of instructor.

Afferent, central, and efferent processes. Prerequisite, consent of instructor.

Social Psychology

31.101 Advanced Social Psychology 3 s.h.
Current research activities in social psychology with
research; also consideration of the development and function of classification systems.

31.361 Theory and Methods in Clinical Psychology 3 a.h.
Survey of the field of clinical psychology, analysis of clinical theories, methods, and the scientific and professional tendencies of the clinical psychologists.

31.362 Psychological Appraisal: Intellectual Functions 3 a.h.

Psychodiagnostic procedures currently employed in clinical practice. Requirements for clinical utility analyzed and applied to each technique. Research needs discussed. Lectures, case conferences, and clinical practicum.

31.364 Psychological Appraisal: Projection Techniques 3 a.h.
Theory and basic concepts underlying projective methods; current research; lectures and clinical practice in administration, scoring and interpretation of the Rorschach, Thematic Apperception Test, and a general survey of other projective techniques. Prerequisite, 31.360 and consent of instructor.

31.365 Clinical Neuropsychology 3 a.h.
Conceptions of brain-behavior relationships in man; analysis of behavioral disturbances associated with cerebral abnormalities; current application of psychological test methods for inferring cerebral status.

31.366 Mental Deficiency 3 a.h.
Survey of research and theory in the field of mental deficiency.

31.367 Seminar in Advanced Psychodiagnostica 2 a.h.
Consideration of a series of children and adolescents with varied intellectual and school problems who have been studied intensively with psychological procedures and for whom extensive follow-up data are available. Prerequisites, 31.264 and permission of instructor.

31.368 Child Clinical Psychology 3 a.h.
Family in its complex and varied roles in the development of behavioral maladjustments in children and adolescents. Survey of various approaches to treatment of child psychopathology. Prerequisites, 31.260 and consent of instructor.

31.369 Theory and Techniques of Psychotherapy 3 a.h.
Survey course in major psychological techniques of behavior change; critical evaluation of theories and techniques. Prerequisite, consent of instructor.

31.370 The Aphasics Disorders 2 a.h.
Same as Neurology 64.203.

31.371 Schizophrenia 3 a.h.
Theories of etiology and treatment, and their empirical and experimental bases.

31.275 Behavioral Therapy 3 a.h.
Learning or conditioning approaches to the treatment of psychopathology will be covered. These include the techniques of behavior modification, insight, behavior therapy, systematic desensitization, and other techniques. Prerequisites, 31.260 and consent of instructor. May be repeated.

31.381 Seminar: Clinical Psychology 2 a.h.
Survey of the field of clinical psychology, analysis of clinical theories, methods, and the scientific and professional tendencies of the clinical psychologists.

31.382 Psychological Appraisal: Intellectual Functions 3 a.h.

Psychodiagnostic procedures currently employed in clinical practice. Requirements for clinical utility analyzed and applied to each technique. Research needs discussed. Lectures, case conferences, and clinical practicum.

31.384 Psychological Appraisal: Projection Techniques 3 a.h.
Theory and basic concepts underlying projective methods; current research; lectures and clinical practice in administration, scoring and interpretation of the Rorschach, Thematic Apperception Test, and a general survey of other projective techniques. Prerequisite, 31.360 and consent of instructor.

31.385 Clinical Neuropsychology 3 a.h.
Conceptions of brain-behavior relationships in man; analysis of behavioral disturbances associated with cerebral abnormalities; current application of psychological test methods for inferring cerebral status.

31.386 Mental Deficiency 3 a.h.
Survey of research and theory in the field of mental deficiency.

31.387 Seminar in Advanced Psychodiagnostica 2 a.h.
Consideration of a series of children and adolescents with varied intellectual and school problems who have been studied intensively with psychological procedures and for whom extensive follow-up data are available. Prerequisites, 31.264 and permission of instructor.

31.388 Child Clinical Psychology 3 a.h.
Family in its complex and varied roles in the development of behavioral maladjustments in children and adolescents. Survey of various approaches to treatment of child psychopathology. Prerequisites, 31.260 and consent of instructor.

31.389 Theory and Techniques of Psychotherapy 3 a.h.
Survey course in major psychological techniques of behavior change; critical evaluation of theories and techniques. Prerequisite, consent of instructor.

31.390 The Aphasics Disorders 2 a.h.
Same as Neurology 64.203.

31.391 Schizophrenia 3 a.h.
Theories of etiology and treatment, and their empirical and experimental bases.

31.392 Behavioral Therapy 3 a.h.
Learning or conditioning approaches to the treatment of psychopathology will be covered. These include the techniques of behavior modification, insight, behavior therapy, systematic desensitization, and other techniques. Prerequisites, 31.260 and consent of instructor. May be repeated.

RECREATION EDUCATION
Chairman of Program, Phyllis M. Ford
Office, 120 Fieldhouse

RECREATION EDUCATION Committee on Recreation Education: Louis S. Alley, M. Gladys Annes, Phyllis M. Ford, chairman.

of the Bachelor of Science and the Master of Arts degrees are provided.

Necessary for B.S. Degree

The program of study leading to the Bachelor of Science degree with a major in recreation education is designed
RECREATION EDUCATION

Semester Hours 4

5135 Methods of Social Research 4

2032 Techniques of Research 4

2031 Elementary Social Statistics 3

71-143 Introduction to Statistical Methods 3

104-151 Seminar of Organized Recreation 3

104-251 Philosophy and Trends in Recreation 3

104-201 Seminar: Thesis I 1-3

104-401 Seminar: Thesis II 2 or 4

104-251 Seminar: Recreation Administration 3

104-351 Philosophy and Trends in Recreation 3

104-301 Seminar: Internship 3

20311 Methods of Social Research 3

20326 Techniques of Research 4

STAFF

Associate Professor: William H. Ford.
Assistant Professors: Martha M. Glazener, Donald D. Linder.
Lecturers: Lauranne Kottner, Donald Lough.

COURSE DESCRIPTIONS

Primarily for Undergraduates

104-30 Foundations of Recreation 3

Basic philosophical, historical, and scientific foundations and developments in leisure and recreation. The function and settings of organized recreation and a survey of the organizations and agencies concerned with recreation.

104-31 Recreation Leadership 3

Leadership principles and program administration.

104-32 Social Recreation 2

Practical application of the techniques in planning, directing, and conducting activities and programs designed for a broad variety of social events.

104-33 Recreational Crafts 3

Crafts for camp, playground, club, family, and personal leisure interests. Emphasis on crafts from inexpensive native materials and laboratory practice.

104-34 Advanced Recreational Crafts 3

Continuation of 104-33, but may be taken as an independent unit.

104-35 Camp Leadership 3

Counselor skills and techniques for the camp counselor. ACA Certification program.

104-36 Orientation to Rehabilitation 3

Settings 1

Institutional and community rehabilitation programs concerning the following: psychologic, retarded, physically handicapped, corrected, aging, and the aged.

For Undergraduates and Graduates

104-103 Readings in Leisure 2

Consecrated readings, conferences, and written reports related to a specific area or field of interest in which the student has a special interest.
04:110 Field Work in Recreation cr.arr. Practical 4-6 credits arranged to include direct leadership, program planning, and administrative procedures. Prerequisite: 04:110.

04:111 Field Work in Recreation cr.arr. Continuation of 04:110.

04:112 Colloquium cr. 1 Exploration of current issues. Required of all senior and graduate students majoring in recreation. Meets one time a month each semester.

04:280 Introduction to Therapeutic Recreation 4 cr. Basic concepts of recreation's role in rehabilitation; organization and development of programs; approaches to understanding the behavior of patients, and the adaptation of activities to the basic disability areas.

04:210 Role of Therapeutic Recreation in Rehabilitation 3 cr. Role of therapeutic recreation in the total institutional and community rehabilitation effort. Specific attention is given to the comparative role of therapeutic recreation in relation to the total therapy program.

04:189 Administration of Recreation I 3 cr. Programming, personnel, finance and budgets, liability areas and facilities, and other administrative aspects of recreation. Prerequisite: 04:134.

04:190 Administration of Recreation II 3 cr. A continuation of 04:189, for students specializing in municipal recreation administration.

04:121 School and Community Recreation 3 cr. An analysis of the role of the schools in educating for leisure, and a survey of total community involvement in recreation through recreation, church, voluntary agency, governmental, private industrial, institutional, military, and municipal programs.

04:122 The Recreation Program 3 cr. All phases of the planning and evaluation of the recreation program; organization, promotion, utilization of resources, use of facilities, and leadership. Prerequisite: 04:281.

04:146 Principles of Outdoor Recreation 3 cr. The utilization of natural resources and public land on the national, state, local, and private levels. Responsibilities of the recreation profession in the various phases of natural resource recreation and multiple use of public wild lands.

04:141 Camp Administration 3 cr. Public relations, personnel, finance and budgets, areas and facilities, ACA standards, administrative structure, legal aspects, evaluation, and other administrative aspects of organized resident camping.

04:142 Principles of Outdoor Education 3 cr. Analysis of the development and scope of outdoor education; ecological significance, procedures, organization, administration, methodology, and content. Particular attention to interpretive programs in ecology for recreation and education majors.

04:140 Practicum: Environmental Education 2 or 3 cr. Organization, administration, leadership, and programming for the school camp. Integration into the school curriculum.

04:150 The Role of the College Union 3 cr. Relationship of the college union in higher education; its role in the educational, cultural aspects of campus life; its relationship to other student services.

04:155 Workshop: Camp Program 1 cr.

04:190 Independent Study cr.arr. Investigation of a problem related to a specific area of interest. Primarily for Graduates

04:201 Problems Same as 27:201.

04:230 Seminar: Administration of Recreation 3 cr. Problems of administration, supervision, and programming in recreation programs.

04:231 Philosophy and Trends in Recreation 3 cr. Historical and philosophical development of attitudes toward leisure and recreation, emerging program patterns, current issues, and education for leisure living.

04:232 Seminar: Therapeutic Recreation 3 cr. A seminar and special project approach to therapeutic recreation in a specific setting such as psychiatric, physically handicapped, mentally retarded, correctional, etc., and administrative techniques and procedures unique to activity therapy programs.

04:233 Seminar: Camping cr.arr. Special topic; camp programs for various types of groups. Campsite development.

04:234 Design and Maintenance of Recreation Facilities and Areas 3 cr. Principles, terminology, and standards of design, planning, construction, use, and maintenance of areas and facilities for recreation and physical education.

04:235 Seminar: College Union Management 2 cr. Management of college union food services, recreation facilities, social events, housekeeping, maintenance, etc. Emphasis on administrative problems.

04:230 Seminar: Nutrition 3 cr.

04:001 Seminar: Thesis I (M.A.) cr.arr.

04:002 Seminar: Thesis II (M.A.) cr.arr.

HEMIGION

Director of School, George W. Parel Office, 367 Gilmore Hall

The School of Religion is designed to help students gain an understanding of the history and literature of religion and insight into its nature and meaning. Emphasis is put on the religious thought of the Judeo-Christian tradition. Courses are offered, however, which include other religions of the world.

The School of Religion offers a variety of courses for students who are not majoring in religion, and in addition provides opportunity for concentration at both the undergraduate and graduate levels. Programs leading to the B.A. and the M.A. degree in religion are described below. The School of Religion is a theological seminary and does not prepare students for ordination.

An undergraduate student majoring in religion is required to complete 50 semester hours in the field of religion, and to take two years of a foreign language approved by his adviser. Courses in the field of religion should be selected so as to provide an introduction to the living religions of the world, with special emphasis on the history and thought of Judaism, Christianity, and Protestantism. A total of 12 semester hours is required in related subjects at the direction of the department. For general requirements, see College of Liberal Arts.
Graduate study in religion is offered in five areas, including 13 fields as follows:

Area A—Jewish and Christian Scriptures
1. Old Testament
2. New Testament

Area B—History of Christianity
4. Early (to 1000)
5. Modern (since 1500)

Area C—Theology and Ethics
6. Systematic
7. Biblical
8. Roman Catholic

Area D—World Religions
10. History of Religions

Area E—Religion and Personality
13. Religion and personality development
15. Pastoral counseling

The Master of Arts degree. A student must have a reading knowledge of either French or German. He may substitute another foreign language if it is related to his field of study and is approved by his adviser.

The formal course requirement is four courses or seminars, at the 200-level or above, in each of three areas, for a total of not less than 15 hours in each area and 30 hours altogether. Four hours of thesis research can be counted toward the total of hours and courses required, in a manner determined by the advisory committee for each case. Each of the three areas the student will be responsible to one faculty member, who will advise him on courses in that area; the three faculty members together will constitute the student’s advisory committee. By his second semester in this program a student should have decided on his areas of concentration. By this time, the committee should have been formed.

The committee conducts the master’s examination, written toward the end of a student’s fourth semester of study, at times to be set, and intended as an examination on the twelve courses or seminars taken. A student who fails the examination may, with the approval of his faculty committee, retake it once, but not sooner than the next regularly scheduled examination time.

A thesis is also required. It must be approved by the advisory committee. How it will normally be written under the supervision of only one of the three members. It will not be formally defended except in those cases where the advisory committee considers it desirable.

If the work is of sufficient competence, a student who has completed the master’s degree may continue in the Ph.D. program by petitioning for a change in degree objective. In such a case he will be expected to take and pass the qualifying examination and meet for other requirements for the degree.

The Doctor of Philosophy degree. Each student is required to submit to the departmental office as soon as possible (but before taking the qualifying examinations) a proposed program of study for the Ph.D. degree. This program, which must be approved by the thesis adviser and the Graduate Committee, shall constitute both a broad and a specialized study in the field of religion and shall enable the student to meet the following requirements.

In qualifying examinations, the student will be examined in three of the five areas listed above. The purpose there will be three major written examinations. A student who fails any of the examinations may, with the approval of the faculty, present himself for reexamination in the area in which he has failed, but not sooner than the next regularly scheduled qualifying examination. These are repeated once.

Comprehensive examinations, which shall consist of three of the five areas listed above, are to be taken before the dissertation is begun and are required.

a. A student’s major field: (e.g., Old Testament, Protestant Theology and Ethics). A special topic within the student’s major field (e.g., Old Testament criticism and the prophetic literature, patristics). Any one of the other 13 fields listed above, or a related field outside the School of Religion, approved by the thesis adviser and the Graduate Committee.

To meet distribution requirements, such a student will be required to take course work at the 200 level or above as follows: 10 semester hours outside the School of Religion and 30 semester hours in one of the fields of religion other than the major field. The courses offered to meet this requirement must be approved by the thesis adviser and the Graduate Committee. Only work passed with a grade of A or B may be counted.

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 first year in graduate school, students must pass or be exempted from qualifying examinations. Students must have passed the first-year seminar Language Tests in both English and French. If the nature of the student’s specific program of study warrants it, another language may be used with the permission of the faculty, but should be fulfilled for French or German. In addition to French and German several areas have special language requirements. Students in New Testament, for example, must attain departmental requirements in Greek. All students are advised to consult with their advisors as early as possible concerning the special requirements in their field.

A dissertation, for which not more than 12 semester hours of credit may be allowed, is also required. An oral examination on the dissertation and related materials will be conducted by a committee of five or more members, at least one of whom shall be chosen from outside the department. The director of the dissertation will serve as chairman of the committee.

Note: Any student whose grade-point average in graduate study at the above level below 3.0 will be placed on probation. If he fails to bring his average up to 3.0 within one semester, he will ordinarily be disqualified from further graduate study in the School of Religion.

STAFF

Professors: David Belzoo, George W. Buttrill, Sidney M. Myrick, Robert L. Welch.

Associate Professors: Robert D. Baird, James F. McCune, Howard V. Walle.


Lecturers: F. William Al, Margaret A. Alexander, Joseph A. Goldberg, James M. Hiesey, Donald W. Sutherland, J. Richard Wilkins, R. Howard Williams.

CURSE DESCRIPTIONS

Primarily for Undergraduates

32:1 Old Testament Survey
2.0 h.

32:2 Genesis through II Kings
2.0 h.

32:3 Old Testament Survey
2.0 h.

32:4 Prophets through Daniel
2.0 h.

32:5 Major Figures of the Bible
2.0 h.

32:6 Principal contributors to the development of biblical life and thought
2.0 h.

32:7 The Nature and Relation of Biblical Thought
2.0 h.

Structures of biblical thinking developed through a study of central themes within the Old and New Testaments and their bearing upon the present.

32:8 New Testament Survey
2.0 h.

32:9 The literature of the New Testament in its historical setting.
2.0 h.

32:10 Introduction to Catholicism
2.0 h.

Principal teachings and practices of the Catholic faith.
32:32 Introduction to Catholicism 2 s.h.
32:35 Religion in Human Culture 4 s.h.
32:36 Religion in Human Culture 4 s.h.
Same as core course 11:35. For undergraduate religion majors, but cannot be counted for the major and the core course requirement. May be elected as an indepen- dent unit.
32:36 Religion in Human Culture 4 s.h.
Continuation of 32:35, but may be elected as an inde- pendent unit.
32:45 Living Religions of the West 2 s.h.
32:46 Living Religions of the East 2 s.h.
Religious thought and practices in India, China, and Japan. Same as Chinese and Oriental Studies 28:46.
32:72 Religion in American History, 1607-1800 3 s.h.
Development of religious thought patterns and institu- tional life during the colonial and constitutional periods. Same as History 16:72.
32:73 Religion in American History, 1800-Present 3 s.h.
Development of religious thought patterns and institu- tional life in the United States. This is a continuation of 32:72 (16:72), but may be taken independently. Same as History 16:73.

For Undergraduates and Graduates
32:100 The Interpretation of Biblical History 3 s.h.
The Hebrew Bible as interpreted in the writings of Philo, Josephus, Matthean, Spinoza, and Yehudah Keiman.
32:101 Biblical Archaeology 2 s.h.
Course in the critical research to the understand- ing of the historical and cultural backgrounds of the biblical period.
32:102 Introduction to Rabbinic Literature 3 s.h.
32:103 Jewish Mysticism 3 s.h.
Martin Buber and the Jewish mystical tradition.
32:104 Jewish Religious Philosopher 3 s.h.
Readings in Philo, Hasid, and Matthean on selected problems.
32:105 Introduction to the Intertestamental Period 3 s.h.
History and theology of Judaism from 300 B.C.E. to 135 C.E. Readings from English translations of source- Archival evidence.
32:106 The Synoptic Gospels 2 or 3 s.h.
Interpretation of one of the first three gospels with refer- ence to the other two. Spring, 1971: Luke.
32:107 Paul 2 s.h.
Aspects of Pauline theology in their historical context.
32:108 Christian Ethics 2 s.h.
Specific nature of Christian ethics and a survey of lead- ing ethical theories, according to the directives and dy- namics of the Christian ecumen.
32:109 History of Christian Ethics 2 s.h.
History of Christian social and ethical thought treating its development from the Old and New Testaments to the present.
32:110 Problems of Christian Ethics 2 s.h.
Moral choices as viewed by the Christian faith. Applica-tion to problems of marriage, vocation, economics, politics, race relations, war, and peace.
32:111 Biblical Hebrew I 3 s.h.
Vocabulary, grammar, oral expression, composition; se- lected readings.
32:112 Biblical Hebrew II 3 s.h.
32:115 The World of the Old Testament 3 s.h.
Historical and intellectual background of the Old Testa- ment with special attention to common patterns of thought and religion in the ancient Near East and their relation to the religions of Israel.
32:116 Critical Approaches to the Old Testament 2 s.h.
Examination of relevant methodologies (e.g., literary, crit- ical, form-critical, sociological, archaeological, theo- logical) used in approaching the Old Testament in the context of ancient academic study. One previous course in Old Testament is recommended.
32:118 New Testament Epistles 2 or 3 s.h.
32:119 History of Theology: Patristic Era 3 s.h.
From the end of the New Testament period to the end of the 5th century.
32:120 History of Theology: Scholasticism and Reforma- tion 3 s.h.
Scholastic theologians and their relation to the theologies of Luther and Calvin and to the Council of Trent.
32:121 Protestant Faith 2 s.h.
Christian faith as understood by Protestantism. Selected readings in the major Reformers and in contemporary Protestant theology.
32:122 Theology of Luther 2 s.h.
Analysis of the religious thought of the 16th century re- forms.
32:125 Prophetic Thought in Ancient Israel 3 s.h.
Classical Israelite prophetism from the 16th through the 5th centuries B.C.
32:126 Theology of the Old Testament 3 s.h.
God, man, sin, and salvation as advanced by Old Testa- ment thought.
32:127 Theological Questions I 3 s.h.
Treatment of basic questions of religious thought, such as the meaning of "God," the nature of religious symbols, the phenomena of skepticism and mysticism.
32:128 Theological Questions II 3 s.h.
Treatment of questions related to Christology and its counterparts in secular and non-Christian thought.
32:130 The World of the New Testament 3 s.h.
The background and setting of Early Christianity and the New Testament: early post-Biblical Judaism, Hellen- ism, pagan religions, gnosticism, the Roman Empire.
32:136 History of Catholic Moral Theology 3 s.h.
32:133 The Catholic Church to 1500 3 s.h.
History of Church from its foundation to end of Middle Ages. The seven development and major relationships.
32:134 The Catholic Church Since 1500 3 s.h.
Continuation of 32:133. History of Church from Protestant Revolt to present day.

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32:135 Catholic Social Thought

Religion

32:135 Catholic Social Thought 2 s.h.
History and development of Catholic social teaching on the problems of the reconstruction of the social order with special emphasis on the encyclicals of Pope John XXIII.

32:138 Christian Marriage
32:138 Christian Marriage 2 s.h.
Christian view of marriage with consideration of questions of courtship, sex, mixed marriage, responsible parenthood, divorce and remarriage, sacramental view of marriage.

32:137 Catholic Life and Worship
32:137 Catholic Life and Worship 3 s.h.
Catholic sacramental theology with emphasis upon recent thought and practice concerning the Liturgy: the Mass, sacraments, and prayer.

32:138 Recent Developments in Catholic Theology
32:138 Recent Developments in Catholic Theology 3 s.h.
Principal recent developments and present situation in Roman Catholic theology.

32:141 Major Themes in Jewish Philosophy
32:141 Major Themes in Jewish Philosophy 3 s.h.
God, faith, revelation, and Medieval epistemology.

32:142 Readings in Contemporary Jewish Philosophy
32:142 Readings in Contemporary Jewish Philosophy 3 s.h.
A thematic examination of selected writings of Franz Rosenzweig, Leo Baeck, Martin Buber, and Mordecai Kaplan.

32:143 The Social Institutions and Social Dynamics in Ancient Israel
32:143 The Social Institutions and Social Dynamics in Ancient Israel 3 s.h.
An analysis of the priesthood, prophecy, and monarchy in ancient Israel, from her semi-semantic beginnings to the Babylonian exile.

32:151 Religion in India
32:151 Religion in India 3 s.h.
Monuments, doctrine, and religious practices in India both in its history and in its modern expressions. Same as Oriental Studies 20:147.

32:152 Religion in China
32:152 Religion in China 3 s.h.
Study of the main religions in China. Same as Oriental Studies 20:152.

32:159 Buddhism and Buddhist Texts
32:159 Buddhism and Buddhist Texts 3 s.h.
Mahayana and Theravada texts in translation. Same as Oriental Studies 20:159.

32:157 Anthropology of Religion
32:157 Anthropology of Religion 2 or 3 s.h.
Religious activity in folk and tribal setting. Focus upon religious thought, myth, ritual, and symbolic systems and upon the application of theories of the origin and functions of religion in human affairs. Same as Anthropology 128:126.

32:158 Sociology of Religion
32:158 Sociology of Religion 3 s.h.
Comparative study of religious beliefs and practices; basis in social organization; social consequences in literate societies. Prerequisites: Sociology 34:1. Same as Sociology 34:187.

32:159 Religion and Personality
32:159 Religion and Personality 3 s.h.
Religious factors and influences as they relate to personality development and adjustment.

32:160 Pioneers in Psychology of Religion
32:160 Pioneers in Psychology of Religion 3 s.h.
An historical survey of various psychological interpretations of religious experience and behavior from William James and Freud to the present.

32:162 Religion and Health
32:162 Religion and Health 3 s.h.
Religious aspects of psychiatric and mental illness, as well as the role of religion in therapy and the reintegration of the patient.

32:165 History of the Jews
32:165 History of the Jews 3 s.h.
The Jew in the Greek, Roman, Sasanian, and Modern Worlds.

32:167 History of First Century Christianity
32:167 History of First Century Christianity 3 s.h.
John the Baptist, the life and ministry of Jesus, the history of the first century church.

32:159 The Religious and Democratic Traditions of the U.S.
32:159 The Religious and Democratic Traditions of the U.S. 3 s.h.
An historical examination of what is commonly called "the church-state question," based primarily on an analysis of selected Supreme Court decisions on matters pertaining to religion. Same as History 16:159.

32:173 Survey of American Jewish History
32:173 Survey of American Jewish History 3 s.h.
Analysis of the genesis and development of the American Jewish community.

32:174 The Catholic Church in America
32:174 The Catholic Church in America 3 s.h.
Beginnings, development, and present condition of the Catholic Church in the United States.

32:176 The Genius of American Religious Institutions
32:176 The Genius of American Religious Institutions 3 s.h.
Characteristics which define the peculiar genius of institutionalized religion in the United States. Same as History 16:180.

32:177 Puritansim in the Shaping of America
32:177 Puritansim in the Shaping of America 3 s.h.
The last representatives of the medieval ambition to synthesize all experience and their influence on the development of the American school. Same as History 16:188.

32:180 Theology of Thomas Aquinas
32:180 Theology of Thomas Aquinas 3 s.h.
Principal topics in Aquinas' theology.

32:181 Religious Thought in the 17th Century
32:181 Religious Thought in the 17th Century 3 s.h.
Main trends in Western religious thought: 1550-1680.

32:182 Religious Thought in the 18th Century
32:182 Religious Thought in the 18th Century 3 s.h.
Trends in Western religious thought during the Age of Reason: 1680-1800.

32:183 Religious Thought in the 19th Century
32:183 Religious Thought in the 19th Century 3 s.h.
History and analysis of the main developments in religious thought from 1800-1915.

32:184 Religious Thought in the 20th Century
32:184 Religious Thought in the 20th Century 3 s.h.
History and analysis of the main developments in religious thought from 1915 to the present.

32:185 Religious Thought of Soren Kierkegaard
32:185 Religious Thought of Soren Kierkegaard 2 s.h.

32:186 Religious Thought in Tudor/Stuart England
32:186 Religious Thought in Tudor/Stuart England 3 s.h.

32:187 The Theology of Paul Tillich
32:187 The Theology of Paul Tillich 2 s.h.
An exposition and analysis of Tillich's thought.

32:189 Readings in Religion
32:189 Readings in Religion 3 s.h.
Contemporary Issues in Religion 2 or 3 s.h.
Identification and analysis of problem areas: nature of religion, relationship of religions in a pluralistic world, new religions, religion and culture, the future of religion. Prerequisites: Religion 12:16, 18, or 20:16, 18.

32:192 Honors Tutorial
32:192 Honors Tutorial 2 or 3 s.h.

32:194 Honors Essay
32:194 Honors Essay 2 or 3 s.h.
Russian

Primarily for Graduates


32:205 Research: Religion

32:207 Seminar: Problems in New Testament Interpretation 2 s.h.

32:213 Seminar: History of Theological Ethics cr.arr.

32:211 Seminar: Problems of Old Testament Criticism 2 s.h.

32:217 Seminar: Buddhism cr.arr.

32:216 Seminar: Religion in India cr.arr.

32:217 Protovarsavan: History of Religions Methodology 3 s.h.

32:218 Seminar: Problems in the History of Religions cr.arr.

32:224 Seminar: Contemporary Theology cr.arr.

32:225 Seminar: Problems in Proverbs cr.arr.

32:226 Seminar: History of Protestant Thought cr.arr.

32:227 Seminar: Reformation Theology cr.arr.

32:230 Seminar in Historical Theology cr.arr.

32:233 Seminar in Recent Catholic Theology cr.arr.

32:254 Clinical Pastoral Education cr.arr.

32:255 Clinical Pastoral Care cr.arr.

32:256 Clinical Pastoral Care 6 s.h.

32:257 Orientation in Pastoral Counseling 3 s.h.

32:258 Orientation in Pastoral Care of the Mentally Ill 3 s.h.

32:275 Seminar: Topics in American Religion History, 1607 to 1820 3 s.h.

32:276 Seminar: Topics in American Religion History, 1820-Present 3 s.h.

32:279 Seminar: Church and State Relations in the U.S. 3 s.h.

32:280 Interdisciplinary Seminar in Social Ethics: Human Rights and World Order 2 to 4 s.h.

32:283 Seminar: Law and Political Science 20 s.h.

Chairman of Department, Norman Luxenburg Office, 315 Gilmore Hall

The purpose of the Russian program is to give the students training in both the written and spoken Russian language and literature.

An important secondary objective of the program is an understanding and appreciation of Russian civilization and culture.

The Russian department also offers introductory courses in the Russian language to students having specific language needs. The Russian Civilization and Culture courses designed to give students from other fields an opportunity to acquire an understanding of the social or natural sciences or both. Survey courses in Russian literature and civilization, conducted in English are open to University students from all departments.

Undergraduate Requirements

In addition to the general requirements of the College of Liberal Arts, students majoring in the department are required to complete 32 semester hours in Russian courses, numbered above 100, including:

41:100, 101 Second-Year Russian 8 s.h.

41:109 Special Readings 2 s.h.

41:111, 112 Third-Year Russian 8 s.h.

41:117, 118 Readings in Soviet Literature 4 s.h.

41:180 Readings in Soviet Literature 4 s.h.

41:181 Russian Civilization 2 s.h.

Total 32 s.h.

Students majoring in Russian are urged to include related courses in economics, geography, history, or political science among their course selections so as to acquire a more complete background.

The following courses constitute the basic requirement for a teaching minor in Russian:

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Honors in Russian

Russian majors of junior or senior standing with a grade-point average of at least 3.5, both overall and in Russian, may enroll in this program upon approval by the department. The student chooses an instructor in the field of his special interests under whom he works. An extensive reading program with discussions, regular reports, and a seminar paper is required for each work unit (2 semester hours). A total of 6 to 8 semester hours may be taken in this program. A comprehensive examination in the senior year terminates the program.

Graduate Study Requirements

Master of Arts degree in Russian. The major emphasis of the graduate program at Iowa in Russian, 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 second criticism of form, content, and language of works in all genres. All Master of Arts degree candidates are responsible for having read the works in 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 (comparative literature, history, philosophy, other languages, etc.); 4 to 6 semester hours may be reserved for thesis preparation. The candidates must pass a written and oral examination; they must also demonstrate a reading knowledge of French or German.

The program for the M.A. must include the following courses or their equivalents:

41:111, 41:114 Advanced Composition and Conversation 2 s.h.
41:211, 41:213 19th Century Russian Literature 3 s.h.
41:281 Russian Civilization 3 s.h.
41:281 History of the Russian Language 3 s.h.
Pick one 200- or 300-level course in pre-19th-century Russian literature.

Special Facilities

The department shares in the facilities of a fully-equipped Language Laboratory (rational tape recorders, record players, soundproof recording room, whisper tube, dictaphone, many recordings from Russian and other languages and also make recordings of their own voices).

STAFF

Professor: Helene Steiner.
Associate Professor: Norman Lunenburg.
Assistant Professor: George C. Kolesar, Harry Weber.
Instructor: T. N. Hamilton Lebedeva.

COURSE DESCRIPTIONS

For Undergraduates and Graduates

41:101 Elementary Russian 4 s.h.
41:102 Elementary Russian 4 s.h.
Prerequisite: 41:101 or equivalent.

41:203 Second-Year Scientific Russian 4 s.h.
Prerequisite: 41:102 or equivalent. Emphasis on reading scientific and technical Russian material. For students, especially those majoring in sciences, who need primarily to develop reading ability for research purposes.

41:104 Second-Year Scientific Russian 4 s.h.
Prerequisite: 41:103 or equivalent.

41:105 Second-Year Russian 4 s.h.
Prerequisite: 41:102 or equivalent. Standard second-year course recommended for students satisfying their foreign language requirement for a B.A. degree and desiring further training in the active use of the language.

41:106 Second-Year Russian 4 s.h.
Prerequisite: 41:105 or equivalent.

41:107 Supplemental Russian Reading 2 s.h.
Prerequisite: 41:104 or 41:105.

41:108 Special Readings 2 or 3 s.h.
Prerequisite: 16 semester hours of language instruction.

41:111 Third-Year Russian 4 s.h.
Prerequisite: 41:106 or equivalent.

41:112 Third-Year Russian 4 s.h.
Prerequisite: 41:111 or equivalent.

41:113 Advanced Composition and Conversation 3 s.h.
Prerequisite: 41:112 or equivalent.

41:114 Advanced Composition and Conversation 3 s.h.
Prerequisite: 41:113 or equivalent.

41:121 Linguistic Analysis of Contemporary Russian 3 s.h.
41:125 Russian Pronunciation 1 s.h.
41:126 Russian Pronunciation 1 s.h.
41:151 Russian Literature in Translation (1800-1860) 3 s.h.
Conducted in English.
41:152 Russian Literature in Translation (1860-1917) 3 s.h.
Conducted in English.

41:171 Readings in Representative Russian Literature 3 s.h.
Given in Russian. Prerequisite: 41:112 or equivalent.

41:172 Readings in Representative Russian Literature 3 s.h.
Given in Russian. Prerequisite: 41:112 or equivalent. Combination of 41:171, but may be taken as an independent unit.

41:181 Readings in Soviet Literature 3 s.h.
Given in English.

41:191 Russian Civilization 3 s.h.
Given in English.

41:202 Short Story 3 s.h.
41:209 Honors Program in Russian cr.arr.
May be repeated to a maximum of 8 semester hours. Prerequisite, consent of the department.

Primarily for Graduates

41:201 19th-Century Russian Literature 2 s.h.
41:205 Old Russian Literature 2 s.h.
41:211 19th-Century Russian Literature 4 s.h.
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S O C I A L S T U D I E S

41:212 19th-Century Russian Literature 3 a.h.
41:224 Russian Drama 3 a.h.
41:231 Soviet Literature 3 a.h.
41:241 Russian Phonetics 2 a.h.
41:244 Literary Criticism 3 a.h.
41:251 Samizdat Print 2 or 3 a.h.
41:253 Seminar: Tolstoy 2 or 3 a.h.
41:253 Seminar: Pushkin 2 or 3 a.h.
41:254 Seminar: 20th-Century Russian Literature 2 or 3 a.h.
41:255 Seminar: Turgenev 2 or 3 a.h.
41:256 Seminar: Emile Zola 2 or 3 a.h.
41:257 Seminar: Dostoevsky 2 or 3 a.h.
41:261 History of the Russian Language 3 a.h.
41:279 Special Work cr.arr.
41:310 Master's Thesis cr.arr.

S O C I A L S T U D I E S
Advisers: John H. Hazen
Office, 352 University High School
Robert M. Fitch
Office, 350 University High School
Barbara M. Olmo
Office, 413 Jefferson Building

The program of concentration in the area of the social studies provides a sound, nonprofessional major. The program is primarily intended, however, for those preparing to teach the social studies in public schools and junior or community colleges. Together with professional requirements, the social studies major meets the standard standards of the North Central Association of Teachers and Schools.

Bachelor of Arts in Social Studies
Advisors. Students wishing to major in the social studies must have the permission of the advisor. Normally students will not be permitted to major in this area unless they have earned a minimum grade-point average of 2.5 on all work undertaken in the fields of anthropology, economics, geography, history, political science, and sociology, and in the core areas of the social sciences and the historical and cultural studies.

Degree requirements. A minimum of 20 semester hours constitutes a major in social studies for a bachelor's degree. These 20 semester hours shall be distributed in the five departments of Anthropology, Economics, Geography, Political Science, and Sociology. Minimum distribution of work in the five departments shall be as follows:

- Economics: 6 a.h.
- Geography: 6 a.h.
- History: 12 a.h.
- Political Science: 6 a.h.
- Sociology or Anthropology: 6 a.h.

Total: 36 a.h.

The Department of History recognizes the following sequences, as follows:

Division I: The Ancient World and Medieval Europe
Division II: European History, 1500-1815
Division III: European History, 1815 to the Present
Division IV: United States History
Division V: Latin American History
Division VI: British Empire and Commonwealth
Division VII: Far Eastern History

The minimum history requirement of 12 semester hours must include at least 6 semester hours in Division IV.

The remaining 14 semester hours of work in the major shall be distributed among one or more of the five social studies departments in accordance with the needs and interests of the students, with the advice and consent of the social studies advisor.

Approval of candidacy for the B.A. in this area will be granted only to students who have a grade-point average of at least 2.5 in all college work undertaken in the social studies departments.

Students interested in a teaching certificate in the area of the social studies should consult the appropriate department for the requirements for teaching majors in anthropology, geography, history, political science, and sociology.

(Master's degrees of the College of Liberal Arts, see College of Liberal Arts.)

Master's Degree in Social Studies

Admission requirements. A student wishing to major in social studies for a master's degree must present a minimum of 20 semester hours of credit in the area of the social studies earned as an undergraduate in an accredited institution. The transcript of the applicant must show a minimum grade-point average of 3.0 in all work undertaken in the five social studies departments. After having declared a social studies major, a student shall maintain a 3.0 grade-point average in all work undertaken in the social studies departments.

Degree requirements. In the master's degree program in social studies, each student shall take a degree with thesis or a terminal degree (without thesis). A minimum of 24 semester hours is required under either plan. These 24 semester hours of work are normally distributed in three of the five social studies departments, Anthropology, Economics, Geography, History, Political Science, and Sociology. Normally, at least 30 semester hours shall be taken in each field. In some cases a candidate may, with the consent of the advisor, choose to have the same department count as two of the major departments.

The candidate must complete the requirements for the major department and in courses offered by the College of Social Studies. The minimum distribution of 18 semester hours in education will be counted toward the degree requirements.

A minimum of nine semester hours of the total 38 semester hours shall consist of graduate courses bearing course numbers of 500 or above.

Comprehensive written and oral examinations are required of the candidate. The written examinations shall consist of a six-hour examination over the fields in which the student has distributed his work. These are to be comprehensive tests not course examinations and are submitted by the candidate and the advisor. The oral examination is conducted by the candidate's committee as a whole.

In the case of the candidate's election to write a thesis, the degree committee consists of two co-chairmen and one or more members of the candidate's advisor; the other is a member of that department in which the candidate is writing his thesis.

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Approved of candidacy for the M.A. in this area will be granted only to students who have a grade-point aver-
age of at least 3.5 in all college work undertaken at the graduate level in the social studies departments.

Doctoral Program

Purpose. To prepare secondary departmental chairman, superintendents, curriculum directors, teacher education personnel, and college instructors in the social sciences and pedagogy.

Admission. A student must be a baccalaureate degree in history or the social sciences; master's degree in history, the social sciences, and specialization.

Degree requirements:
1. Required courses—A minimum of 40 semester hours of coursework and dissertation credit beyond the bache-
lor's degree and not including tool requirement established by the College of Education.
   a. The 40 semester hours to be distributed among two of the following disciplines: anthropology, eco-
nomics, geography, history, political science, and sociology, and in the field of education. Work in the two disciplines chosen will constitute between 60 and 75 per cent of the total 40 semester hours; work in education, between 25 and 40 per cent of the total.
   b. Seminars and courses numbered 202 or above are required in each of the three fields constituting the major.
2. Comprehensive examinations—Normally three three-hour examinations, one in each of the fields, will be required. Depending on the distribution of work taken, the nine hours of written examinations may be re-
arranged. An oral examination in defense of the dis-
sertation will be conducted by the committee as a whole.
3. Dissertation—A research problem in history or the social sciences, in which case the dissertation director will be a faculty member of the department; or, a research problem in social sciences education, in which case the dissertation director will be a faculty member of the College of Education.
Committee on Social Studies Education: Professors William Aydelotte, Clyde Kline, Chester Morgan, James Murray, Harold Sommers, John Haechter, chairman.

COURSE DESCRIPTIONS

Almost all courses included in the social studies major consist of courses in the Departments of Anthropology, Basic sciences, or field History, Political Science, Sociology, and the College of Education. However, candidates may elect a maximum of 4 semester hours in courses listed in the area of social studies education.

98:201 Seminar: Readings in Social Science 1 or 2 s.h.

Reading and discussion of recognized works selected from the social sciences. Insights provided by these books are used for understanding the contemporary scene and re-

ing the point of view of the social science disciplines. Prerequisite: consent of instructor.

98:202 Seminar: Readings in Social Science 1 or 2 s.h.

Continuation of 98:201, but may be elected as an in-
dependent unit.

SOCIAL WORK

Director of School, Frank Z. Glick
Office, 280 Social Work Building
201 Grand Avenue

The School of Social Work offers a graduate curriculum leading to the Master of Social Work degree. The School stresses a practical and program approach to the M.S.W. degree in the College of Liberal Arts. The basic objective of the Iowa School is to give each graduate a good foundation for entering and growing in professional practice. It also recognizes that all social work practice requires, in varying degrees, competence in working with individuals, groups, and communities.

Master's degree graduates of the School are employed in a wide variety of agencies, clinics and hospitals.

Opportunities exist in family casework, psychiatric social work, child welfare work, community organization, social administration, and in many other areas. The number position requests the number of available people. Therefore, a graduate in social work has no difficulty in securing current work. Many agencies have positions open to B.A. degree gradu-
ates. Among these are local public welfare, some chil-
dren's institutions, and some positions in correction.

For more information regarding career possibilities con-

S O C I A L W O R K

Undergraduate Program

The program is a four-year course of study in the College of Liberal Arts, meeting requirements for a major, and leading to the Bachelor of Arts degree in social work. With the exception of the social service courses taught by the social work faculty, it consists entirely of regular courses in other departments of the University.

Advisory Service

The student may declare for the major in social work when he enrolls as a freshmen or at any later time when completion of the major remains feasible. The declara-
tion should be made in the Liberal Arts Advisory Office, to which he will be assigned for an undergraduate advisor on the faculty of the School of Social Work.

HONORS IN SOCIAL WORK

The School of Social Work has an Honor's 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 of the Undergraduate Program

I. Undergraduate students majoring in social work must complete the general education requirements of the Liberal Arts, foreign language requirements, and additional course work in one of the following areas.

II. The following specific courses are required:

   20:1 Introduction to American Politics or
   30:100 American Political System
   24:1 Elementary Psychology or
   32:1 General Psychology
   40:1 Social Problems Principles of
   40:2 Principles of Economics (or ESE)
   40:188 The Field of Social Work
   30:154 American Civilization
   40:171 Social Welfare Program and Policy
   40:179 Social Work Methods
   30:156 Introduction to Social Work Methods
   30:157 Introduction to Social Work Methods

II. A minimum of 15 semester hours of coursework is required in one department in group A or B and a mini-
mum of 6 hours required from departments in the other group. Courses listed under II or IV may be applied toward the II-semester-hour requirement.

A. Social Sciences

   Economics
   Political Science
   Psychology
   Sociology
   Anthropology

B. Humanities

   History
   English
   American Civilization
   Psychology

C. Languages

   German
   Spanish
   Latin

D. Literature and Thought

   English
   American Civilization
   History
   Philosophy
   Religion

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IV. Any of the following courses are recommended:

- 5:191 Biological and Psychological Aspects of Aging 2 a.h.
- 5:195 Child Development 2 a.h.
- 7:100 Principles of Guidance 2 a.h.
- 7:150 Introduction to Group Counseling 2 a.h.
- 7:152 Educational Psychology and Measurement 2 a.h.
- 7:153 Exceptional Children 2 a.h.
- 7:156 Teaching the Emotionally Disadvantaged 2 a.h.
- 7:157 Socialization 2 a.h.
- 7:159 Orientation to Rehabilitation of the Child 2 a.h.
- 7:160 Principles of Nutrition 2 a.h.
- 7:165 Administration of Family Resources 2 a.h.
- 7:168 Family Housing 2 a.h.
- 7:170 Marriage and Family Interaction 2 a.h.
- 7:171 or 725 Seminar: Parent-Child Relationships 2 a.h.

V. Communication: Concepts and Perspectives
- 4:191 Communication 2 a.h.
- 4:192 Communication 2 a.h.
- 4:193 Psychological Adjustment 2 a.h.
- 4:196 Psychological Measurement 2 a.h.
- 4:197 Introduction to Statistical Methods 2 a.h.
- 4:198 Abnormal Psychology 2 a.h.
- 4:210 Problems of Christian Ethics 2 a.h.
- 4:215 The Pursuit of Happiness 2 a.h.
- 4:216 Myths and Mazes 2 a.h.
- 4:217 The Good Society 2 a.h.
- 4:218 Values in the Contemporary World 2 a.h.
- 4:219 Ethics and the Future of Man 2 a.h.
- 4:220 Introduction to Sociology: Problems 2 a.h.
- 4:221 Introduction to Social Research 2 a.h.
- 4:222 Introduction to Field Method 2 a.h.
- 4:240 Criminology 2 a.h.
- 4:241 Juvenile Delinquency 2 a.h.
- 4:242 Race and Ethnic Relations 2 a.h.
- 4:243 Sociological Aspects of the Family 2 a.h.
- 4:244 Sociology of Family Formation 2 a.h.
- 4:245 Sociology of Politically Organized Groups 2 a.h.
- 7:101 Psychology for Related Professions 2 a.h.
- 7:150 Training Group Processes 2 a.h.
- 10:041 Recreation Leadership 2 a.h.
- 10:041 Recreation to Rehabilitation Settings 2 a.h.
- 11:03 Introduction to the Study of Culture 2 a.h.

VI. The World's Peoples
- 4:191 The World's Peoples 2 a.h.

VII. The following courses are offered in social work:

- 42:191 Individual Study cr.arr.
- 42:195 Field Work cr.arr.
- 42:196 Field Experience cr.arr.

Admission to Graduate Program

A bachelor's degree from an accredited college or university is required. No particular courses are rigidly required, but there should be a broad background in the social sciences and humanities, plus some work in biological science. From among those who apply, those with strongest qualifications are accepted. In this selection, consideration is given to the undergraduate record and individual qualities considered by references, interviews, and the application materials. Regular admission requires a grade-point average of 2.5 or better on a 4-point scale. The Graduate Record Examination Aptitude Test should be taken and scores sent to the Director of Admissions. Applicants who meet all other admission requirements, may be admitted without the GRE as conditions that they take the GRE at the first subsequent test date.

Graduate Curriculum

Under the present plan the student begins his M.S.W. program in September and remains continuously in school until all work is completed. He is off the summer, and he finishes corresponding early the next spring. The three general content areas of the curriculum are: social welfare services and policies, human behavior in the social environment, and methods used in practice. The program of instruction aims to provide the basic and behavioural preparation needed for professional practice in almost any setting today. In keeping with this, the program is new, and increasingly will be, designed to take account both of what the entering student brings with him and his particular needs and desires for learning. Individualized opportunities are available in academic courses and in the practicum.

During the first and final terms all students are on the campus in Iowa City spending full time in academic work. As of the fall semester of 1960, students may take from about February first until near the end of the academic year—the student is responsible for working out the conditions of his or her own academic work. Social agencies and social work departments in the Iowa City and Des Moines areas are utilized. The courses meet both in the Iowa City and Des Moines Educational Centers, and each student attends the one nearest his practicum agency.

Requirements for the Master of Social Work

The Master of Social Work degree is conferred by the University upon those students who give evidence of knowledge and competence in the professional practice of social work by meeting the following requirements:

1. A minimum of 24 semester hours in residence at the University of Iowa.
2. A minimum of 20 semester credit hours in graduate social work study, including a research requirement. Consideration upon approval by the graduate faculty, the 20-credit requirement may be reduced to some reduction in cases where work clearly equivalent to graduate courses has already been done.
3. A final comprehensive examination, written or oral or both, covering all work for the degree.

STAFF


COURSE DESCRIPTIONS

Primarily for Undergraduates

42:120 Elementary Statistical Concepts 2 cr. A required course for entering graduate students demonstrating gaps in this area. Consideration of the rationale and use of various descriptive statistical models including measures of central tendency, variability, and correlation. Introduction to selected inferential statistical concepts most frequently used in social work research.

42:143 The Field of Social Work 3 cr. An introduction to social welfare as a social institution; historical development; settings of social work practice; the profession of social work. Same as Sociology 343.

42:176 Introduction to Social Work Methods 4 cr. Processes of social work treatment used by social workers with individuals, groups, and families. Principles, instrumentation in all social work practice. Pre-requisite: 42:126 or consent of instructor.

42:191 Individual Study cr.arr.

A project related to the student's interest is carried out under direction of a faculty member.

42:192 Honors in Social Work cr.arr.

Supervised individual research. Prerequisite, admission to Honors program in social work.
42:159 Field Experience cr.arr. Supervised observation of and experience with the activi-
ties of selected social welfare agencies and organizations. Requires approximately sixty hours in agency participa-
tion per credit hour, plus conference or seminar time. Prerequisites: 42:158 and consent of instructor.

For Graduate and Undergraduate Students

42:131 Human Behavior in the Social Environment I cr.arr. Selected theoretical approaches to understanding human behavior. Changing character of social and cultural forces and their impact upon individual, family, and societal processes of personality growth and developmental tasks and modes of adaptation.

42:132 Human Behavior in the Social Environment II 3 s.h. Major personal and social stress situations; range and var-
iability of adaptive responses to these stresses. Features and manifestations of social dysfunction. Assessment approaches to evaluation of social functioning.

42:171 Social Welfare Program and Policy 4 s.h. or cr.arr. Selected programs which demonstrate the organization and provision of individualized social services, through both government and voluntary agencies, in dealing with major social and health problems in the fields of depen-
dency (old age, children, handicaps); ill health, and oil-
families; evolving social problems, policies and provision relevant to respective programs; role of government; role of social work. Undergraduate registrar for 4 semester hours. Prerequisite: 42:168 or consent of instructor.

Primarily for Graduate Students

Admitted to the School of Social Work

42:211 Historical and Legal Foundations of Social Welfare 3 s.h. Selected pre-20th century antecedents of modern social welfare programs, under public and voluntary auspices, including eras in European community organization and 19th-cen-
tury United States. Statutory basis of certain social wel-
fare provisions; legal aspects of administering modern social welfare services.

42:215 Seminar: Social Welfare Program and Policy 4 s.h. Critical evaluation of selected aspects of current social welfare provisions, with emphasis upon relevance, ef-
ficacy, and directions of change in substantive and procedural policy.

42:225 Seminar: The Social Work Profession 2 s.h. The profession of social work in modern society, includ-
ing historical development; community and governmental sanctions, standards, and regulations; professional ethics, values, regulation, and social policy; historic knowledge base; and education necessary for practice.

42:241 Social Work Practice I cr.arr. Issues and responsibilities of social work; general con-
ceptual base for all social work practice; frame of refer-
ce for student educational experience.

42:242 Social Work Practice II 3 s.h. Further consideration of the common conceptual base of social work practices with special emphasis on specific application of differential social work experiences.

42:250 Social Group Work 3 s.h. Differential use of groups in social work: main elements of social interaction, group process, the in-
dividual's place in the group, the program, the worker's role as diagnostician, carrier of values, agent of influence or treatment.

42:253 Community Organization for Social Welfare 3 s.h. Community organization as a social work process. Medi-
cation of helping the community achieve its social work needs. Dynamics of problem solving. Role, skills, and tools of the professional worker.

42:254 Administration in Social Welfare 3 s.h. Analysis of structure and process in social welfare or-
dinances. Behavior, administration, struc-
ture and importance of role of agency workers in policy determination and administration.

42:263 Social Work Research 3 s.h. Selected research skills applicable to participation, under-
direction, in social work research. Emphasis on research tech-
niques, methods and problems involved in formulating a research problem, sampling, instrumentation, data collection, classification, analysis, and presentation of findings.

42:264 Seminar in Social Work Research 2 s.h. Critical examination of the theoretical framework, re-
search methodology, and findings of contemporary social work research in a circumscripted area. Substantive areas examined will vary from year to year.

42:265 Projects in Social Work Research cr.arr. Individual or group research projects related to social work or social welfare. Through a subject and research design, chosen and formulated by students and carried out under faculty supervision.

42:266 Practice in Ongoing Research cr.arr. Participation in several discrete aspects of an ongoing research project administered by the project agency, another social welfare agency, or the School of Social Work under the supervision of a research faculty mem-
ber. Substitution of a major professional paper upon request.

42:267 Seminar: Social Work Practice 4 s.h. Critical examination of the contemporary role of the social work practitioner and its application in fulfilling the roles of the social work professional person; trends in practice and findings of research.

42:273 Practicum in Social Work I 3 s.h. Practicum work program for graduate teachers. Understanding and use of knowledge and skill in the application to all social work practice; specific knowledge and skill distinctive to each method. Integrat-
tion of learning from the entire curriculum is emphasized.


42:291 Individual Study cr.arr.

SOCILOGY

Chairman of Department, James L. Price
Sociology Office, Marshale Hall

An undergraduate program in this department is pri-
marily intended to provide a broad general education with concentration in social science. It also constitutes a basis for graduate study in sociology. A number of courses in the department serve as well the need of non-
majors seeking an understanding of society, culture, and personality.

The principal vocational goal toward which a major may be taken is that of training for professional study in law school levels, professional preparation for social wel-
fare work, or other kinds of social work, or public welfare administration, correctional and law enforcement work; industrial relations work where a fundamental
knowledge of human relations is required; public rela-
tions work; and social research positions with either edu-
cational institutions, private research foundations, or
government agencies. Students selecting one of the specific vocational goals listed above should plan their programs in such a way as to include the appropriate courses from the Department of Sociology and also allied degree-occupations which provide a well-rounded comprehension of the field of study. These selections are made with the advice and consent of the departmental advisor. For more information concerning undergraduate extension opportunities, consult the undergraduate advice. These interest in an under-
graduate preprofessional background for social work should consult the graduate advisor in sociology. Graduates with MA. and Ph.D. degrees in sociology have open up a wide choice of professional positions. Examples of the positions sociologists enter on comple-
tion of their graduate programs are college professor; re-
search director; demographer; social statistician; social psy-
chologist; marriage counselor; public opinion analyst; survey research analyst; social gerontologist; human ecologist; criminologist; sociologist—lecturer; probation or parole officer; classification officer for a penal institution: police administrator; city planner; community sociologist; and industrial sociologist. Students who complete the B.S. or B.A. degree may apply for admission to the master's degree program in urban and regional planning.

Undergraduate Requirements
In addition to the general requirements of the college of Liberal Arts (see College of Liberal Arts), there are departmental requirements which depend upon the selec-
tion of sociology as the major.

Research Facilities
The University Library affords a large number of books, pamphlets, journals, and other materials (including the Human Relations Area Files) of a varied and diversified character for research in sociology.

Students specializing in criminology have access to an equipage of current information necessary for research and training purposes. The department's research labora-
tories are equipped with the latest in electronic data-
processing machines. Laboratory facilities are also avail-
able to the social work class for group interaction.

The Iowa Urban Community Research Center was established in 1968 to study social problems in a research librarians and laboratory.

The Center for Research in Interpersonal Behavior was established in 1969 as a laboratory for research in social psychology. The basic facility is a five-room, shared laboratory equipped with audio, videotape, and interactive process recording equipment.

STAFF

Associate Professor: John Brown, Carl J. Conch, Edward J. Halkett, Paulus Dem, John H. Sturton, Robert T. Terry, Powhatan Viles, Stu Woldridge.

Assistant Professor: Lyle J. Franklin, Jan-un Kim, Frank Rabedeau, William D. Brown, Robert Woodworth.

Affiliated Staff: I. Wayne Johnson.

Sociology
Undergraduate Advisers
Assigned at Department Office
128 Manhrude Hall

Students may select a program leading either to a Bachelor of Arts or a Bachelor of Science degree. A preprofessional background is required within the department for either degree.

For either a B.A. or B.S. degree, students must take the following courses:

4.0 Introduction to Sociology: Principles
4.0 Introduction to Sociology: Problems
3.0 Sociology, Theory, Research, and Statistics
3.0 12 additional semester hours in sociology

For the Bachelor of Science degree the following additional requirements must be fulfilled:

2.5 or 3.0 Introduction to the Philosophy of Science: (a) 2.0 General Education: (b) 2.0 Social Science: (c) 2 courses in mathematics or computer science: (d) 2.0 Social Science (2.00 the major in the department, the remaining specialization courses to be selected from the major in the department.

A minimum of 16 semester hours in the Department of Sociology and a minimum of 6 semester hours in each of the following fields: economics, geography, poli-

tical science, history, and political science.

The requirements in courses in teaching methods and practice are prescribed as follows:

Departmental electives should be selected from the social sciences to a total of 9 semester hours in which they relate to the student's particular vocational goal or objective. All courses selected for electives shall be major in the department, the remaining specialization courses to be selected from the major in the department.

Honor's in Sociology
Honor's Sociologists, J. Richard Wilmeth

Students wishing to graduate with Honors must include the following in the undergraduate major:

2.5 or more science electives
2.5 or more humanities electives

2.5 or more in the major

2.0 or more in the major

The requirements for admission to graduate study vary with the undergraduate preparation of the individual student. As a general rule, a student should have had a minimum of 24 semester hours in sociology, including a basic introductory course. A minimum overall undergraduate grade-point average of 3.0 is required, as is a combined score of 1,000 on the Graduate Record Examination (GRE). Special consideration is given to those students with undergraduate grade-point averages of 3.5 or better. Special consideration is given to those students with undergraduate grade-point averages of 3.5 or better. Special consideration is given to those students with undergraduate grade-point averages of 3.5 or better. Special consideration is given to those students with undergraduate grade-point averages of 3.5 or better.
SOCIOLGY

Master of Arts Degree in Sociology

The Master of Arts in Sociology may be obtained either in a 30-semester-hour program with thesis or in a 36-semester-hour program without thesis. With the exception of the programs of the two years, the two programs are essentially the same. The program without thesis is intended for those candidates to become a terminal degree and for whom a wider range of content courses in sociology and the applied social process in appropriate Information concerning the general requirements for the M.A. and 36.5. degree in the Department of Sociology may be obtained from the chairman. The specific requirements vary with the student's concentration or specialization. In all cases, 34.113 Elementary Statistics and Data Analysis, 34.114 Sampling, Measurement, and Observational Techniques, 34.251 History of Sociology, and 34.260 Principles of Sociology are specifically required and must be passed with a grade of B or better. The possible areas of concentration are social theory, methodology, social psychology, criminology and penology, stratification, political sociology, sociology of the family, industrial sociology, social problems and social change, community and population, organizations, and intergroup relations.

The student through consultation with the department advisor plans a program of study specifically designed to prepare him for a definite vocational objective. A more highly specialized curriculum available at the master's level leads to the Master of Arts degree with concentration in criminology.

Doctor of Philosophy Degree in Sociology

The doctorate is awarded to students who complete a minimum of 72 semester hours at the graduate level and who fulfill the following requirements: passing following courses in statistics, 34.215 Intermediate Statistics and Data Analysis, 34.217 Theory and Research Design, and 34.218 Advanced Statistics and Data Analysis, passing the comprehensive examinations; and preparing a dissertation.

If a master's degree is held before the student enters the doctoral program, all required courses in theory and methodology must be passed. If a master's degree is held after the student enters the doctoral program, all required courses in methodology must be passed.

A student becomes a doctoral candidate when he presents himself for the first time and stands for examination. All candidates are examined in theory and methods. In addition, candidates are examined in an area of specialization that covers one major area and one minor area chosen from the following: major areas - social theory, social methodology, social philosophy, criminology and penology, stratification, political sociology, sociology of the family, industrial sociology; minor areas - social problems and social change, community and population, organizations, and intergroup relations.

A detailed statement of regulations for graduate study in the department is available upon request.

Master of Arts Degree with Concentration in Criminology

Program Advisers
Robert G. Caldwell
Office, 124 Machiride Hall
John R. Stratton
Office, 111A Machiride Hall
Robert M. Terry
Office, 111D Machiride Hall

The program provides the student with the latest information regarding the nature of crime and delinquency, their counseling and treatments, and work at the graduate level to gain insight into some of the problems that will confront him in his future work. Arrangements have been made to utilize Iowa's penal institutions, training schools, and correctional centers for understanding of practical instruction. Persons applying for admission to this program should have the equivalent of an undergraduate major in sociology, including a first course in criminology or juvenile delinquency.

The following additional courses are required:

34.145 34.146 Crime and Justice 6 s.h. Two of the following courses:
34.147 34.151 Evolution and Policy 2 s.h.
34.145 The American Prison System 2 s.h.
34.148 American Justice Systems 2 s.h.
34.147 Prevention of Crime and Delinquency 2 s.h.

7 of the following seminars:
34.240 Seminar: Criminological Theories 2 or 3 s.h.
34.241 Seminar: Theory of Criminal Behavior 2 or 3 s.h.
34.262 Seminar: Sociology of Law 2 or 3 s.h.
34.263 Seminar: Behavioral Theory of Punishment 2 or 3 s.h.

The remainder of a student's program will be composed of courses selected to meet his particular needs and goals. The Master of Arts degree, with concentration in criminology, is a 30-semester-hour program with thesis. An internship may be arranged during the semester in a correctional institution or agency, for which research credit may be obtained. Students who are awarded this degree may be eligible for continued work toward the Ph.D. in sociology.

Master of Arts Degree with Concentration in Law Enforcement and Corrections

Program Director, Robert G. Caldwell
Office, 124 Machiride Hall

The purpose of this program is to provide the student with a broad education in the social and behavioral sciences with a concentration in criminal law and procedure and administrative justice. It is designed to prepare students for professional positions in law enforcement, government, correctional agencies, and institutions, familiarity with the administration of criminal justice through practical experience in interviewing, counseling, probation, judicial proceedings, and other aspects of law enforcement and correction. The program is based on the position that sociology can make significant contributions to the study of law enforcement; therefore, corrections and sociological orientation will be emphasized.

As in the case of the Master of Arts degree with concentration in Criminology, all requirements have been made to utilize Iowa's penal institutions, training schools, and correctional centers for understanding of practical instruction. The successful completion of this program requires a minimum of 45 graduate credits and leads to an M.A. degree in Law Enforcement and Corrections without thesis. Students who obtain this degree will be qualified for a variety of positions in law enforcement and corrections.

To be admitted to the program the student must have a B.S. or Bachelor's degree, a grade point of 3.0, or higher. This degree must be completed in 4 years, or the student will not be eligible for the program. The program may be completed on a full-time basis in conjunction with the program in law enforcement and corrections, or on a part-time basis. The student must complete the prescribed course work at the required level of performance, meet the final examination, and be qualified to work toward the Ph.D. in Sociology.

34.130 Principles of Social Psychology
34.139 Collective Behavior
34.140 Criminology
34.141 Juvenile Delinquency

After the student has completed the prescribed course work at the required level of performance, he must pass comprehensive examinations on Crime and Justice and Correction and Prevention.

A detailed description of required courses and summer internships is available from the program advisor. The completion of the program will be awarded at the end of the course of study in consultation with the program advisor. The program is designed to be completed in conjunction with the program may be found under the section Criminology and Psychology.
Program in Social Psychology
Program Director, Howard J. Ehrlich
Office, CSRE
Associate Director
Carl J. Couch
Offic, CSRE
The Program in Social Psychology places primary em-
phasis on the training of graduate students in autonomous
and rigorous research on problems of profes-
sional and social importance. The major substantive
focus of research training is oriented to the study of
interpersonal and interpersonas processes as they are
manifest in the social and behavioral behavior of indi-
viduals in social situations. The program allows for
research in natural and experimentally contrived situations.
Within
in this substantive focus, the program has four major
objectives: to provide opportunities for students to design
and execute substantive research on significant social
psychological problems, in laboratory and field
situations, under the direction of the program staff, to provide stu-
dents with the facilities, technical know-how, and sup-
porting personnel requisite to large-scale or complex
research designs; to provide opportunities for students to conduct methodological research for the improvement
and development of research operations in social psy-
chology; and to provide a means by which the formal
classroom situation and the research laboratory can be
brought into a closer alignment.

The basic format of the training program is an adap-
tation of the apprenticeship system. Research training is
focused on annual projects and a continuous research
program. The projects are under the direction of as-
signed members of the faculty, and students work with
them directly through the initiation, design, and execu-
tion of the project. The research program encourages
each student to develop an active research interest from
the start of his training. All research training activities
are sponsored through the Center for Research in Inter-
personal Behavior.

COURSE DESCRIPTIONS

Sociology
For Undergraduates Only
Note: All sociology majors are required to take 34:2 and
34:4.

34:1 Introduction to Sociology: Principles
4 s.h.
This course is designed to provide an overview of
the discipline of sociology. Topics include the
history, philosophy, and methodology of sociol-
ya, as well as the major theoretical perspectives
and the sociological analysis of social problems.

34:3 Introduction to Sociology: Social
Problems
4 s.h.
Continuation of 34:1. Analysis of selected varieties of
social problems and their social causes. Emphasis is
placed on the social causes and consequences of
different social problems, including crime, poverty,
and inequality. The course also covers the
methods of sociological research and the
interpretation of sociological findings. Readings
include classic and contemporary sociological
works.

34:10, 11 Theory, Research, and Statistics
3 s.h.
This course is designed to provide an introduction to
theoretical and research methods in sociology. Emphasis is
placed on the development of critical thinking and
the ability to read and understand sociological
research. Topics include research design, data
collection, and analysis.

34:75 Individual Study
1-3 s.h.
Individual study in selected areas of sociology. For
individuals who have a strong interest in a specific
area of sociology.

34:90 Honors Seminar
2-3 s.h.
For undergraduate majors with superior academic rec-
era. Selected theoretical and methodological issues.

34:97 Honors Research
2 to 4 s.h.
The honors candidate undertakes a special research proj-
ect under the Honors chairman, chosen after consulta-
tion with the Honors advisor. May be repeated.

Advanced Courses

Social Theory

34:201 History of Sociology
3 s.h.
Modern sociological thought from the time of social sci-
economy; principal stages; central ideas; major sociol
principles; social and cultural context. Emphasis is
on the development of social thought and its rela-
tionship to social change. The course is required for
majors and can be taken for graduate credit.

34:202 Principles of Sociology
3 s.h.
Nature and functions of sociological theory. Systematic
organization of concepts and principles for the explana-
tion of social phenomena and as a guide to socio-
logical research. Prerequisites, graduate standing and
consent of instructor.

34:203 Seminar: Sociological Theory
3 s.h.
Selected problems in sociological theory. Prerequisites,
34:202 and 203 or consent of instructor. May be repeated.

34:204 Sociology of Knowledge
3 s.h.
Role of ideas and ideologies in modern society, inter-
action between ideas and the social context within
which they develop and function; the structure of in-
ternal relations; Comedic ies in contemporary con-
sciousness. Prerequisites, graduate standing and con-
sent of instructor.

34:205 Seminar: Contemporary Social
Theory
3 s.h.
Comparison and examination of leading contemporary
theoretical approaches and systems in light of empirical
research studies. Prerequisites, graduate standing and
consent of instructor.

Statistics and Methods of Research

34:110 Methods of Social Research
3 s.h.
Research process, from problem formulation through use
of specific tools such as interviews, questionnaires, etc., to
derivation of scientific knowledge. Prerequisite, 34:1.

34:111 Elementary Social Statistics
3 s.h.
Introduction to the application of statistical methods to research problems in sociology: classification and presentation of statistical data, and
relation of statistical techniques to the development and
interpretation of social theories.

34:112 Nonparametric Statistics
3 s.h.
Techniques which do not make numerous stringent as-
sumptions about the nature of the population from
which sample is drawn; emphasis on application in real-world
and classification in small samples. Prerequisite, 34:110 or equivalent.

34:113 Elementary Statistics and Data
Analyst
3 s.h.
Problems of drawing theoretical inferences from data in
studies using very simple measures, study designs, and
statistical techniques. Emphasis is on the development of
statistical techniques, the logic of statistical inference and
hypothesis testing, and the use of statistical techniques to
analyze complex data.

34:114 Sampling, Measurement, and
Techniques
3 s.h.
Problems of gathering data from which valid theoretical
and descriptive inferences may be drawn. Basic sam-

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34.208 Axiomatic Method in Sociology 3 a.h.
Clarification of existing social-theoretical theories by resolution into explicit axioms. Comprehensive analysis of theories, with emphasis on their context rather than their structures. Formation of new methods. Prerequisites: graduate standing and consent of instructor.

34.211 Advanced Social Statistics 3 a.h.
Development of error formulas for various sample designs; further statistics of relationship among social data involving analysis of variance and covariance and multiple and partial correlation. Prerequisites: 34.115.

34.212 Design of Social Research 3 a.h.
Theoretical, logical, and technical problems in the formulation of descriptive and explanatory surveys. Formulation of conceptual framework; development of adequate research design, problems and technique of sampling, and execution of field work. Consideration of theoretical and practical problems. Prerequisites: 34.211.

34.213 Analysis of Social Research 3 a.h.
Preparation of research data for electronic processing. Measurement techniques; testing and scaling. Problems of evidence and proof in the study of the interactional styles among variables and the applications of various statistical techniques. Use of electronic equipment to expedite research analysis. Prerequisites: 34.212.

34.214 Mathematical Sociology 3 a.h.
Review of mathematical topics essential to the analysis of social systems and survey of structural, quantitative, and stochastic models. Prerequisites: graduate standing and consent of instructor.

34.215 Seminar Computer Techniques 3 a.h.
Logic of computers and basic programming techniques. Computer simulation of social processes and analysis of sociological data. Techniques to be relevant to students' research interests. Prerequisites: course in research methods and consent of instructor.

34.216 Intermediate Statistics and Data Analysis 3 a.h.
Problems of drawing theoretical inferences from data in studies using basic designs, measurement techniques, and analysis. Design and development parametric and nonparametric statistical techniques for basic analysis problems. Construction of measurement error in data analysis. Analysis of variance and statistical interaction. Basic computer programs in data processing. Prerequisites: 34.114.

34.217 Theory and Research Design 3 a.h.

34.218 Advanced Statistics and Data Analysis 3 a.h.

34.219 Seminar in Research and Data Analysis 3 a.h.
Selected topics. Prerequisites: advanced graduate standing and consent of instructor. May be repeated.

SOCIOLOGY

34.120 Principles of Social Psychology 3 a.h.
Basic concepts and principles of social psychology; personality, interpersonal, and group processes. Prerequisites: 34.1.

34.121 Social Structure and Personality 3 a.h.
Research and theory relating social structural variables as processes of socialization, development of personality, concepts of role and self. Prerequisites: 34.120.

34.122 Sociology of Personality 3 a.h.
Methodology, results, and interpretations of studies of the social psychology of mental health and mental illness and of the psychiatric hospital as a social institution. Prerequisites: 34.120.

34.123 Mass Communication 3 a.h.
Problems of communication and measurement of the opinion process. Influence of mass media, reference groups and categories, interpersonal relations, personality factors. Same as Journalism 39.142. Prerequisites: 34.120.

34.125 Small Group Analysis 3 a.h.
Study of the small group as a fundamental unit in the structure of larger social organizations; as a subject of research interest in its own right. Prerequisites: 34.120 and Psychology 35.1 or graduate standing and consent of instructor.

34.126 Seminar: Collective Behavior 3 a.h.
Social unrest, crowd behavior; social movements treated as a form of social change. Prerequisites: 34.120.

34.127 Interaction Processes 3 a.h.
Reviews various approaches to the study of interactional processes in both laboratory and field settings. Special emphasis given to problems of measurement and interaction. Students acquire experience in observing, coding, and analyzing social interaction. Prerequisites: 34.120 and 34.125.

34.127 Field Methods in Social Psychology 4 a.h.
Field experiments, real-experiments, various natural observation techniques. Open to advanced undergraduate and graduate students. Enrollment by permission of instructor. Prerequisites: 34.120.

34.129 Group Organization and Leadership 3 a.h.
Primary groups in modern society; interpersonal relations within groups; processes of group formation and change. Social functions of leadership. Prerequisites: 34.120 and 34.125.

34.127 Research Practicum in Social Psychology 3 a.h.
Guided group research on selected topics in social psychology. Prerequisites: consent of instructor. May be repeated.

34.220 Contemporary Approaches to Social Psychology 3 a.h.
Review and critical analysis of current theoretical approaches and systems of social psychological analysis. Prerequisites: 34.120 and departmental standing as a major or doctoral student in social psychology; other students by consent of instructor.

34.221 Seminar: Selected Topics in Social Psychology 3 a.h.
Selected theoretical and methodological issues. Prerequisites: advanced graduate standing and consent of instructor. May be repeated.

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34:232 Seminar in Social Structure and Personality 3 s.h.
- Selected problems. Prerequisites: advanced graduate standing and consent of instructor. May be repeated.

34:233 Seminar in Social Psychiatry 3 s.h.
- Selected problems. Prerequisites: advanced graduate standing and consent of instructor. May be repeated.

34:234 Seminar in Small-Group Analysis 3 s.h.
- Selected problems. Prerequisites: advanced graduate standing and consent of instructor. May be repeated.

34:236 Seminar in Collective Behavior 3 s.h.
- Selected problems. Prerequisites: advanced graduate standing and consent of instructor. May be repeated.

34:237 Seminar: Processes of Deviation 3 s.h.
- Critical analysis of dynamic models of deviance with particular emphasis upon significant theoretical and methodological issues. Prerequisites, graduate standing and consent of instructor.

Criminology and Penology

34:140 Criminology 3 s.h.
- Nature and causes of crime; criminal investigation and prosecution; punishment, correctional treatment, and crime prevention. Prerequisites, 34:1.

34:141 Juvenile Delinquency 3 s.h.
- Delinquency as an individual and a social problem; theories of delinquency causation; law enforcement and the juvenile court; methods of correction and prevention. Prerequisite, 34:1.

34:142 Probation and Parole 2 s.h.
- Development, organization, administration, operation, and results of probation and parole. Prerequisites, 34:140 or 141.

34:143 Crime and Justice I 3 s.h.
- Criminal law and justice in theory and practice; problems in the criminal law considered in the light of recent developments in the social sciences. Prerequisite, 34:140 or consent of instructor.

34:144 Crime and Justice II 3 s.h.
- Continuation of 34:143. Prerequisite, 34:143 or consent of instructor.

34:145 American Prison Systems and Their Administration 2 s.h.
- Origins of the prison system in the United States; prisons as institutions; correctional concepts and problems of administration. Prerequisites, 34:140.

34:146 American Police Systems and Their Administration 2 s.h.
- Origin, organization, administration, operation, legal basis, and problems of law enforcement agencies in the United States. Prerequisite, 34:140.

34:147 Prevention of Crime and Delinquency 2 s.h.
- Principles, programs, and problems of crime and delinquency prevention in the United States; relations of public and private agencies in the field. Prerequisite, 34:140.

34:148 Internship in Corrections I cr.arr.
- Supervised training in correctional counseling and casework in the prison setting with formal instruction in theory and techniques. Prerequisites, 34:140 and consent of instructor.

34:149 Internship in Corrections II cr.arr.
- Supervised training in probation and parole in the criminal court setting with formal instruction in theory and techniques. Prerequisites, 34:140 and consent of instructor.

34:240 Seminar: Criminological Theories 3 s.h.
- Theories of crime causation and their relationships to the culture in which they have functioned. Prerequisites, graduate standing and consent of instructor.

34:241 Seminar: Theory of Criminal Law 3 s.h.
- Basic, descriptive, and interpretative problems of criminal law and its relationship to culture and social change. Prerequisites, graduate standing and consent of instructor.

34:242 Seminar: Sociology of Law 3 s.h.
- Law as a social institution; its origin, development, and relationship to culture, the social process, social groups, and other aspects of social control. Prerequisites, graduate standing and consent of instructor.

34:243 Seminar: History and Theory of Punishment 3 s.h.
- History and theory of punishment and their relationship to cultural influences and social change. Prerequisites, graduate standing and consent of instructor.

34:244 Seminar: Current Research in Criminology, Penology, and Delinquency 3 s.h.
- Critical analysis of current research contributions with particular emphasis upon their theoretical contributions and their methodological foundations. Prerequisites, graduate standing and consent of instructor.

34:245 Field Research in Criminology cr.arr.
- Prerequisites, graduate standing and consent of instructor.

34:246 Crime and Justice III 2 s.h.
- Continuation of 34:143 and 144. Particular attention is given to the law on evidence as it is related to criminal investigation.

34:247 Investigative Techniques 2 s.h.
- Various techniques, such as surveillance interrogation, and lie detection, used by law enforcement officers in the identification and apprehension of alleged criminals and the accumulation, preservation, and presentation of evidence regarding their alleged crimes.

34:248 Internship in Law Enforcement cr.arr.
- Supervised training in a law enforcement agency with formal instruction in theory and technique.

Social Institutions and Social Change

Social Institutions is a large area consisting of the following courses.

34:150 Political Sociology 3 s.h.
- Sociological analysis of political behavior and belief, group conflict and political process, group consumption, political institutions, and power and policy-making, with emphasis or attention to a single policy area or to the social system. Prerequisite, 34:1. Same as Political Science 31:150.

34:151 Social Problems of Underdeveloped Areas 2 s.h.
- Economic development as a sociological problem. Social institutions and social organization of underdeveloped areas and their relationship to social and economic development programs. Social change and the consequences of internalization of urbanization in underdeveloped areas. Prerequisites, an introductory course in sociology, economics, or anthropology and junior standing.

34:153 Public Opinion 3 s.h.
- Public opinion as a factor in the decision-making process. Critical problems in the description and conceptualization of public opinion. Role of the social and political structure in the development of public opinion. Influence of public opinion on legislative and executive decision. Same as Political Science 31:153.

34:154 Social Movements 3 s.h.
COMMUNITY AND POPULATION

Factors and processes determining population size, composition, and distribution; relations of population to social organization and human welfare; recent trends in population, problems, policies, and programs.
Prerequisite, 24.11.

THE URBAN COMMUNITY
Processes of urbanization and conditions of urban life. Nature of urban social relationships, organization of city life, urban ecological patterns and demographic conditions, and regional influences of metropolitan centers.
Prerequisite, 24.11.

SOCIOLOGICAL THEORETICS
Point of view of human ecology and selected empirical aspects of the study of social organization. Prerequisites, 24.11.

SOCIETY AND FAMILY
Theory and research in social demography, population, and social structure; stability, mortality, and migration in modern types of society; review of research literature on family planning.

DEVELOPMENT OF A FRAME OF REFERENCE AND DESIGN FOR A COMMUNITY STUDY
Prerequisite, consent of instructor.

CRITICAL REVIEW AND DISCUSSION OF THE DESIGN AND FINDINGS OF SELECTED COMMUNITY STUDIES
Prerequisite, 24.25.

THEORIES AND METHODS OF COMMUNITY STUDIES
Prerequisite, consent of instructor.

THEORY OF COMMUNITY DEVELOPMENT
Prerequisite, 24.25.

COMMUNITY AND POPULATION
Population Studies 24.10
Factors and processes determining population size, composition, and distribution; relations of population to social organization and human welfare; recent trends in population studies, problems, policies and programs. Prerequisite, 24.11.

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Factors and processes determining population size, composition, and distribution; relations of population to social organization and human welfare; recent trends in population studies, problems, policies and programs. Prerequisite, 24.11.

THE URBAN COMMUNITY
Processes of urbanization and conditions of urban life. Nature of urban social relationships, organization of city life, urban ecological patterns and demographic conditions, and regional influences of metropolitan centers. Prerequisite, 24.11.

SOCIOLOGICAL THEORETICS
Point of view of human ecology and selected empirical aspects of the study of social organization. Prerequisites, 24.11.

SOCIETY AND FAMILY
Theory and research in social demography, population, and social structure; stability, mortality, and migration in modern types of society; review of research literature on family planning. Prerequisite, consent of instructor.

DEVELOPMENT OF A FRAME OF REFERENCE AND DESIGN FOR A COMMUNITY STUDY
Prerequisite, consent of instructor.

CRITICAL REVIEW AND DISCUSSION OF THE DESIGN AND FINDINGS OF SELECTED COMMUNITY STUDIES
Prerequisite, 24.25.

THEORIES AND METHODS OF COMMUNITY STUDIES
Prerequisite, consent of instructor.

THEORY OF COMMUNITY DEVELOPMENT
Prerequisite, 24.25.

COMMUNITY AND POPULATION
Population Studies 24.10
Factors and processes determining population size, composition, and distribution; relations of population to social organization and human welfare; recent trends in population studies, problems, policies and programs. Prerequisite, 24.11.

THE URBAN COMMUNITY
Processes of urbanization and conditions of urban life. Nature of urban social relationships, organization of city life, urban ecological patterns and demographic conditions, and regional influences of metropolitan centers. Prerequisite, 24.11.

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Prerequisite, consent of instructor.

CRITICAL REVIEW AND DISCUSSION OF THE DESIGN AND FINDINGS OF SELECTED COMMUNITY STUDIES
Prerequisite, 24.25.

THEORIES AND METHODS OF COMMUNITY STUDIES
Prerequisite, consent of instructor.

THEORY OF COMMUNITY DEVELOPMENT
Prerequisite, 24.25.

COMMUNITY AND POPULATION
Population Studies 24.10
Factors and processes determining population size, composition, and distribution; relations of population to social organization and human welfare; recent trends in population studies, problems, policies and programs. Prerequisite, 24.11.
Foreign Language Requirement

Candidates for the Bachelor of Arts degree, who wish to meet the foreign language requirement in Spanish or Portuguese, may do so by completing four years of high school study in one language, performing satisfactorily in an achievement examination standardized to measure proficiency equivalent to that usually attained in four semesters of college study in one language, completing a minimum of four semester hours of college-level study in Spanish or Portuguese, or completing the equivalent of four semesters of college study in one language which would be the equivalent of 8 semester hours of study at the college level. If the four semesters are taken at The University of Iowa, the series of courses will total 14 semester hours. In the case of the last two options, the student must complete the second semester of the second-year course (33:12).

Candidates for the Bachelor of Fine Arts, Bachelor of Music, and Bachelor of Science, who wish to meet the foreign language requirement in Spanish or Portuguese may do so by completing a combination of high school and college study in one language which would be the equivalent of 8 semester hours of study at the college level, completing a minimum of 8 semester hours of approved college-level study in a foreign language, or giving satisfactory performance in an achievement test measuring proficiency equivalent to that usually attained after one year of college study of a foreign language.

Undergraduate Requirements for Majors

The following courses constitute the minimum major requirements:

**Spanish**

- Language
  - 23:27, 33:28 4 s.h.
  - 33:101, 33:125 4 s.h.
  - 33:105 4 s.h.

- Literature
  - 33:091, 33:104 6 s.h.

- Total 14 s.h.

**Portuguese**

- Twenty-four semester hours beyond the second-year level.

- Requirements for Spanish Teaching Minor


  All students preparing for the secondary teacher's certificate should elect courses in pronunciation and civilization.

Honors in Spanish

Requirements: An overall grade-point average of 3.0 and a minimum in Spanish of 3.5; 6 semester hours beyond the major requirements from any of the following Honors courses:


- Literature: 23:103, 23:201

- An honors essay in Spanish

- An oral discourse in Spanish.

Graduate Study

Appointments. Teaching, research, and laboratory assistantships are available to qualified graduate students. A certain number of NDEA Title IV fellowships in Spanish, and University scholarships and fellowships, including four-year teaching-research fellowships, are also available. GRE scores are required. Inquiries should be addressed to the departmental office.

Spanish and Portuguese

- Master of Arts

  Candidates for the master's degree are required to complete a minimum of 30 semester hours with thesis or 36 semester hours without thesis. The program may include courses in related fields. Candidates must pass a written and oral examination.

  The program for the M.A. in Spanish must include 33:206 Graduate Composition and Conversation; 23:201 Graduate Composition and Conversation; 23:202 Studies in Spanish Style. In addition, the following areas must be covered by prescribed courses in Spanish: 23:120 Middle Ages; 23:121 Historical Latin; 23:122 Golden Age (including Cervantes and one other select); the modern era in Spain; Spanish American.

Doctor of Philology

All prospective candidates for the Ph.D. degree in Spanish must apply in writing to the Department of Spanish and Portuguese for approval to be admitted to the Ph.D. program.

The Ph.D. degree is awarded after completion of at least three years of graduate work of which one must be spent at this 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 projects. Two doctoral programs are available:

1. Intense specialization in Spanish and Spanish-American literature. Before comprehensive examinations, candidates must acquire a good acquaintance with a Romance language and literature other than the major (Portuguese-Italian program is especially recommended), have completed the equivalent of a year of college Latin, and have read one of the following readings in knowledge of another approved foreign language.

   a. Spanish
   b. French

2. Specialization in Spanish language and literature with emphasis on philosophy. This major is to be supplemented by courses in another Romance language with stress on philosophy. Before comprehensive examinations, candidates must take a course in general introduction, have completed the equivalent of three semesters of college level, and must demonstrate knowledge of another approved foreign language.

   a. Spanish
   b. French

Qualifying and Comprehensive Examinations

Before being allowed to present himself for the comprehensive examination for the Ph.D., the candidate's general knowledge of all periods will be tested at the M.A. level. All candidates with a Ph.D. degrees from other institutions must demonstrate their general knowledge through a written examination and Defense a dissertation. All candidates must write a research essay in Latin or English. After a study period of 3 years, the student who presents the results of his scholarly work clearly, logically, and with facility in the use of the language, will be encouraged to continue preparing for the comprehensive. Comprehensive examinations will be offered during the first four weeks of the fall semester. Before the examination must be approved in writing by the candidate 1 1/2 months before the semester examination and no later than May 1 for the fall semester examination.

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SPANISH AND PORTUGUESE

Language Laboratory

The Language Laboratory provides facilities for language study: short-wave radio; tape recorders; record players; microscopic writing; recording rooms; two civil rooms, with sixty-eight dual channel tape recorders providing a simultaneous master duplicate and student record; an electronic classroom; a soundproof work room; 35 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.

STAFF

Professor: Julio Durán-Cordero, Edmundo de Chaves, Oscar Espinosa, Antonio Zañartu, Enrique鸡蛋格。

Associate Professor: Mary L. Daniel, Walter A. Dobkin, R. Thomas Dougher, Coleman Jeffery, Samuel Martin.

Assistant Professor: George de Mello, Enrique Fernández-Barrón, Eugene Silver.

Instructors: Rodolfo Chumac, Antonio Martínez, María Calvo Fisberon, María Sanzón.

Laboratory Director: Winston J. Reese.

COURSE DESCRIPTIONS

Spanish

Primarily for Undergraduates

Students who have had any experience with Spanish through academic study, foreign residence, or otherwise, are required to take a placement test at the time of their first registration in any Spanish course. If students with two years of high school Spanish place in 21:1, 4 semester hours will be added to their graduation requirement. A student may not, except with the approval of the chairman, take for credit or quality points an elementary course if he has already completed a higher-level course for which he has had elementary courses or its equivalent in a prerequisite.

31:1 Elementary Spanish 4 s.h.
Prerequisite: 21:1 or equivalent.

31:1 Intermediate Spanish 3 s.h.
Prerequisite: 21:1 or equivalent.

31:12 Introduction to Hispanic Literatures 3 s.h.
Prerequisite: 21:1 or equivalent.

31:25 Spanish Pronunciation 1 s.h.

31:37 Third-Year Composition and Conversation 4 s.h.
Prerequisite: 21:15 or equivalent.

31:38 Third-Year Composition and Conversation 4 s.h.
Prerequisite: 21:27 or equivalent.

31:52 Ph.D. Spanish

For candidates for the doctorate in other departments who need to acquire reading ability for purposes of research.

31:53 Special Work 1 to 3 s.h.

For Undergraduates and Graduates

31:101 Renaissance and Golden Age Literature 3 s.h.
Prerequisite: 21:15 or equivalent.

35:105 Modern Spanish Literature 3 s.h.

35:107 Contemporary Spanish-American Fiction 3 s.h.

35:108 Contemporary Spanish-American Poetry and Drama 3 s.h.

35:105 Fourth-Year Composition and Conversation 4 s.h.
Prerequisite: 21:28 or equivalent.

35:106 Fourth-Year Composition and Conversation 4 s.h.
Prerequisite: 21:15 or equivalent.

35:107 American Experiments of the 20th Century 3 s.h.

35:109 Contemporary Issues: The Concept of Revolution in 20th Century Spanish-American Writings 2 s.h.
Given in English. Readings in English.

35:110 Survey of Spanish Literature 4 s.h.
Intensive semester seminar providing a panoramic view of Spanish literature. Open to seniors and honors students, as well as graduate students in need of a refresher course in literature.

35:111 Survey of Spanish-American Literature 4 s.h.
Intensive semester seminar providing a panoramic view of Spanish-American literature. Open to seniors and honors students, as well as graduate students in need of a refresher course in literature.

35:115 Spanish Civilization 3 s.h.

35:115 Spanish-American Civilization 3 s.h.

35:117 Poetry and Drama of the Golden Age 3 s.h.

35:118 19th- and 20th-Century Spanish Literature 3 s.h.

35:119 Syntax, Lexicology, and Composition 3 s.h.

35:120 Syntax, Lexicology, and Composition 3 s.h.
Prerequisite: 21:15 or equivalent.

35:121 Honors: Literature 3 s.h.

35:122 Honors: Literature 3 s.h.

35:123 Honors: Language 3 s.h.

35:123 Honors: Language 3 s.h.

35:126 Honors: Language 3 s.h.

35:128 Introduction to Don Quijote 3 s.h.
Given in English. Open to undergraduates Spanish majors, and is undergraduates and graduates in other disciplines, with permission of the instructor.

35:129 Romance Linguistics 3 s.h.

35:130 Methods in High School Modern Foreign Languages 3 s.h.
Prerequisite: 21:15 or equivalent. Ordinarily elected as Education 76:12.

35:131 Language Laboratory Procedures 1 s.h.

35:132 Spanish Pronunciation and Diction 2 s.h.
Prerequisite: 21:28 or equivalent.

35:132 Spanish Pronunciation and Diction 2 s.h.
Prerequisite: 21:28 or equivalent.

35:207 European Fiction 3 s.h.
Course in Comparative Literature 41:207.

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students and others improve their ability to communicate effectively, whether as actors or directors, community leaders, supervisors, participants in a group, film-makers, broadcasters, designers, playwrights, teachers, speakers, or publicists.

The department has six major divisions, each employing different critics and directors. The students are divided into the following groups under the headships, Interdisciplinary Courses, Speech, and Drama, Dramatic Art, Rhetoric and Public Address, Communication Research, and Broadcasting and Film.

Students will consult with departmental advisors in the preparation of programs of study, and the consequences of the advisor or the chairman of the department with the student's plan are encouraged initially and for all changes of program.

The requirements for undergraduate majors in each of the divisions are cited in the sections for each division. The department also offers M.A. and Ph.D. degrees with a variety of possible emphases in each division. In addition, M.F.A. degrees are offered in dramatic art. Programs are developed for each individual graduate student with an advisor and his graduate committee.

Departmental requirements for the M.A. degree: (1) A minimum of 30 semester hours, including one course in which significant original research is done, (2) A research thesis, or for the non-thesis degree, a graduate seminar in which significant original research is done, (3) Successful completion of a six-hour written examination, the scope of which is determined by the candidate's division and his graduate committee.

Departmental requirements for the M.F.A. degree in dramatic arts: (1) A minimum of 30 semester hours and six semesters in residence. (2) The examination of outstanding artistic talent and achievement in theatre.

Departmental requirements for the Ph.D. degree: (1) A minimum of 78 hours of graduate credit, exclusive of research thesis and dissertation. (2) At least one course in each of the following, or equivalent: Experimental and Critical Theories, Dramatic Literature, Rhetoric and Public Speech, and a major study in one of the above. A minimum of 12 semester hours must be in residence with his advisor and his graduate committee. (3) A successful written examination and demonstrated competence in one of the research areas.

Substantially similar dissertation.

STAFF


Coretusa: Assistant Professor: James J. Broche, George Graham, Jacob M. Cline, William F. Pettis, Elizabeth Cline, Margaret R. Hall, Robert Kemp.

SERVICE COURSES

Interdivisional Courses 3 s.h.

35:2 Principles of Communication Arts 3 s.h.

Required of all undergraduate majors. Concepts in the behavioral sciences, linguistics, and communications are used to provide a philosophical perspective on interpersonal communication, broadcasting, film, and theatre arts.

35:53 Voice Training for Speech and Reading 3 s.h.

Required of all undergraduate majors. Phonetics, voice exercises, dictation, and comprehension with applications to film, broadcasting, public address, and dramatic situations.

36:57 Oral Interpretation of Literature I 3 s.h.

Introduction to the principles and practices of reading literary prose and poetry to audiences. Analysis, interpretation, evaluation. Recommended especially for students in elementary education and English.

36:79 Analysis of Criticism of Communication Arts 3 s.h.

Required of all majors. Should be taken during the junior year. Critical analysis of selected and critical principles in the understanding and appreciation of dramatic works, speeches, films, and radio and television programs.

36:89 Honors in Speech and

Dramatic Art 3 s.h. or cr.arr.

Open to seniors and graduate students by permission.

36:151 Oral Interpretation of Literature II 3 s.h.

Critical analysis and oral presentation of the more complex works of fiction, autobiography, poetry, and drama.

36:198 Senior Seminar 1 to 3 s.h.

36:249 Special Studies 2-3 s.h.

36:301 Introduction to Research 2 or 3 s.h.

Required of all new graduate students in speech and dramatic arts in preparation for the degree of Master of Fine Arts. Problems of selecting and developing research problems, study and application of representative methods and techniques of research, lectures, discussions, readings, papers, and reports; guidance in research.

36:365 Master's Thesis 2-3 s.h.

36:685 Ph.D. Dissertation 2-3 s.h.

Speech Education

Professor in Charge, Hugh F. Seabury

Teaching speech, dramatics, and forensics offers unusual rewards which compare favorably with those in other fields. Skills, working conditions, and living standards are unusually excellent. The demand for teachers of speech, dramatics, and forensics in high schools and colleges is greater than the supply.

The immediate and long-range outlook is bright for well-prepared teachers. Obviously, the student should plan early to complete requirements for a degree and for a professional certificate. Students are advised to consult with Dr. Seabury in planning their programs in preparation for teaching.

B.A. with emphasis in speech education. Students may proceed to the B.A. with emphasis in speech education by electing a minimum of 30 semester hours in the department and a minimum of 20 semester hours in education plus 3 semester hours in American history or American government, as recommended in Plan A, B, or C. Basic to each of the three plans are course requirements of all departmental majors.

35:5 Principles of Communication Arts 3 s.h.

36:52 Video Training in Speech and Reading 3 s.h.

36:59 Analysis and Criticism of Communication Arts 3 s.h.

36:128 Theory and Practice of Argumentation 3 s.h.

36:212 Theory and Practice of Argumentation 2 s.h.

36:301 Survey of Films 3 s.h.

36:100 Introduction to Broadcasting 3 s.h.

36:129 Speech Personnel 3 s.h.

36:218 Theory and Practice of Argumentation 1 s.h.

36:54 Group Discussion 1 s.h.
PARLIAMENTARY PROCEDURE 3 s.h.
INTRODUCTION TO SPEECH AND HEARING 3 s.h.
EDUCATIONAL FORENSICS 3 s.h.
PUBLIC SPEAKING AND MOVEMENT 3 s.h.
ACTING I 3 s.h.
SURVEY OF FILM 4 s.h.
INTRODUCTION TO BROADCASTING 3 s.h.
DRAMATIC ART EMPIRICAL 3 s.h.
DRAMA, MUSICAL COMEDY 3 s.h.
THEATRICAL PRODUCTION 3 s.h.
INTRODUCTION TO THEATRICAL PRODUCTION 4 s.h.
PHOTOGRAPHY AND FILM 6 s.h.
PHOTOGRAPHY AND FILM 3 s.h.
INTRODUCTION TO BROADCASTING 3 s.h.
PHOTOGRAPHY AND FILM 3 s.h.
*Students register for one-third of the hours for each course in acting, directing, or design under a separate dramatic art laboratory number.
ADDITIONAL REQUIREMENTS TO BE TAKEN IN A R, B, AND C.
Note: 1. Students are advised to complete a minimum of 30 semester hours as a major in English (with some work in dramatic literature), social studies, or other tangential fields to strengthen their major.
2. Accumulate a record of achievement in University forensics, television, and theatre activities.
3. Consult with your departmental adviser to plan your program of study and have his concurrent plan with your initial plan and with all later changes in the plan.

Requirements in Education

A. STATUTORY: American history or American government
2 semester hours
B. PROCESS AND DISCIPLINARIES
2 semester hours
C. EXPERIENCE

1. Junior Year

EDUCATIONAL PSYCHOLOGY AND MEASUREMENT (SECOND SEMESTER) 3 s.h.

2. Senior Year

THT 120: Methods: High School Speech 3 s.h.
THT 121: Methods in minor or a 3 semester hour course in education in lieu of a second methods course, 3 s.h.
THT 130: Operating and Laboratory Practice in Teaching Speech in High School, 4 s.h.
THT 131: Observation and Laboratory Practice in Teaching Speech in High School, 4 s.h.

3. Notes and Requirements

1. Application for admission to the program of teacher preparation in the College of Education is made in the College of Education.
2. The professional semester in the College of Education consists of 8 semester hours of methods and 8 semester hours of student observation and laboratory practice in teaching.
3. Formal admission and senior standing are prerequisite to registration for the professional semester, based on the application filed in April preceding the year during which the student desires to do student teaching.
4. The methods course meets daily for the first seven weeks of the semester.
5. Student teaching consists of an all-day class assignment daily during the last eight weeks of the semester.
6. In order to register for Observation and Laboratory Practice the student must have satisfactorily completed Education TP 75 and 75:100 or their equivalents, a course in anatomy, and have applied for student teaching.
7. All morning or afternoon classes are required to see that their student teaching assignments are made in their major department and second field of concentration if one was selected, and maintained a grade-point average of not more than 2.3 for the professional semester.

SPEECH AND DRAMATIC ART

COURSE DESCRIPTIONS

1. Methods: High School Speech 2 s.h.
TEACHING SPEECH, DRAMATICS, AND FORENSICS. Consideration of various patterns in teaching, curricular program, objectives, instructional methods and materials, effects and written criticism and evaluation, factors in selecting texts and references, periodicals and journals, and theory and practice of class and interscholastic activities, multimedia aids, individual courses and in-service training programs. Open to teaching of speech in the schools. Projects, reports, observations, conferences, and discussion. Same as Education 170:50 required for majors who plan to apply for a professional certificate to teach.

2. Educational Forensics 3 s.h.
PLANNING, ORGANIZING, AND EVALUATING THE CURRICULUM AND THE CONTEMPORARY FORENSICS PROGRAM IN THE SCHOOL. DESIGNED AS A COURSE FOR INDEPENDENT STUDY. CLASS MEETING ON FOUR SUNDAYS. DATES TO BE ARRANGED.

3. Speech for Educators 3 s.h.
FOR ADMINISTRATORS, TEACHERS, AND OTHERS WHO WISH TO STUDY AND DEVELOP THEIR SPEECH ABILITIES TO SERVE THE PROFESSIONAL AND SOCIAL ISSUES IN WHICH THEY DESIRE TO ENGAGE. TOPICS ON PREPARATION, PERFORMANCE, CRITICISM, AND EVALUATION OF SPEECH AND CONFERENCE LEADERSHIP. INDIVIDUALIZED ASSIGNMENTS IN READINGS AND PERFORMANCE. SAME AS EDUCATION 170:50.

4. The Teaching of Speech 3 s.h.
PRINCIPLES, PRACTICES, AND PROBLEMS IN TEACHING SPEECH AND DIRECTIONS, EXPLANATIONS, AND INTERPERSONAL ACTIVITIES IN DRAMATIC, FORENSIC, AND SPEECH PLANNING IN TODAY'S SECONDARY SCHOOLS. EMPHASIS ON PLANNING, ORGANIZING, AND SUPERVISING THE SPEECH PROGRAM INCLUDING CURRICULUM PLANNING AND MATERIALS SELECTION IN THE CURRICULUM. PROVIDES EXPERIENCE IN ORGANIZING AND DIRECTIONS AND CONFERENCE LEADERSHIP. INDIVIDUALIZED ASSIGNMENTS IN PREPARATIONS AND PERFORMANCE. SAME AS EDUCATION 170:50.

5. Workshop in Teaching Dramatics, Forensics, and Speech 3 s.h.

6. Educational Play Production 3 s.h.
PRINCIPLES AND PRACTICE OF PRODUCTION IN THE SCHOOL. DESIGNED TO ALL LEVELS OF PRODUCTION FROM THE classroom TO THE scenaRE. SAME AS EDUCATION 170:50.

7. Teaching of Rhetoric 2 s.h.
LECTURE-DISCUSsION COURSE WHICH EXPLORES THE LITERARY AND SOCIAL PROBLEMS INVOLVED IN TEACHING COMPOSITION, PUBLIC SPEAKING, AND RELATED TOPICS. SAME AS EDUCATION 170:50.

8. Foundations of Speech 3 s.h.
ORIGINS, EARLY PSYCHOLOGISTS, PHILOSOPHERS, AND THEORIES

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and practices of teaching speech. Attention to relevant counsel, teaching, and writing by early contributors to speech education, beginning with Publius and ending with the English educationalists. Special attention to speech education in the works of Aristotle, Quintilian, the Attic orators, St. Augustine, Ramus, and English teachers and writers.

36.202 Modern Speech Education 2 to 4 s.h.

Studies in modern speech education, beginning with the works of Hamme and English theorists and teachers, and ending with certain-pervasions developments in teaching, research, and service in speech education in America. Attention to institutional methods and materials as revealed by exploring the literature and problems related to planning, organizing, and evaluating the speech program in today's secondary schools.

Rhetoric and Public Address

Professor in Charge, Donald C. Bryant
Office, E201 Jemep Hall

R.A. with emphasis in public address. Required are a minimum of 26 semester hours and a maximum of 36 semester hours in the department. This major is recommended for students preparing for careers of active participation in public affairs or teaching. It is intended to serve as an effective source for a sound liberal education encompassing breadth of study, experience, and modest specialization. The requirements incorporate a reasonable balance between doing and knowing, between courses and extracurricular activity emphasizing forward and guided improvement in oral performance, and courses devoted to theoretical, critical, and historical study of 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 take one or more substantive courses in branches of the department other than public address; and he is expected to prepare a comprehensive written examination in the major area of specialization.

I. Required of all departmental majors

36.605 Principles of Communication Arts
36.790 Analysis and Criticism of Communication
36.630 Vowel Training for Speaking and Reading
36.745 Public Speaking
36.755 Rhetorical Procedure
36.757 Analytical and Expository Literature
36.747 Theory and Practice of Argumentation
36.749 Critical Thinking and Argumentative Techniques
36.752 Rhetoric of the Western World
36.746 Theories of Rhetoric
36.747 Theory of Style and Criticism
36.760 Greek and Roman Public Address
36.755 Contemporary Public Address
36.757 Contemporary Expository Writing
36.616 Expository and Argumentative Writing

II. A comprehensive course (historical, critical, theoretical) in the history of the literary arts.

III. At least 12 semester hours beyond the liberal arts general education requirements of the college must be chosen from the following: literature, history, psychology, philosophy, foreign language, and social science. These courses should include a course in expository or argumentative writing.

COURSE DESCRIPTIONS

36.255 Principles of Speech Communication 2 s.h.

Introduction to the fundamental principles of oral communication: study of the processes and problems of effective participation in practical speaking and listening; the role of motivation, methods of presentation, and principles and methods of evaluation. Extends the University requirement in speech for students not offering courses 101, 2, 102, or 103, or the equivalent. The requirement may be satisfied also by tests administered at the beginning of each semester by the Rhetoric Program, and for experienced students by passing Speech 36.30. See open for credit to students who have had or are taking Rhetoric 102 and 2, 102, or equivalent.

36.300 Public Speaking 3 s.h.

An intermediate course in speaking making previou courses 2, 3, 10, 102, or equivalent) or other experience in the basic processes and practice of oral communication. Attention to significant issues of public concern; study and experience in the more complete form of informative and persuasive speaking. Frequent speaking and analysis and criticism of speaking and speakers: attention to the needs and problems of speakers in business and the professions.

36.310 Group Discussion 3 s.h.

Projects in social decision and action, involving theory and practical application of problem-solving techniques, interpersonal sensitivity, group cohesiveness, leadership, and persuasion.

36.416 Parliamentary Procedure 2 s.h.

Rules of order for the conduct of business in meetings of committees, clubs, and organizations. Opportunity for practice both in reading and debating motions from the floor and in preparing over parliamentary action.

36.485 Speeches of the Western World

Notable speeches of classical Greece and Rome, modern Europe, Great Britain, and the United States, studied as dynamic events in historical contexts and as important works of literary art.

36.58 Theory of Rhetoric 2 s.h.

Study of major theories of oral and written prose discourse. Plato in the pre-Socratic; Aristotle's logic to its relevance to the understanding and guidance of contemporary speech; study of oral and written readings, lecture, discussion, and exploratory papers.

36.587 Rhetoric - Agitation and Control 2 s.h.

Study of forms of oratory, developing theories for analyzing agitation involving both change and response to that agitation. In small groups, study of the actual and theoretical aspects of agitation and control and preparation of short papers.

36.70 Greek and Roman Public Address 2 s.h.

Analysis and discussion of the major speakers and their speeches from the fifth through the first centuries B.C.?, in the study of the relevant social, political, and historical contexts to the speech-making of each era. Readings, reports, and discussion on the speaking of the Sophists, selected Athens Orators, Cato, and the early Church Fathers.

36.785 Theory and Practice of Persuasion 2 s.h.

Extensive study of the principles of persuasion with applications to today's society; experience in handling complex problems of persuasion in frequent speech-making situations.

36.789 Theory and Practice of Argumentation 2 s.h.

Instruction and practice in analyzing, investigating, bringing, and delivering of persuasive and argumentative papers; debates on selected simplified arguments recommended for persuasive lawyers, business people, politicians, and teachers of weaker forms.

36.130 Interviews and Conference Techniques 2 s.h.

Techniques and principles of communication in small groups, social and business and the use of these principles in other positions. Consideration of theory and guided practice. Review of discussion techniques and the principles of
36:521 Seminar: Techniques and Problems in Dramatic Art 3 s.h.
Focuses on a problem area in small-group research, the problem area changing from term to term. Original research required.

36:532 Seminar: Communication Research 2 or 3 s.h.
The focus of this seminar changes from term to term. Among other topics to which the seminar devotees a semester are language variables and methodological issues. Original research required.

Dramatic Art
(A Unit in the Division of Fine Arts)
Professor in Charge, David Thyser
Office, University Theatre

B.A. with emphasis in dramatic art is required. A minimum of 36 semester hours is required in the department. Course work is to be elected in the following way:

I. Required of all departmental majors:

36:69 Principles of Communication Arts
36:53 Voice Training for Speaking and Reading
36:79 Analysis and Criticism of Communication Arts

II. Required of all majors with an emphasis in Dramatic Art:

36:11 Stage Movement
36:45-46 Introduction to Theatrical Design
36:92 Acting I
36:90 Principles of Directing
36:110 Dramatic Art Laboratory

III. Two of the following courses (including at least one from Group A):

A. 36:112 Shakespeare

36:110 Greek Drama in Translation
36:113 Modern drama
36:137 Modern Drama: From Shaw to Pirandello
36:152 American Theatre History

IV. One of the following:

36:148 Survey of Broadcasting
36:117 Survey of Film
36:185 Broadcast Writing
36:184 Motion Picture History
36:184 Visualisation and Film Theory

V. One of the following:

36:97 Rhetoric of Agitation and Control
36:65 Speeches of the Western World
36:105 Introduction to Language and Literature
36:131 Contemporary Public Address
36:152 Selected American Speakers
36:134 Group Communication

Beyond the above, a maximum of 12 semester hours may be elected, in the department. Majors with a dramatic art emphasis must enroll in 11:51-58 Drama in Western Culture to satisfy the historical-cultural core requirement.

M.A. in Dramatic Art. A general program for high school and junior college teachers and for those wishing an intermediate degree before proceeding to the doctorate. The program of 30 or more semester hours is selected by the student in consultation with the following guidelines: Introduction to Research (36:300) 3 s.h.

Courses in theatre history 6 s.h.
Courses in dramatic literature 6 s.h.
Courses in theatrical production 6 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 theatre may be admitted 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 60 semester hours are required, and students must register 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 the significant literature and research methods and of the professional skills appropriate to it.

Production Sequences

Playwriting
36:173 Playwriting I
36:23 Playwriting Studio (may be repeated)
36:253 Playwriting II
36:255 Projects in Playwriting

Directing
36:90 Directing I
36:170 Directing II
36:350 Directing III
36:254 Directing IV
36:157, 158 Theatre Techniques in Television
36:255 Projects in Directing

Design and Technical Direction
36:65, 66 Introduction to Theatrical Design
36:165 Production Design
36:163, 164 Visual Research for Theatre
36:210 Design Studio (may be repeated)
36:217 Technical Direction Studio (may be repeated)
36:251 Lighting Equipment
36:233 Sound Systems in the Theatre
36:253 Stage and Production Management
36:256 Advanced Scene Construction
36:255 Scene Painting
36:258 Properties and Special Effects
36:259 Stage Costume: Design
36:258 Stage Costume: Drafting and Draping
36:259 Stage Costume: Hats and Headaddresses
36:250 Stage Makeup
36:251 Advanced Makeup
36:252 Props and Stage Design
36:253 Projects in Stage Costume
36:254 Projects in Stage Lighting
36:251 Projects in Technical Theatres
36:448 Theatre Practicum

Acting
36:11 Stage Movement
36:55 Voice Training
36:56 Acting I
36:59 Acting II
36:35 Acting III
36:59 Acting IV
36:57 Acting V
36:36 Movement Laboratory
36:257 Projects in Acting

Course Descriptions

For Undergraduates

36:11 Stage Movement 2 s.h.

Required course training for the actor. Development of awareness and control of body in structural and improvisational situations. Same as Physical Education for Women 36:11.

36:51 Drama in Western Culture 4 s.h.

Same as core course 23:11. Required of all dramatic art majors.

36:52 Drama in Western Culture 4 s.h.

36:65 Introduction to Theatrical Design 2 s.h.

Analysis of scripts for theatre designers and technicians. Mechanical theatre design, lighting and scene design; construction of scenery, costume, lighting, and makeup. Assigned laboratory work in these areas.
36.56 Introduction to Theatrical Design 2 s.h.
Continuation of 36.55. Prerequisite: 36.55.

36.59 Acting I 2 s.h.
Reading, improvisation, and scene study developing the actor's psychological technique. Exercise to enhance concentration of attention, class-reflex, imagination, and sensory responsiveness. Prerequisites: 34.11 and 34.23.

36.60 Acting II 2 s.h.
Readings and exercises leading to a fundamental technique for translating the dramatic values of a play text to the stage. Consideration of the director's medium, arrangement of the stage picture, and production procedures. Prerequisite: 36.59.

For Undergraduates and Graduates
36.108 Greek Drama in Translation 3 s.h.
Same as Classics 14.108.

36.112 Shakespeare 3 s.h.
Same as English 1112.

36.113 Modern American Drama 3 s.h.
Same as English 1213.

36.114 Restoration Drama 3 s.h.
Same as English 1314.

36.115 Roman Drama in Translation 3 s.h.
Same as Latin 2115.

36.119 Dramatic Art Laboratory 3 s.h.
Same as Art 1219 and Music 15.119.

36.120 Intermedia 3 s.h.
Same as Art 2612 and Music 25.120.

36.124 English Drama of the 18th Century 3 s.h.
Same as English 1214.

36.137 Modern Drama: Iben to Shaw 3 s.h.

36.138 Drama Since Pirandello 3 s.h.
Same as English 2337.

36.152 Electrical Play Production 1 to 3 s.h.
Essentials of directing, acting, and stage play for high school. Prerequisite: 34.20 or permission of instructor.

36.157 Theatre Techniques in Television 3 s.h.
Directing and acting experience in visual and performance arts of audio production. Prerequisite: 34.20 or permission of instructor.

36.159 Theatre Techniques in Television 3 s.h.
Coordination of 36.137.

36.162 Production Design 2 s.h.*
Projects in scenic, costume, lighting, and property design. Prerequisites: 34.21 and 34.22.

36.163 Visual Research for Theatre 3 s.h.
Major styles in the decorative arts relating to the productions of plays; fashions in costumes, costumes, furnishings, interior design, stage sets, and theatrical conventions.

36.164 Visual Research for Theatre 3 s.h.
Continuation of 36.163.

36.165 Acting II 2 s.h.
Reading and scene study focusing upon the synthesis of technique, characterization, and communication. Prerequisite: 36.59.

36.170 Directing II 2 s.h.*
Study of the art of stage direction with emphasis on the director as an interpretive artist. Prerequisite: 36.59.

36.172 Playwriting I 2 s.h.*
Analysis and practice of the playwright's technique in today's theatre, including premise, improvisation, and development, dramatic patterns, gesture, language, game, ordered and uncorrelated structures, and audience response. May be repeated. Open to juniors.

36.183 American Theatre History 3 s.h.
Principal plays, playwrights, and developments in the American theatre from the beginning to the present. May be repeated to a maximum of 6 semester hours.

36.186 Strategies in the Drama 3 s.h.
Only analysis for those who are emphasis on current trends in drama.

36.187 Play Analysis and Performance 3 s.h.
Primarily for Graduates
The following seminars and courses may be repeated with permission of instructor.

36.201 Acting III 2 s.h.
Emphasis on problems of style and genre in the modern repertoire.

36.202 Acting IV 2 s.h.
Emphasis on problems of style and genre in premodern repertoire.

36.203 Directing III 2 s.h.
Emphasis upon problems of style and genre in plays from the modern repertoire.

36.204 Directing IV 2 s.h.
Emphasis upon the problems of style and genre in plays from the premodern repertoire.

36.205 Voice Laboratory 1 s.h.
Voice training for the stage. Open only to M.F.A. candidates.

36.207 Movement Laboratory 1 s.h.
Individual attention to movement technique and experience. Open only to M.F.A. candidates.

36.211 M.F.A. Production 1 to 4 s.h.
Appropriate assignments in all aspects of production for the Fine Arts Series. Prerequisites: 34.20 or permission of instructor.

36.211 M.F.A. Workshop I 1 to 4 s.h.
Laboratory of the second year M.F.A. ensemble. Open only to second-year M.F.A. students.

36.212 M.F.A. Workshop II 0 to 5 s.h.
Laboratory of the third-year M.F.A. ensemble. Open only to third-year M.F.A. students.

36.213 Playwriting Studio 3 s.h.
Open only to M.F.A. students.

36.215 Design Studio 3 s.h.
Individual assignments in development in various areas of design. Open only to M.F.A. students.

36.217 Technical Direction Studio 3 s.h.
Individual assignments in problems of theatrical production. Open only to M.F.A. students.

36.219 Lighting Equipment 2 s.h.
Electrical, optical, and mechanical means for the control of light on stage.

36.222 Sound Systems in the Theatre 2 s.h.
Layout and control of electro-acoustic systems for the theatre.

36.225 Stage and Production Management 2 s.h.
Designs and organization of production personnel.

One hour concurrent registration required for all courses marked with an asterisk (*). 120 hours of approved studio activity for each hour of credit. May be taken independently of marked courses.

SPEECH AND DRAMATIC ART
36:224 Advanced Scenery Construction 2 a.h.
Advanced problems in construction, rigging, and shifting scenery.

36:225 Scene Painting 2 a.h.
Lecture on scene painting materials, shop layout, and techniques of applying scenic paint. Laboratory exercises at the paint frame.

36:226 Properties and Special Effects 2 a.h.
Design, construction, and finishing of theatrical properties. Development and control of special effects.

36:227 Stage Costumes: Fabrica 2 a.h.
Selection and use of fabrics on stage.

36:228 Stage Costumes: Drafting and Draping 2 a.h.
Pattern making for stage costumes with particular reference to historical dress.

36:229 Stage Costumes: Hats and Headaddresses 2 a.h.
Construction of theatrical headgear including hats, bonnets, masks, and wigs.

36:230 Stage Costumes: Accessories 2 a.h.
Construction of stage costumes accessories including footwear, jewelry, armor, and personal hand properties.

36:231 Advanced Makeup 2 a.h.
Design and execution of stage makeup. Three-dimensional makeup with prosthetics. Prerequisite: consent of instructor.

36:232 Playwriting II 3 a.h.
Work in progress, with presentation and discussion of work by playwrights at an advanced level. Prerequisites: 36:231 and consent of instructor.

36:233 Projects in Scene Design cr.arr.
Consent of instructor required.

36:234 Projects in Stage Costuming cr.arr.
Consent of instructor required.

36:235 Projects in Stage Lighting cr.arr.
Consent of instructor required.

36:236 Projects in Acting cr.arr.

36:237 Projects in Directing cr.arr.

36:238 Projects in Technical Theatre cr.arr.
Consent of instructor required.

36:406 English Drama of the Renaissance 4 a.h.
Same as English 8313.

36:406 English Drama of the Renaissance 4 a.h.
Same as English 8314.

36:415 Dramatic Theory I 3 or 2 a.h.
Studies in the major theoretical and critical works on the drama from the Greeks to the present day. Same as English 8355.

36:416 Dramatic Theory II 2 a.h.
Continuation of 36:415. Same as English 8356.

36:417 Dramatic Theory III 2 or 3 a.h.
Continuation of 36:416. Same as English 8357.

36:420 Physical Theatre 3 a.h.
Theoretical performance conditions, scenery, properties, and architecture to 1950.

36:420 Physical Theatre 3 a.h.
Continuation to 1900, 36:425.

36:451 Medieval Drama 3 a.h.
Secular and religious drama from the 10th century to the close of the Medieval period. Same as Comparative Literature 46:351.

36:451 Continental Drama, 1500 to 1700 3 a.h.
The drama, written and improvised, in Italy, Spain, and France, 1500 to 1700. Same as Comparative Literature 46:252.

36:453 Continental Drama, 1700 to 1850 2 a.h.
Drama and stage in France and Germany from the death of Moliere to the close of the Romantic movement. Same as Comparative Literature 46:256.

36:454 Backgrounds of Modern Theatre Practice 3 a.h.
Theatre theory and practice from Sene-Caen to the present.

36:461 History of Criticism: Plato to Romanticism 3 a.h.

36:462 History of Criticism: Coleridge to Croce 3 a.h.

36:468 Theatre Practicum cr.arr.
Seminar in technical production problems.

36:520 Seminar: American Theatre History cr.arr.

36:521 Seminar: Elizabethan Theatre History cr.arr.
Study of the basic sources, methods, and problems of historical research.

36:522 Seminar: Theatre History cr.arr.
Subject matter varies.

36:523 Seminar: Dramatic Literature cr.arr.
Subject matter varies.

36:524 Seminar: Dramatic Literature cr.arr.

36:525 Seminar: Dramatic Theory and Criticism cr.arr.
Developing theories of drama and staging, and application of research strategies and critical principles to dramatic materials.

36:526 Seminar: Dramatic Theory and Criticism cr.arr.

36:527 Seminar: Experimental Research in Theatre cr.arr.
Methodological and substantive analyses of experimental work in dramatic art. Primary research encouraged.

36:528 Seminar: Theatre Historiography cr.arr.
Study of the principles and methodologies of historical research and writing; creation of methodologies.

Broadcasting and Film

N.A. with emphasis in broadcasting and film. A minimum of 21 semester hours in the Department of Speech and Dramatic Art is required for majoring in broadcasting and film. The program is intended for the student who seeks an understanding of the nature of the broadcast and film media and their relationship to the larger field of the communication arts. The program is offered within the curricula of a liberal education and is not regarded solely as preparation for a professional career. Students may emphasize either broadcasting or film in their selection of elective courses, but minimal requirements will limit all students to exposure to historical and evaluative courses in both broadcasting and film and to experiences in the production of materials for broadcast and film media. Requirements for a major in the Division of Broadcasting and Film are:

1. International course required of all majors:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
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<tbody>
<tr>
<td>S59</td>
<td>Principles of Communication Arts</td>
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</tbody>
</table>

2. Departmental courses in Listening and Reading

3. 36:79 Analysis and Criticism of Communication Arts
SPEECH AND DRAMATIC ART

II. Division production courses required of all majors: 36.158 Cinematography Techniques
36.159 Advanced Television Production
36.184 Regulation of Broadcasting and Film
36.185 Visualisation and Film Theory
36.186 Regulation of Broadcasting and Film
36.187 Social Impact of Broadcasting and Film
36.188 History of Broadcasting and Film
36.189 Documentary and Educational Film
36.182 Survey of Film
36.160 Introduction to Broadcasting
36.161 Elements of Television Production
36.160 Survey of Film
36.161 Survey of Film
36.163 Elements of Television Production
36.164 Radio Workshop
36.165 Distribution and Film
36.166 Radio Production
36.167 Elements of Television
36.168 History of Broadcasting
36.169 Radio Production
36.170 History of Broadcasting
36.171 Elements of Television
36.172 Elements of Television
36.173 Documentary and Educational Film
36.174 Documentary and Educational Film
36.175 Cinematography Techniques

III. Division survey courses required of all majors: 36.158 Cinematography Techniques
36.159 Advanced Television Production
36.184 Regulation of Broadcasting and Film
36.185 Visualisation and Film Theory
36.186 Regulation of Broadcasting and Film
36.187 Social Impact of Broadcasting and Film
36.188 History of Broadcasting and Film
36.189 Documentary and Educational Film
36.182 Survey of Film
36.160 Introduction to Broadcasting
36.161 Survey of Film
36.163 Elements of Television Production
36.164 Radio Workshop
36.165 Distribution and Film
36.166 Radio Production
36.167 Elements of Television
36.168 History of Broadcasting
36.169 Radio Production
36.170 History of Broadcasting
36.171 Elements of Television
36.172 Elements of Television
36.173 Documentary and Educational Film
36.174 Documentary and Educational Film
36.175 Cinematography Techniques

IV. Advanced substantive courses in the Division: 36.158 Cinematography Techniques
36.159 Advanced Television Production
36.184 Regulation of Broadcasting and Film
36.185 Visualisation and Film Theory
36.186 Regulation of Broadcasting and Film
36.187 Social Impact of Broadcasting and Film
36.188 History of Broadcasting and Film
36.189 Documentary and Educational Film
36.182 Survey of Film
36.160 Introduction to Broadcasting
36.161 Survey of Film
36.163 Elements of Television Production
36.164 Radio Workshop
36.165 Distribution and Film
36.166 Radio Production
36.167 Elements of Television
36.168 History of Broadcasting
36.169 Radio Production
36.170 History of Broadcasting
36.171 Elements of Television
36.172 Elements of Television
36.173 Documentary and Educational Film
36.174 Documentary and Educational Film
36.175 Cinematography Techniques

V. One advanced substantive course from the Division of Dramatic Art or the Division of Radio and Public Address. 36.158 Cinematography Techniques
36.159 Advanced Television Production
36.184 Regulation of Broadcasting and Film
36.185 Visualisation and Film Theory
36.186 Regulation of Broadcasting and Film
36.187 Social Impact of Broadcasting and Film
36.188 History of Broadcasting and Film
36.189 Documentary and Educational Film
36.182 Survey of Film
36.160 Introduction to Broadcasting
36.161 Survey of Film
36.163 Elements of Television Production
36.164 Radio Workshop
36.165 Distribution and Film
36.166 Radio Production
36.167 Elements of Television
36.168 History of Broadcasting
36.169 Radio Production
36.170 History of Broadcasting
36.171 Elements of Television
36.172 Elements of Television
36.173 Documentary and Educational Film
36.174 Documentary and Educational Film
36.175 Cinematography Techniques

VI. At least 15 semester hours beyond the liberal arts graduation requirements in upper-division courses outside the Department of Speech and Dramatic Art, M.A. or Ph.D. in broadcasting and film. The M.A. candidate is expected to offer a plan of study which balances the artistic and scholarly aspects of the broadcast and/or film field. The major emphasis of the Ph.D. program in broadcasting and film is the development of original scholarly thought. The plan of study offered by the candidate and his advisor must reflect that emphasis. 36.158 Cinematography Techniques
36.159 Advanced Television Production
36.184 Regulation of Broadcasting and Film
36.185 Visualisation and Film Theory
36.186 Regulation of Broadcasting and Film
36.187 Social Impact of Broadcasting and Film
36.188 History of Broadcasting and Film
36.189 Documentary and Educational Film
36.182 Survey of Film
36.160 Introduction to Broadcasting
36.161 Survey of Film
36.163 Elements of Television Production
36.164 Radio Workshop
36.165 Distribution and Film
36.166 Radio Production
36.167 Elements of Television
36.168 History of Broadcasting
36.169 Radio Production
36.170 History of Broadcasting
36.171 Elements of Television
36.172 Elements of Television
36.173 Documentary and Educational Film
36.174 Documentary and Educational Film
36.175 Cinematography Techniques

Course Descriptions:
36.100 Introduction to Broadcasting 3 a.h.
Survey of current status of the American broadcasting establishment in its relationship with the business community, the government, and audience analysis of the content of broadcast programming. Same as Journalism 19.132.
36.101 Survey of Film 3 a.h.
Development of film art, awareness of the artistic and sociological factors of the cinema. Screening, discussion, and analysis of selected feature films.
36.102 History of Broadcasting 3 a.h.
History of radio and television as media of mass communication, content, economic, cultural, and social factors which have shaped the institutions of broadcasting. Development and present day styles. Comparison of the American experience with that of certain foreign countries. Prerequisites, 36.100.
36.103 Radio Production 3 a.h.
Registration by permission.
36.104 Radio Workshop 3 a.h.
Writing and preparation of the nondramatic program. For everyone, qualified juniors and seniors.
36.105 Broadcasting and Education 3 a.h.
Television and radio as media for instruction. Research and operations problems.
36.106 Cinematography Techniques 3 a.h.
Basic theory and techniques of visualisation used in motion pictures. Laboratory work develops abilities in pictorial organisation and use of equipment. Short films made. Critiques.
36.107 Cinema Production 3 a.h.
36.108 Advanced Television Production 3 a.h.
The preparation and production of television programs. Emphasis on creative experimental approaches to the use of camera, sound, music, lighting, and graphics in television. Prerequisite, 36.137.
36.109 The Documentary Film 3 a.h.
History and critical survey of the art of the documentary as a reportorial, experimental, and persuasive form in the field of nonfiction film. Screenings emphasize the work of Flaherty, Grierson, Leni, in a variety of recent American and foreign documentaries with some attention given to commercial and technical problems.
36.110 The Educational Film 3 a.h.
Theories and practices employed, their production and utilization in education and conventional film exhibition. Regular class screenings.
36.111 Motion Picture History 3 a.h.
Development of the moving image as art and entertainment, with emphasis on Griffith, Chaplin, Keaton, Lo, Wein, Ford, Welles, Hitchcock, Hawks, Kubrick, and certain other contemporary directors. The realist and romantic traditions within the commercial studio system are examined. Emphasis on the development of the independent film makers today. Screenings and discussions of selected motion pictures.
36.112 Visualisation and Film Theory 3 a.h.
Critical approaches to the analysis of the broadcasting program; theories of evaluating broadcasting as a social institution.
36.113 Telecommunications 3 a.h.
Independent creative work for students who have completed and shown outstanding talent in 36.109. Registration by permission.
36.114 Film Workshop 3 a.h.
Independent creative work for students who have completed and shown outstanding talent in 36.110. Registration by permission.
36.115 Television Program Production 3 a.h.
An intensive examination of the most formidable texts in the aesthetic of film. Problems in the nature of art, style, and film, are treated with reference particularly to Beague, Rimstein, and contemporary trends in aesthetics. This course scrutinizes literature about films, rather than films themselves.
36.116 Social Impact of Broadcasting 3 a.h.
The role of broadcasting in modern society. Prerequisites, 36.109, 36.110, 36.111.
36.117 Radio History 3 a.h.
Focus changes each semester.
36.118 Seminar in Broadcasting 3 a.h.
Journalism 36.109 Seminar: Film History 3 a.h.
36.119 Seminar in American Film 3 a.h.
36.120 Seminar: Film and Literature 3 a.h.
SPEECH PATHOLOGY AND AUDIOLOGY

Application of various critical methodologies to particular topics in: 1. Problems of auditory research.

25:613 Seminar: Broadcasting Research 2 to 4 a.h.

Critical review of data and theories on the behavior of hearing system and its audience. Individual research projects.

25:615 Problems in Television, Film, and Radio pr.ann.

SPEECH PATHOLOGY AND AUDIOLOGY

Chairman of Department, Kenneth L. Moll Office, 119 Wendell Johnson Speech and Hearing Center

The courses and degree programs of the Department of Speech Pathology and Audiology are planned to meet the needs of students seeking to prepare themselves for a wide variety of career opportunities. These include clinical service, college and university teaching, and research concerned with speech, language, or hearing processes and disorders. The offerings also include courses which meet the needs of students with vocational and professional goals in other fields, such as psychology, education, speech and dramatic arts, dentistry, and medicine, whose preparation may be enriched by the study of speech and hearing processes and their disorders.

Employment opportunities are numerous and varied for persons trained in speech pathology, audiology, and speech and hearing sciences. Clinical service facilities for persons with special needs are available in hospitals, clinics, rehabilitation centers, and related agencies. The department maintains a registry of qualified persons who are interested in hospital or college faculty positions. They provide many opportunities for individuals who have prepared themselves for clinical careers. The corresponding growth of college and university programs in speech and audiology provides numerous opportunities for careers as college and university teachers.

There is an increasing demand for full-time researchers in laboratories concerned with communication processes and disorders.

All professional programs of this department which lead to the M.A. degree are accredited by the Education and Training Board of the American Board of Speech Pathology and Audiology.

Undergraduate Curriculum

Since the master's degree or its equivalent is the minimum level of preparation for persons seeking professional careers in this field, the undergraduate curricula leading to B.S. or B.A. degrees in speech and hearing science have as a primary purpose the preparation of students for graduate work. These undergraduate programs may be taken, of course, by persons who wish a degree in the College of Liberal Arts but who do not desire a career in this field.

Bachelor's degrees in speech and hearing science. Students may qualify for the B.S. degree or the B.A. degree with a major in speech and hearing science by completing the following general requirements prescribed by the College of Liberal Arts, the undergraduate department of the College of Liberal Arts.

Required departments courses

25:633 Introduction to Speech and Hearing Science 3 h.

25:635 Principles of Auditory Research 3 h.

25:650 Analytic techniques in speech and hearing 3 h.

25:613 Analysis of the Speech and Hearing 3 h.

25:612 Fundamentals of Speech Science 3 h.

25:612 Introduction to Hearing Science 3 h.

25:612 Children's Language Development 3 h.

25:613 Principles of Normal and Abnormal Language 3 h.

25:615 Physical of sound and music 3 h.

25:613 Statistical Analysis I 3 h.

120:350 General Linguistics 4 h.

A minimum of 9 semester hours completed by one course from Group 2 and one course from Group 3, as listed below, and one additional course selected from the fields of psychology, anthropology, or sociology.

Group 1

25:615 Child Development 3 h.

25:614 Introduction to Child Psychology 3 h.

Group 2

25:615 Psychology of Adjustment 3 h.

25:615 Personnel Assessment 3 h.

25:612 Abnormal Psychology 3 h.

Other requirements

Students majoring in speech and hearing science must also complete or have had the equivalent of each of the following: college algebra, college trigonometry, college physics, college chemistry and biology, and a college course in the biological sciences.

Honors Program

The senior year program leading to the B.S. degree with Honors in Speech Pathology and Audiology is open to students who at the beginning of the senior year have completed at least 10 semester hours of coursework that can be counted toward a major in this department; earned a minimum grade-point average or all major courses; and earned a minimum grade-point average of 3.0. For graduation with Honors, the student is required to have completed the requirements for a major in this department; completed two semesters of study in research after entering the senior year Honors program; maintained 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 8 semester hours of departmental Honors' courses for seniors, Honors seminar and Honors thesis; and be recommended for graduation with Honors by the Honors thesis adviser and the departmental Honors adviser.

Students who are eligible for the senior year Honors program and who are not Honors students should confer with the departmental Honors adviser prior to 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 who have not entered the U of I as Honors students may apply for Honors classification in the College of Liberal Arts and in this department by recommendation of the departmental Honors adviser.

Advanced Degrees in Speech Pathology and Audiology

More specific details on the requirements for advanced degrees will be obtained from the graduate department of the College of Liberal Arts.

Ph.D. Program in Speech Pathology and Audiology

The Ph.D. program in speech pathology and audiology may be a professional program to prepare the student for immediate placement in clinical or service positions or it may be a general program of graduate study leading to an additional study for the Ph.D. degree. The various programs for the professional M.A. program are necessarily specified to ensure that the student will meet upon graduation the requirements of any potential employer.

The general M.A. program allows greater flexibility of individual student in course selection. There are no general requirements for the undergraduate course in speech and hearing science, with the exception of content in the field of human behavior which is essentially equivalent to an undergraduate degree in this field.

The Ph.D. program provides for comprehensive training for the scholar and researcher in speech and hearing science.
processes and their disorders and also for more intensive specialization in particular clinical problems in which the student may have special interest.

The full academic load for all regular graduate students is 22 semester hours of course registration per semester and 21 semester hours in summer sessions. In addition is 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 assignments for each student in 4 or 5 semesters is based on his particular professional goals and on the type of activity which contributes most to his 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.

Master of Arts degree. All entering M.A. degree candidates are required to take preliminary comprehensive examinations covering courses with 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 his faculty advisor with a basis for developing an appropriate plan of study. The examinations are to be taken during the first semester of residence. Forwards of the examinations may be waived if the student chooses to take appropriate courses.

.M.A. degree—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-Language-Hearing Association. Four different curricula are offered. Each includes basic studies and specializations. Considerations for the professional M.A. degree are not required to prepare for particular specialization and interest are encouraged to do so. All candidates who enter the program within 3 years of matriculation are required to take 3 full comprehensive examinations.

Requirements for the professional M.A. degree

A. All majors

1. 3116 Human Processes of Speech and Language 2.5
2. 3250 Clinical Procedures in Speech and Hearing 1.5
3. 3261 Articulation Disorders 1.5
4. 3255 Auditory Diagnosis 1.5
5. 3265 Seminar in Clinical Practice in Speech and Hearing 1.5
6. 3214 Clinical Procedures for Language Disorders 1.5
7. 3244 Auditory Rehabilitation 1.5

Additional semester hours of practicum registration suitable to meet the supervised clinical experience requirements for the Certificate of Clinical Competence of the American Speech-Language-Hearing Association and to provide a broad supervised practicum experience in speech and hearing disorders shall be selected from courses numbered 3231 and 3234 which have specializations.

B. Speech pathology general clinical emphasis

1. 3234 Clinical Procedures under A, and 1.5
2. 3239 Stuttering 1.5
3. 3213 Voice Disorders 1.5
3. 3235 Neurosurgical Audiology and Speech Disorders 1.5
5. 3237 Clinical Practicums 2.5

C. Audiology general clinical emphasis

1. 3231 Clinical Procedures under A, and 1.5
2. 3221 Voice Disorders 1.5
3. 3232 Neurophysiology of Speech and Hearing 1.5
4. 3227 Clinical Practicums 2.5

6. 3234 Auditory Training in Speech and Hearing 1.5
7. 1201 Laboratory Practice in Elementary School 4.5

Prerequisites, research, and elective courses to bring the total to at least 38 semester hours.

D. Audiology major, general clinical emphasis

Course listed under A and 1.5
1. 3220 Audiology Research Laboratory 4.5
2. 3221 Voice Disorders 1.5
3. 3232 Neurophysiology of Speech and Hearing 1.5
4. 3227 Clinical Practicums 2.5
5. 3234 Auditory Training in Speech and Hearing 1.5
6. 1201 Laboratory Practice in Elementary School 4.5

E. Audiology major, school hearing clinician

Course listed under A and 1.5
1. 3221 Voice Disorders 1.5
2. 3232 Neurophysiology of Speech and Hearing 1.5
3. 3234 Auditory Training in Speech and Hearing 1.5
4. 1202 Laboratory Practice in Elementary School 4.5

Practicums, research, and elective courses to bring the total to at least 38 semester hours.

Prerequisites, research, and elective courses to bring the 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 3.5
Introduction to Elementary Teaching 2 or 3.5
Elementary Psychology and Education 3 or 3.5
Exceptional Children 2 or 3.5

M.A. degree—general program. The M.A. program for the student planning to continue to the Ph.D. degree in individually planned in consultation with his advisor. It usually includes individual concentration of the portion of the course previously listed for the professional M.A. program. Certain of the courses, including those identified, are 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 seminars as part of the M.A. program and successfully complete a final oral examination.

The Doctor of Philosophy degree. The Ph.D. program is planned to provide the student with the opportunity to study a comprehensive and thorough knowledge of a subject matter both in the area of speech pathology and audiology in general and in one or two areas of particular specialization. Consideration is given to special interests and goals which are available in arranging the details of the student's Ph.D. program.

The Ph.D. program is usually planned with specialization in one of four major areas: speech pathology, audiology, speech science, and hearing science. Within each area the candidate and his 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 establishments of prescribed programs for these areas is not intended to circumscribe the diverse 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 they are approved by the student and his advisor. It is expected that he presents an adequate plan of study for their accomplishment. Beyond beyond, the comprehensive examinations and general examination listings are drawn mainly from the areas of physics, math,
SPEECH PATHOLOGY AND AUDIOLOGY

ginnering, mathematics, 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 gen-
eral 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 demon-
strated abilities for research by completing a suitable research project and presenting a paper summarizing its results. This project is to be of a magnitude which is adequate for a master's thesis. The Ph.D. candidate must also successfully complete a dissertation which is based upon original research in his area of specialization.

Recommended courses
A. All areas of specialization

- The course, or their equivalents, required for the M.A. degree and the following additional courses:
  - 2162 General Experimental Phonetics 4 s.h.
  - 2990, 291 or SR Research not less than 30 s.h.
  - Physiological Psychology or
  - Neuropsychology not less than 3 s.h.

- Statistics beyond an introductory course not less than 3 s.h.

- Appropriate courses in Computer Science

B. Speech pathology major

- The course listed under A, and
- 2113 Abnormal Psychology 3 s.h.

- Advanced seminars in areas of special interest

- Practicum

C. Audiology major

- The course listed under A, and
- 2220 Advanced Laboratory Instrumentation 3 s.h.
- 2324 Psychometrics 3 s.h.
- 2325 Psychophysiology Laboratory 3 s.h.
- 2326 Physiology of Hearing 4 s.h.
- 2327 The Pathological Anatomy System 3 s.h.
- 2113 Abnormal Psychology 3 s.h.

- Advanced seminars in areas of special interest

- Practicum (elective)

D. Speech or hearing science major

- Practicum: Students interested in teaching in these areas will vary considerably depending on the individual's special interest.

- The Ph.D. program will usually include in addition to those courses listed under A the course listed under B.

- 2220 Advanced Laboratory Instrumentation 3 s.h.
- 2324 Psychometrics 3 s.h.
- 2325 Psychophysics Laboratory 3 s.h.
- 2326 Physiology of Hearing 4 s.h.
- 2327 The Pathological Anatomy System 3 s.h.

- Students following this program are no-

- rmally required 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 de-
gres great benefits from the fact that Iowa City is in the health center of the state and that these health service

areas are limited only as much as they are 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 examinations, and rehabilitation programs for speech, hearing, and language problems. Included in a six-week summer residential program for children. These clinical programs are planned for the training of students through supervised clinical experi-
ences in the areas of speech, hearing, and lan-
guage disorders. This training is enhanced by the use of the new and modern facilities of the Wendell Johnson

Speech and Hearing Center, which includes audiological testing units, diagnostic and therapy units, a dissoci-
circuit television system, and modern equipment for diagnosis and therapy.

In addition to the clinical training in the University Speech and Hearing Clinic, such training may also be obtained in the following supervised clinical practices with elementary school children in the schools is in-
cluded by cooperative arrangements with the local schools and the special education programs of Johnson County

and adjacent counties; supervised clinical practice in speech and hearing service provided by the Department of Otolaryngology and Maxillofacial Surgery, which offers special clinics and a hearing clinic, and the Speech and Hearing Center at the University Hospitals, as well as through the Student Speech and Hearing Service at the University, the University Hospitals, as well as by the Iowa State Speech and Hearing Center.

- and individuals and institutes associated with the programs of the Iowa Speech and Hearing Center, the Iowa Speech and Hearing Center, the University Hospitals, as well as by the Iowa State Speech services to the schools for the mentally retarded, and other state institutions.

Public and private departments and programs in addi-
tion to those mentioned above often contribute to the co-
operative professional training, research, and service pro-
grams.

Research facilities. Research facilities in the Wendell Johnson Speech and Hearing Center include a number of fully equipped laboratories for the study of the basic processes of speech, hearing, and language and disorders of these processes. Included are laboratories and equip-
ment for acoustic, phonetic, and perceptual studies of

- speech and for audiological, psychoacoustic, and psycho-

- physiological studies of hearing. Well-equipped mechan-

- ical and electronic shops and trained technical personnel

- are available for assistance in research instrumentation.

- Cooperation of various departments of the University Hospitals and the College of Dentistry makes it possible to utilize additional laboratory facilities for the investi-

- gation of a wide variety of research problems. Research opportunities are materially broadened by the active par-

- ticipation and cooperation, especially with respect to tech-

- nical problems, of specialists from various fields including

- psychology, child development, education, engineering, and medicine.

STAFF

Professor: James F. Curtis, James C. Hardy, Kenneth L. Miller, Richard L. Morris, Dorothy Sherman, Arnold M. Weiss, Joanne D. Williams.

Associate Professor: Charles V. Anderson, David J. Danish, D. Van Der Zee.

Assistant Professors: Carol B. Berta, Richard Blaisdell, Mrs. B. Jonge, Joel B. Kandel.

Clinical Associate: Penelope J. Kliehstein, Breit Low.

Supervisor Social Services: Barbara B. Moore.

Undergraduate Staff: Robert N. Regier, Assistant Professor Jeanne L. Smith; Clinical Assistant Pro-

Fessors Herbert N. Jordan and Madeleine Demmer.

COURSE DESCRIPTIONS

3:1 Preparatory Seminar in Speech Pathology and Audiology 0 to 1 s.h.

A general introduction to the nature and scope of the field of speech pathology and audiology for students who anticipate majoring in this field.

2:15 Individual Instruction in the Speech and Hearing Clinic 0 to 1 s.h.

Open to any student in need of speech and hearing clinic services, except those enrolled in Clinic Program who automatically receive services without further regis-

tration. Registration by clinical staff. All semesters.

3:15 Introduction to Speech and Hearing Process and Disorders 3 s.h.

Speech, language, and voice disorders. A broad field of scientific study. Description of the major types of speech, hearing, and language disorders. Two lectures and two
3.150 Clinical Procedures in Speech Pathology and Audiology
2 s.h.
Case history and interviewing procedures; methods for evaluating speech and voice behavior; record keeping and reporting procedures. Lectures, discussions, and case observations. Prerequisites: S135 or consent of instructor. All semesters.

3.176 Introduction to Speech and Hearing
2 s.h.
Prerequisite: S135 or consent of instructor. All semesters.

3.185 Audiology
2 s.h.
The application and interpretation of hearing tests in children and adults. Three lectures and one two-hour laboratory period per week. Prerequisites: S135 and S135. Second semester; summer sessions of even-numbered years.

3.186 Problems: Speech Pathology
Prerequisite, staff consent. All semesters.

3.187 Problems: Audiology
Prerequisite, staff consent. All semesters.

3.191 Practicum: Articulation Disorders
Prerequisites: S135 and consent of instructor. All semesters.

3.197 Practicum: Stuttering
Prerequisite: S135. Supervised clinical practice in the speech and hearing clinic with consent of instructor. All semesters.

3.203 Seminar: Introduction to Research in Speech Pathology and Audiology
2 s.h.
Research methods and significant current research issues. Required of candidates for M.A. degree in speech pathology and audiology. First semester.

3.212 Voice Disorders
2 s.h.
Prerequisite: S135. Examination and diagnosis of disorders of voice, speech, and language. Staff consent. All semesters.

3.214 Clinical Procedures for Language Rehabilitation
Remedial principles and procedures for children whose language development is severely retarded. Prerequisites: S135. Second semester.

3.217 Introduction to Psycholinguistics
2 s.h.
Relationship between linguistic structure and psychological processes affected by language use. Related topics may include syntax, semantics and pragmatics, language universals, language acquisition, bilingualism, and animal communication. Prerequisites: S135 or Linguistics 105-106. Staff consent. First semester.

3.222 Advanced Laboratory
2 s.h.
Practical procedures which apply to clinical work. Laboratory exercises in using indirect current equipment, power supplies amplification, signal generators, switching and timing, magnetic-tape recorders, and transducers.

191
Two lectures and two laboratories per week. Second semester.

3:353 Neuropathologies of Speech and Language 3 a.h.
Nature and principles of treatment of communication disorders associated with neuropathology, including the dyslexics, dyslexics plus and two laboratories per period. Prerequisite: 3:353. First semester.

3:357 Cleft Palate 2 a.h.
Nature, etiologies, and principles of treatment of speech disorders arising from cleft palate. Prerequisite: 3:353 or equivalent. Second semester; summer sessions of odd-numbered years.

3:421 Advanced Audiology 4 a.h.

3:422 Conservation of Hearing 3 a.h.
School, community, and industrial conservation of hearing programs; administration, psychological, economic, and sociological aspects. Prerequisite: 3:353. Second semester; summer sessions of even-numbered years.

3:423 Hearing Aids 3 a.h.
Function and performance characteristics of hearing aids and their application to the evaluation of the use of hearing aids by individuals with hearing impairments. Laboratory provides experience with physical measurements on hearing aids and hearing-aid evaluations. Prerequisite: 3:353. Summer sessions.

3:444 Aural Rehabilitation 3 a.h.
Theory and procedures of speech reading, auditory training, and speech conservation. Observations and reports of clinic cases. Prerequisite: 3:353. First semester; summer sessions of even-numbered years.

3:550 General Experimental Phonetics 4 a.h.
A survey course summarizing current status of knowledge and trends concerning acoustic, physiological and psychological aspects of speech production. Two lectures and two hours of scheduled laboratory per week, with additional laboratory on an arranged basis. Same as Linguistics 103:275. Prerequisite: Speech Pathology and Audiology majors should have completed 3:313 or equivalent. Nonmajors will be admitted with permission of instructor. First semester.

3:554 Psychocoustics 4 a.h.
Lectures and discussions on advanced topics and current research in psychology and psychoacoustics. Same as Psychology 3:351. Prerequisite: 3:313 or consent of instructor.

3:555 Psychocoustics Laboratory 2 a.h.
Supervised laboratory experiment. Analysis of stimuli generation equipment. Reporting of students' classified psychocoustic experiments. Two laboratory periods per week. Same as Psychology 3:351. Corequisites: 3:354 or consent of instructor. First semester.

3:558 Physiology of Hearing 3 a.h.
Application of physiological techniques, primarily electrophysiological, to basic research in hearing. Micromanipulation of auditory system (AS), both peripheral and central, dynamics of the cochlea, electrophysiological response at various levels in the AS, adaptation, sleep, and learning. Three lectures and two hours of laboratory per week. Prerequisite: 3:354 or consent of instructor. First semester.

3:571 The Pathological Auditory System 3 a.h.
Reexploration of hearing loss with auditory lesions in psychocoustic and histologic experiments. Utilization of experimental data and elaboration of traditional techniques to aid in diagnosis of lesions within the auditory system. Prerequisite: 3:311. First semester.

3:578 Signal Analysis 3 a.h.
Development of a set of mathematical tools for analysis of electrical and acoustical signals in linear, time-invariant systems. Mathematical treatment coordinated with an introduction to dynamical analogies. Assigned problems relate to research in speech and hearing science. Prerequisite: 3:580 or consent of instructor.

3:581 Practicum: Neuropathologies of Speech and Language 3 a.h.
Supervised clinical practice at Speech and Hearing Clinic, University Hospitals, and University Hospital School in areas of central aphasia, aphasia, and other neuropsychological conditions associated with speech and language disorders. All semester.

3:582 Practicum: Cleft Palate 3 a.h.
Supervised clinical experience with individuals with cleft palate in Speech and Hearing Clinic and University Hospitals, consent of instructor. All semester.

3:583 Practicum: Voice Disorders 3 a.h.
Supervised clinical experience in diagnosis and remedial procedures for all types of voice disorders. Prerequisite, consent of instructor. All semester.

3:586 Practicum: Speech and Language Habilitation for the Mentally Retarded 3 a.h.
Supervised clinical experience with individuals who are mentally retarded. Prerequisite, consent of instructor. First and second semester.

3:591 Practicum: Aural Rehabilitation 3 a.h.
Supervised clinical practice at hearing handicapped children and adults. Prerequisite, 3:313. First semester.

3:592 Practicum: Diagnostic Procedures 3 a.h.
Supervised clinical practice at Speech and Hearing Clinic, University Hospital School, Veterans Administration Hospital, University Hospital School, and State Services for Crippled Children. Prerequisite: 3:313. All semester.

3:592 Practicum: Diagnostic Procedures 3 a.h.
Supervised clinical practice in the evaluation of hearing problems at Speech and Hearing Clinic, University Hospital School, and State Services for Crippled Children. Prerequisite: 3:313. All semester.

3:595 Seminar: Voice and Articulation Disorders 2 a.h.
Systematic study and critical review of research on selected topics. May be repeated for credit. Prerequisite, 3:353.

3:595 Seminar: Stuttering 2 a.h.
Intensive, individualized study of theoretical issues and clinical literature. Prerequisite, 3:313 or consent of instructor. May be repeated for credit.

3:595 Seminar: Speech and Language Skills of the Mentally Retarded 2 a.h.
Prerequisite, consent of instructor. May be repeated for credit.

3:595 Seminar: Cleft Palate 2 a.h.
Intensive, individualized study of theoretical issues and research literature. Prerequisite, consent of instructor. May be repeated for credit.

Intensive, individualized study of theoretical issues and research literature. Prerequisite, 3:313 or consent of instructor. May be repeated for credit.

3:598 Practicum: Neuropathologies of Speech and Language 3 a.h.
Individualized study of special topics concerned with problems of speech and language associated with neurological conditions.
3:30 Seminar: Research Design in Speech and Hearing 2 s.h.
Problems of design of experiment in speech and hearing. Practical application of principles of experimental design in planning analysis of speech and hearing data. Pre-requisite, E 376. Second semester.

3:53 Seminar: Symbolic Processes 2 s.h.
Intensive, individual study of theoretical issues and research literature concerning the processes of symbolization and communication in their diameters. Same as Psychology 3100, Speech 3631. Pre-requisite, 3:38 or 3:39 or 3:40. May be repeated for credit.

3:53 Seminar: Experimental Phonetics 2 s.h.
Some of the advanced topics in phonetic research and theory. May be repeated for credit. Same as Linguistics 385:350. Pre-requisite, consent of instructor. First and second semesters. May be repeated for credit.

3:55 Seminar: Psycholinguistics 2 s.h.
Theoretical topics in psycholinguistic research and theory. May be repeated for credit. Same as Linguistics 385:350. Pre-requisite, consent of instructor. First and second semesters. May be repeated for credit.

3:55 Seminar: Psychological Acoustics 2 s.h.
Intensive individual study of current research in experimental acoustics. May be repeated for credit. Pre-requisite, 3:34.

3:56 Seminar: Audiology 2 s.h.
Intensive individual study of advanced topics and current research in experimental acoustics. May be repeated for credit. Pre-requisite, 3:36.

3:56 Seminar: Clinical Audiology 2 s.h.
Intensive individual study of current topics in clinical audiology. May be repeated for credit. Pre-requisite, 3:36.

3:58 Seminar: Auditory Physiology 2 s.h.
Pre-requisite, 3:56 or consent of instructor. May be repeated for credit. Same as Audiology.

3:59 Research: Speech Pathology cr.arr.
Pre-requisite, staff consent.

3:59 Research: Audiology cr.arr.
Pre-requisite, staff consent.

3:59 Seminar: Experimental Phonetics cr.arr.
Pre-requisite, consent of instructor.

3:59 Internship in Speech Pathology cr.arr.
Resident clinical practice in speech pathology and/or research at an approved institution. Pre-requisite, staff consent.

STATISTICS
(See Mathematical Sciences, Division of)

URBAN AND REGIONAL PLANNING
Chairman of Program, James Harris
Office, 348 Jenny Hall

Urban and regional planning is a graduate professional program concerned with the improvement and orderly development of man’s environment with particular reference to the urbanized areas. Preparation for work in this field involves a knowledge of economics, in observing, analyzing, and interpreting the social, economic, political, and technological forces that affect environment.

There is today an unprecedented 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 baccalaureate degree from an accredited college or university from a wide variety of fields of undergraduate concentration are eligible for admission. Those fields considered most relevant are sociology, economics, political science, geography, and architecture. Each student must have completed basic coursework (undergraduate or graduate) in statistics, economics, environmental, economic, or public administration, and sociology. Deficiencies in these areas must be corrected before entering the program. The student must have a minimum of 2.5 in the last two years of the undergraduate program in the major field of study, or 2.5 overall for the entire undergraduate program, with a 3.0 minimum for the major field of study.

Degrees Offered
The degrees of Master of Arts in Science in Urban and Regional Planning are conferred upon successful completion of appropriate program requirements. Each degree is a professional degree which prepares and qualifies students to enter the planning professions.

Curriculum
The curriculum in planning is designed to differentiate between urban and regional focus, to allow for concentrations in various occupational disciplines, e.g., environmental planning, community and regional development, health, transportation, and other related fields. Each student must design his program to meet the specific needs of his career focus.

The requirements for professional planning courses varies but in any event the general requirements include five core courses, minor courses, an internship, a seminar, and a thesis or research paper. The curriculum is designed to provide a basis for the students to enter the planning professions.

Joint Programs.
A joint program with the College of Law is offered, leading to the degree of Juris Juris Doctor and a Master of Arts in Urban and Regional Planning are granted upon successful completion of the program. The student must complete the program within five years of enrollment. This program represents an orderly progression of courses designed to provide the legal knowledge necessary to function effectively in the field of research or teaching. The requirements are designed to meet the needs of the program.

A master’s thesis is required in each of the professional programs. A thesis shall be approved by the department of planning and submitted for approval by the graduate studies and the department of planning.

U.S. CITIES, INSTITUTIONS, AND COMMUNITIES
The study of cities and institutions and communities as they relate to urban and regional planning is an important aspect of the planning profession. The study of cities and institutions and communities as they relate to urban and regional planning is an important aspect of the planning profession.
alternative of six hours of coursework is possible with faculty approval. The summer internship does not carry credit; therefore, the coursework option increases the degree requirements by six hours. A substantiated paper relating to the internship experience is required.

Field Studies Program: For the Fall (fall) semester of the second year an option is being offered to students, for residency in a large metropolitan area, thereby leaving the campus of the University for the period, being assigned to a host university in the selected city. This is to be done in groups programs in which a small number of students pursue their studies as follows: courses 120.284.01, planning studies with field orientation, dealing with the acute problems of large cities, and electives at universities in the selected metropolitan area, such electives to be chosen in consultation with the students, in the urban faculty resources available in urban studies and urban planning. This curriculum is planned for a two-year, four-semester sequence. The total semester-hour requirement varies from 45 to 50, depending upon options followed in regard to thesis and internship employment, as follows:

A. For students selecting a thesis and completing an internship 45 s.h.
B. For students selecting a thesis but not completing an internship 45 s.h.
C. For students selecting a shorter paper in lieu of thesis (3 semester hours) and an internship 54 s.h.
D. For students electing a shorter paper in lieu of thesis (3 semester hours) but no internship 50 s.h.

For students electing the program without basic coursework in statistics, economics, local/state public administration, and sociology, electives in each of these areas may be required without degree credit.

The recommended four-semester sequence is shown above. Variances may be necessitated in individual cases.

Programs. Two major options are available, leading to a master's degree with emphases in either urban planning or regional planning. The urban planning option is possible for a student to select a methodological direction in quantitative methods, policy planning, implementation and evaluation, or design. In addition it is possible to select advanced study in functional areas such as: land use, transportation, economic development, social planning, health, environmental quality, open space and recreation, or housing and renewal planning.

Specialization requires the inclusion of courses from other departments chosen by individual consultation with the planning faculty. The following list is composed of courses offered by other departments; these have relevance to both urban planning and regional planning. More complete descriptions of these courses are available in the departmental listings in the University of Iowa Catalog. The list is illustrative and not exclusive: of related coursework.

Relevant to Both Urban and Regional Planning

145.111 Geographic Analysis of Social Behavior 3 s.h.
145.121 Location of Economic Activity 3 s.h.
145.122 Spatial Organization of Social Processes and Behavior 3 s.h.
145.140 Location Analysis of Economic Behavior 3 s.h.
145.142 Spatial Implications of Public Policies 3 s.h.
145.178 Methods of Population Analysis 3 s.h.
25.104 State and Local Government Law 3 s.h.
Civil Engineering
31.105 Man and His Environment 3 s.h.
50.106 Air Pollution and Solid Waste 3 s.h.
Computer Science
25.107 Mathematical Fundamentals for Computer Users 3 s.h.
Economics
65.119 Flows in the Government Sector 3 s.h.
65.120 Introduction to Urban and Regional Economics 3 s.h.
Statistics
225.25 Elementary Probability and Statistics 3 s.h.
225.26 Introduction to Statistical Methods 3 s.h.
225.28 Introduction to Mathematical Statistics I 3 s.h.
225.29 Introduction to Mathematical Statistics II 3 s.h.
Urban Planning Focus

Urban Policy
144.111 Political Behavior and Urban Policy 3 s.h.
144.125 Internal Social Structure of Cities 3 s.h.
144.130 Geographic Analysis of Urban Areas 3 s.h.
144.135 Urban Studies 3 s.h.
144.136 Social Structure of Residential Areas 3 s.h.
144.137 Social Structure of Metropolitan Areas 3 s.h.
144.237 Macro Models of Urban Growth and Development 3 s.h.
Political Science
32.120 Municipal Administration 3 s.h.
32.220 Administrative Theory and Behavior 3 s.h.
32.231 Physical Administration 3 s.h.
32.232 Community Political Systems 3 s.h.
Sociology
34.171 The Urban Scene 3 s.h.
34.172 The Urban Community 3 s.h.
34.265 Race and Ethnic Relations 3 s.h.
Law
61.122 Land-Use Planning Seminar 2 s.h.
Civil Engineering
33.125 Urban Transportation Planning 3 s.h.
50.126 Environmental Health and Community Relations 3 s.h.
Economics/Urban Administration
65.107 Problems in Urban Economics 3 s.h.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>52:218</td>
<td>Urban Economics</td>
<td>3.0</td>
</tr>
<tr>
<td>52:136</td>
<td>Real Estate and Urban Development</td>
<td>3.0</td>
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<tr>
<td>52:126</td>
<td>Social Work</td>
<td>3.0</td>
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<tr>
<td>52:353</td>
<td>Welfare Policy and Program</td>
<td>3.0</td>
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<td>52:353</td>
<td>Community Organization</td>
<td>3.0</td>
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<td>52:316</td>
<td>Regional Planning</td>
<td>3.0</td>
</tr>
<tr>
<td>52:126</td>
<td>Economic Development of Underdeveloped Areas</td>
<td>3.0</td>
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<tr>
<td>52:216</td>
<td>Regional Economics</td>
<td>3.0</td>
</tr>
<tr>
<td>52:216</td>
<td>Economic Development of North American Economies</td>
<td>3.0</td>
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<td>52:216</td>
<td>Regional Planning</td>
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<td>52:216</td>
<td>Economy of Underdeveloped Areas</td>
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<td>52:216</td>
<td>Urban Anthropology</td>
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<td>52:216</td>
<td>Resource Planning</td>
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### URBAN AND REGIONAL PLANNING

#### Spring
- 52:216 Planning Analysis and Techniques | 3.0 |
- 52:216 Quantitative Methods for Planning | 3.0 |
- 52:216 Urban Housing Law | 3.0 |
- 52:216 Theory of Planning | 3.0 |

#### Fall
- 52:216 Planning Analysis and Techniques | 3.0 |
- 52:216 Quantitative Methods for Planning | 3.0 |
- 52:216 Urban Housing Law | 3.0 |
- 52:216 Theory of Planning | 3.0 |

#### Summer
- Internship in Planning | 1.0/3.0 |

#### Total
- 12.0/18.0

### Fourth Year

#### Fall
- 52:216 Planning Analysis and Techniques | 3.0 |
- 52:216 Quantitative Methods for Planning | 3.0 |
- 52:216 Urban Housing Law | 3.0 |
- 52:216 Theory of Planning | 3.0 |

#### Total
- 12.0/18.0

#### Total
- 30.0/45.0

### COURSE DESCRIPTIONS

#### 102:101 Introduction to Planning | 3.0 |
Analysis of current urban environmental problems. Historical perspective on the development of planning theory and practice. Lecture and seminar discussions. This course is offered for students outside the planning program.

#### 102:201 Environmental Planning and Design | 4.0 |
Lecture and studio (laboratory) problems concerned with the understanding of environmental factors as they affect urban form, historically and currently. Studies in visual perception and elements of form and design relationships in the urban environment; design process and general urban planning.

#### 102:202 Environmental Planning and Design | 4.0 |
Detailed analysis and design of planning components; planned unit development, community facilities, etc. Depending on individual student emphasis.

#### 102:203 Metropolitan Planning | 3.0 |
Survey of planning and implementation programs; analysis of major planning approaches and methods of implementation. Emphasis on intergovernmental problems.

#### 102:204 Planning Studies in Residence | 4.0 |
An option program to permit students to undertake planning studies in large metropolitan areas, in groups with faculty participation, dealing with some of the acute problems of large cities. Residence will be established at a host university. Other coursework will be scheduled at institutions with reasonable accessibility.

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Staff

Associate Professors: Kenneth J. Ducker, James Harris, David C. Buehler.
Assistant Professors: Barbara K. Hafay, Gordon Jacobs.
Participating faculty from other disciplines:
- Professor: Russell W. Mose (Political Science), Allan D. Vail (Law), Nanci L. Gonzalez (Anthropology), Walter Kermm (Economics), Frank F. Hiebert (Geography), Edith H. M. Fiedler, I. Alex V. Barnard, Thomas E. Palmer (History), John E. Norman, Sally (Business Administration).
102:205 Planning Workshop 4 s.h.
In depth study of selected urban and regional problems. Individual and/or team analysis with emphasis on a combined design and quantitative approach to planning. Lecture and studio.

102:206 Planning Analysis and Techniques I 3 s.h.
Planning applications of techniques for analysis of population patterns and urban forms. Topics include: mapping techniques, systems analysis, urban transportation planning, and urban information systems.

102:207 Theory of Planning 3 s.h.

102:208 Urban Housing 3 s.h.
Lectures and seminars regarding the quality of residential environments, the effect of variations in standards of interior space, density, building form, and open space upon the residents. Historical view of housing and its production and management; housing supply and market; finance; legislation; design in housing related to urban renewal; a brief examination of the community facilities functionally related to housing.

102:209 Planning Legislation 3 s.h.
Governmental and legal aspects of planning and land development in the United States covering the principal tools for implementing planning policy including planning by public agencies, zoning, subdivision control, land acquisition, and development incentives.

102:210 Quantitative Methods for Planning 3 s.h.
Mathematical and statistical techniques useful in planning analysis. Introduction to computer and computer programming.

102:220 Planning Analysis and Techniques II 3 s.h.
Application of analytical techniques to selected urban or regional problems.

102:221 Seminar: Urbanization 3 s.h.
Problems and consequences of the urbanization process. An economic, social, and political study of metropolitan areas. Emphasis on classic study of metropolis by Park and Gardener 1925, Geography 4300, and Civil Engineering 33:298.

102:222 Student Research Seminar 2 s.h.
Analysis of research methodology and study design. Research review and criticism of thesis or equivalent project.

102:223 Regional Planning Seminar 2 s.h.
Approaches to regional development policy; economic analysis of urbanized regions considered relevant to less developed countries; comparative studies.

102:224 Principles of Urban Design 3 s.h.
Theory 2 to 3 s.h.
Physical development of urban form. Determination of basic patterns in the growth of cities; part and parts thereof. Urban design as a factor of societal development.

102:225 Readings cr.arr.
Individual program of readings under guidelines established by the department.

102:226 Seminar: Urban Transportation 3 s.h.
Analysis of selected urban transportation issues and problems.

102:227 Seminar: Urban Information Systems 2 to 3 s.h.
Analysis of selected topics dealing with collection, storage, retrieval, reporting, and utilization of urban data for land use and transportation planning.

102:228 Evolution of Cities 2 s.h.
The city as the foundation of human civilization. Morphological analysis of cities; case studies examining structures of urban form and growth as determined by social, economic, and cultural factors. Research assignments.

102:230 Special Problems in Planning 3 to 4 s.h.
Advanced problems in urban analysis, regional analysis, urban design, and general plan development. Research of planning problems of special interest to student with approval of the department. Written report and oral presentation required.

102:231 Seminar: Social Planning 3 s.h.
Special topics in social policy planning.

102:240 Process and Problems of Development: Africa 3 s.h.
Strategies for development, background of East and West African nations, visiting lectures with African experience and specialization, focusing upon current problems; economic, cultural, and political aspects. Same as Anthropology 132:341.

102:241 Process and Problems of Development: Latin America I 3 s.h.
Background studies in history, geography, political structures, population, health, and welfare, followed by presentation of currently operating programs and planning efforts, economic integration, development plans for specific regions. Visiting lectures with Latin American experience, faculty from various departments. Same as Anthropology 132:341.

102:242 Process and Problems of Development: Latin America II 3 s.h.
Continuation of 102:241. Same as Anthropology 132:342.

102:279 Independent Study in Planning 3 s.h.
Research project in lieu of thesis.

102:280 Thesis: Urban and Regional Planning 6 s.h.
Research and analysis of a special planning problem assigned by the student with approval of the department, to provide an opportunity for him to apply knowledge obtained in his area of specialization.

ZOOLOGY
Chairman of Department, Jerry J. Kollros
Office, 309 Zoology Building

The basic courses offered by the Department of Zoology are designed both for students entering the university to enter medicine, dentistry, or related professions. The additional undergraduate and graduate offerings are planned for persons interested in modern fields of descriptive and quantitative experimental biology. Graduates of the department meet professional requirements in the health sciences and also may continue into graduate programs leading to teaching, service, and research in the various professional areas.

The B.A. Degree in Zoology

Courses in zoology required for the B.A. degree majors: 37:3 Principles of Animal Biology 9
37:5 Principles of Modern Embryology 9
37:180 Cell Physiology 9
37:197 Animal Kingdom I 9
37:198 Animal Kingdom II 9
37:230 Fundamental Genetics 9
37:234 Comparative Physiology 9
37:238 Population Genetics 9

Requirements for the B.A. degree are currently under review. It is anticipated that the list of zoology courses presented above will be reduced (by 1972-73), and that the regional courses will substitute for the deleted courses. The intent is to permit increased emphasis in coursework
of certain departmental stipulations, such as genetics, \textit{principles of population biology}, and so on.

Within the department, for current students, courses in physics, mathematics, and \textit{statistical mechanics} are required.

For graduate students, the following courses are recommended:

\begin{itemize}
\item \textit{Elementary Functions}
\item \textit{Principles of Chemistry I and II}
\item \textit{Biological Chemistry}
\item \textit{Chemical Physics}
\item \textit{Theoretical Chemistry Laboratory}
\item \textit{Organic Chemistry I and II}
\item \textit{Intermediate Chemistry Laboratory}
\item \textit{Electrical Engineering}
\item \textit{General Physics}
\end{itemize}

\textit{For general degree requirements see College of Liberal Arts, Biological Sciences in mathematics, \textit{zoology}, geology, and botany are recommended.}

Honors in Zoology

Honors candidates in zoology fulfill the college-wide requirements by completing successfully at least 5 semester hours of coursework from 379C, 379D, and 379F, followed by a comprehensive examination. The departmental program offers membership in a small, active group of undergraduates with a common interest, 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 parts of practising scientists to which the students are introduced.

Advanced Degree in Zoology

M.S. and Ph.D. degrees with thesis are offered, as is an M.S. degree without thesis. In addition, an M.S. degree in biology is offered with thesis, in cooperation with the Department of Botany and the Department of Entomology. Programs, the entering graduate student is expected to have completed the equivalent of the general requirements and to have acquired the knowledge and skills required for the bachelor's degree in zoology. All deficiencies must be made up before candidacy for an advanced degree can be approved, and ordinarily deficiencies are made up during the first year of graduate study in the Graduate College. In the first semester, all new graduate students in zoology must take the required undergraduate courses in zoology. A passing grade in Zoology Laboratory I is a prerequisite for candidacy for an advanced degree. Applicants with a degree other than Zoology or Biology must present evidence of the completion of certain requirements. Applicants for graduate study in zoology should have a cumulative undergraduate grade-point average of 2.5 or better. Applicants with an average of 2.0 or better may be admitted on the basis of recent and current work of superior quality or of satisfactory scores on the Graduate Record Examination. Three to four of the advanced field sections will be taken.

The Bachelor's Degree in Zoology

For the B.S. degree, with thesis, 30 semester hours of graduate credit and a thesis based on original research are required. Ordinarily 8 to 10 semester hours are assigned to thesis research and writing. Besides the thesis work, 12 to 15 semester hours of graduate credit in zoology are required, of which no more than 8 semester hours may be earned in Zoology 379A and 379B, 379D, 379E, 379F, and 379G. Remaining hours may be taken in zoology, cognate science, or other courses. After the thesis is accepted, the candidate must pass a written examination covering his graduate program in zoology, with emphasis on the area related to his research. This is followed by an oral examination concerned mainly with the work reported in the thesis.

For the M.S. degree without thesis, 30 semester hours of graduate credit and a library research report are required. The report should be a synthesis of credit given for the research report. A minimum of 18 semester hours must be taken in zoology. The remaining semester hours must be earned in graduate courses in zoology, cognate science, mathematics, or philosophy. Of the total semester hours submitted for the degree, at least 9 must be included from 379D, 379G, 379E, 379F, and 379G. On completion of the hours indicated and acceptance of the research report by the department's faculty sponsor, the student must pass a written examination covering his graduate program in zoology, including the area of his report.

The M.S. Degree in Biology

Every semester hours of graduate credit are required of all students. Ordinarily 8 to 10 semester hours are assigned to thesis research and writing, 8 to 12 semester hours in graduate courses in addition to 8 semester hours to graduate courses in botany, and the remaining semester hours are free electives. Following acceptance of the thesis, the candidate must pass a written examination covering his graduate program in botany. This is followed by an oral examination covering his work reported in the thesis. For other options for the M.S. degree in biology, see Botany.

The Ph.D. Degree in Zoology

For each Ph.D. degree candidate a departmental committee is formed, at which the candidate's faculty sponsor is chairman. The committee is charged with establishing those formal courses or proficiency requirements which the candidate must meet. The background of the candidate, and his current and prospective research interests, are taken into consideration. The committee also establishes that portion of the formal coursework or particular proficiencies (such as ability to read certain modern foreign languages) which will be demanded of the student before he is admitted to the comprehensive examination. In this examination the candidate is expected to demonstrate knowledge of the fundamental areas of zoology, and mastery of one or two specialized fields. Usually the student has demonstrated some ability in research through the M.S. degree, or through equivalent research work. In his research, which culminates in the doctoral dissertation, he will pursue the studies which have been compelling. The competence of the thesis by the dissertation will be demonstrated. The student's record, and the quality of his research, will be the measure of his success in this program. It will be the measure of his worth in the all-graduate field of zoology which it represents.

Research Facilities

Active research programs are current in each of the areas in which graduate courses are offered. Special equipment and facilities are available in general biology, Botany, Microbiology, Entomology, Zoology, and Physiology. Facilities include ultraviolet spectrophotometers and equipment for the analysis of blood, hormones, and other biologically active substances. Electrodeless discharge lamps and spectrophotometers are available for the analysis of plant and animal tissues. A high-speed centrifuge is available for the isolation of nucleic acids. The department maintains facilities for the study of microorganisms, viruses, and other microorganisms. The department maintains facilities for the study of vertebrate and invertebrate animal colonies. In 1965 the department received a new wing which will house all of the available research space. An additional, larger unit will be occupied in 1967. An extensive departmental library is situated in the Zoology Building.

Graduate Student Awards and Aids

Qualified graduate students are invited to apply for awards and aids. These include NIH-sponsored training grants, NIH-sponsored special traineeships in Developmental Biology, and (for award and subsequent years, NIH-197
sponsored traineeships in Neurobiology. Exceptional first-year graduate students are urged to apply to the National Science Foundation for Predoctoral Fellowships. Students with an established and appropriate research interest may apply to the National Institutes of Health for Predoctoral Fellowships as well. Other fellowship and traineeship programs may be instituted in the coming year. Teaching assistantships, research assistantships, and teaching-research fellowships are available each year for up to 40 students. Scholarship funds, usually for part-time school, are generally assigned for the academic year to the various classes of students. Most such assistants and fellows are eligible for full tuition support during summer sessions. The department also provides assistance to its graduate students who arrange to spend a summer session at a marine laboratory or other appropriate summer station. Fellowships are funded for the following academic year and are flexible in regard to the summer period. Students are encouraged to receive applications beginning in the second semester. Requests for appointment should include clear statements of research interest if such interest has been defined.

Iowa Lakeside Laboratory

Courses in field biology and aquatic biology extend the on-campus work in ecology. (See Division of Extension and University Services for further information.)

STAFF


Assistant Professors: Hugh Dingle, Joseph Frankel, Barbara A. Stag.


Librarian in Charge: Jack W. Dickey.

COURSE DESCRIPTIONS

Primarily for Undergraduates

37:3 Principles of Animal Biology 5 s.h.
Major concepts of biology, primarily in animal life. Forms of living organization, metabolism, self-regulation, reproduction, development, genetics and evolution. Prerequisite: Prerequisite: 27:3 or equivalent.

37:4 Lectures in Animal Biology 2 s.h.
Lectures covering the principles of animal biology. Limited to transfer students. Prerequisite: 27:3 or 5-6 semester hours of introductory zoology or biology.

For Undergraduates and Graduates

37:101 Principles of Human Genetics 3 s.h.
Heredity in human families and populations, the genetic basis of normal and abnormal traits, chromosome behavior, and determination. Lectures and discussions. Prerequisite: an introductory course in biology.

37:102 Principles of Modern Embryology 4 s.h.
Current understanding of developmental biology as derived from both classical and modern experimental embryology. Structure and function and concepts of molecular biology. Laboratory emphasis on vertebrate developmental anatomy. Prerequisites: 27:3, Chemistry 4:3 or 4:5; 37:110 is recommended.

37:103 Comparative Anatomy of Vertebrates 4 s.h.
Structures, function, and evolution of vertebrates. Lectures, demonstrations, and laboratory. Prerequisites: 37:3 or equivalent.

37:105 Cell Physiology 4 s.h.
General chemistry of living systems; energetics and intermediary metabolism; cell structure related to function; nature and properties of membranes. Prerequisite: 37:3, Chemistry 4:1 or 4:2; Physics 20:3, or consent of instructor.

37:107 Animal Kingdom I 4 s.h.
Anatomy, physiology, evolution, and behavior of the Protozoa, Radiata, Bilophophora and echinodermata. Prerequisite: 37:3 or equivalent.

37:108 Animal Kingdom II 4 s.h.
Anatomy, physiology, evolution, ecology, and behavior of the deuterostome animals. Emphasis will be on the vertebrates. Prerequisite: 37:107 or equivalent.

37:109 Fundamental Genetics 3 or 4 s.h.
Nature and function of the genetic mechanism. Three lectures and one laboratory. Laboratory illustrates applications of genetic analysis; optional for nonmajors. Same as Botany 313B. Prerequisite: 37:3 or equivalent; Chemistry 4:12, 12B recommended.

37:111 Microscope Technique 4 s.h.
Prerequisite: 27:3 or equivalent.

37:112 Microscopic Anatomy 4 s.h.
Lectures and laboratory on microscopic structures of tissues and organs of various animals. Prerequisite: 37:3 or equivalent.

37:118 Parasitology 4 s.h.
Life histories, taxonomy, morphology, and general incidence of parasites of man and animals. Prerequisite: 37:3 or equivalent.

37:120 Protocozology 4 s.h.
Study: protocozology, organization, physiology, genetics, metabolism, development, and evolution. Emphasis on general principles and concepts. Lecture and laboratory. Prerequisite: 27:3 or equivalent.

37:124 Comparative Physiology 4 s.h.
Comparative study of physiological mechanisms among invertebrates and vertebrates. Prerequisites: 37:107 and Chemistry 4:4 or Physics 20:3, or graduate standing and consent of instructor.

37:131 Population Biology 4 s.h.
Ecology at population and community levels, population structure, and the nature of evolutionary mechanisms. Lectures, discussions. Prerequisites: 37:105 or equivalent.

37:132 Ecology 2 or 4 s.h.
The organization and dynamics of ecosystems. Description of community structure and analysis of interactions between component populations will be studied within a framework of cybernetics and biogeochemistry. Also experimental and quantitative field and laboratory study of terrestrial ecosystems. Prerequisites: Chemistry 4:12, 12B, or equivalent; and Physics 20:3, or equivalent; recommended, 37:3, Botany 5:1, and a course in statistics.

37:141 Comparative Neurophysiology 5 s.h.
The comparative study of nervous system processes and function mechanisms, exemplified by both vertebrates and invertebrate systems. Lectures, seminar reports, laboratory. Prerequisite: 37:124 or consent of instructor.

37:143 Comparative Animal Behavior 3 s.h.
Lectures, discussions, readings on aspects of animal behavior, including ethology, migration, orientation, competition.
37:144 Comparative Animal Behavior Laboratory cr.arr.
Prequisites or corequisites: 37:143.
37:149 Animal Behavior
3 a.h.
Principles and concepts in the study of animal behavior. Evolutionary implications of behavioral differences will be emphasized. Prerequisites: 37:3 and consent of instructor.
37:150 Introductory Endocrinology 2 a.h.
Survey of physiology and morphology of the glands of internal secretion, with emphasis on vertebrate systems. Prerequisite: 27:5; organic chemistry recommended.
37:152 Endocrinology Laboratory 2 a.h.
Prerequisites or corequisites: 37:150 and consent of instructor.
37:154 Invertebrate Endocrinology 2 a.h.
Prerequisite, consent of instructor.
37:160 Advanced Genetics 4 a.h.
Lectures and laboratory. Extended discussions of major genetic phenomena and their molecular bases. Includes chromosomal mechanics and crossing over; mutation, and its role in evolution and gene action. Prerequisites: 37:110 or equivalent and consent of instructor.
37:162 Population Genetics 3 a.h.
Lectures, discussions, readings, and reports on the distribution of alleles in populations, the genetic basis of natural variation, and genetic aspects of evolution. Prerequisite, 37:118 or equivalent.
37:163 Behavioral Genetics 3 a.h.
Behavioral and genetic techniques employed in study of inheritance of behavior characteristics. Human and animal studies, with emphasis on quantitative studies of animal behavior. Prerequisite, consent of instructor.
37:165 Quantitative Genetics 3 a.h.
Principles of quantitative genetics are presented in detail. Emphasis is placed on parameter estimation and artificial selection. Prerequisites: 27:151 or 37:110 or equivalent and consent of instructor.
37:169 Quantitative Methods in Biology 3 a.h.
Application of statistical methods to biological data. Data description and presentation, simple hypothesis testing, estimation, and parameter-modeling techniques in biological applications where possible. Prerequisite, consent of instructor.
37:171 Molecular Genetics 3 or 4 a.h.
Biochemistry of RNA, DNA, and protein in bacteria and higher organisms, with an emphasis on the dependence of gene expression on the occurrence of certain phenomena on the genetic code. The regulation of these phenomena, especially of RNA transcription, and repressor protein and bacteriophage infection. Prerequisite: 27:150 or 37:120, or biochemistry, or permission of instructor.
37:172 Topics in Molecular Genetics 2 a.h.
A bacteriophage, or group of phages, will be studied in detail in relation to general mechanisms of control of RNA, DNA, and protein synthesis. Lectures, discussions, oral reports. Prerequisites, 37:171 or consent of instructor.
37:173 Proseminar: Insect Reproduction and Development 2 to 5 a.h.
Literature reports and discussion on gametogenesis, accessory gland secretion, spermatogenesis, and hormonal control mechanisms. Research problem optional. Prerequisites, organic chemistry and biology.
37:180 Sensory Neurophysiology 1 a.h.
Prerequisite, consent of instructor.
37:181 Integrative Neurophysiology 2 a.h.
Prerequisite, consent of instructor.
37:194 Macromolecular and Cellular Aspects of Development 4 a.h.
Current problems in developmental biology, emphasizing mechanisms of information transfer and their controls. Activities of micro-organisms, cells, and self-interacting systems will be explored as the bases for development and differentiation in multicellular organisms. Prerequisites, 37:160; biochemistry recommended.
37:196 Laboratory Research 1 to 3 a.h.
For honors candidates.
37:197 Readings in Zoology 1 to 3 a.h.
For honors candidates.
37:198 Honors Seminar 1 a.h.
Discussions and readings centered on either a single topic or on the regular lecture series of 37:215. May be repeated.
37:199 Introduction to Research cr.arr.
For senior majors in zoology. Prerequisite, consent of instructor.

Primarily for Graduates
37:201 Research: Orientation 1 1/2 a.h.
Research—experience in selected faculty laboratories as an introduction to specific area of research. Prerequisites, graduate standing and consent of instructor.
37:204 Molecular and Experimental Embryology Laboratory 1 or 2 a.h.
Prerequisites or corequisites, 37:194 and consent of both instructors.
37:205 Molecular Biology Seminar 1 a.h.
Readings, reports, and discussions on topics of current interest, with implications for the fields of genetics and development. May be repeated. Prerequisite, consent of instructor.
37:211 Cytology 2 a.h.
Lectures and reports on finer structure of cells. Prerequisite, 27:112 or equivalent.
37:213 Cytology 2 a.h.
Continuation of 37:211.
37:214 Developmental Genetics Seminar 1 a.h.
Informal discussion of selected topics from the literature. Prerequisite, 37:213 or consent of instructor.
37:217 Seminar: Zoology 0 or 1 a.h.
Weekly lecture on current research. Invited speakers.
37:225 Seminar: Endocrinology 2 a.h.
Selected topics of current research interest in basic physiology of the glands of internal secretion; readings, reports, and discussions. Prerequisites, 37:120 or consent of instructor.
37:226 Hormones and Behavior 2 a.h.
Discussions, readings, and reports dealing with topics concerning central and peripheral regulation of behavior. Prerequisite, consent of instructor.
Reports on and discussions of the important and recent literature of comparative and general physiology. A four-semester sequence within the areas: structure and properties of the nervous system, physical chemistry of the cell, cellular physiology. Function, regulation, enzyme action, growth, and development; muscular transport, calorimetry, temperature, radiant energy; protoplasmic movement.
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>37:329</td>
<td>Neuroembryology</td>
<td>2 s.h.</td>
<td>Lectures, discussions, readings, and reports on development of fish embryos and early larval</td>
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<td>development. Prerequisites: 37:330 and permission of instructor.</td>
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<tr>
<td>37:330</td>
<td>Helminthology</td>
<td>cr.arr.</td>
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</tr>
<tr>
<td>37:331</td>
<td>Helminthology</td>
<td>cr.arr.</td>
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<tr>
<td>37:332</td>
<td>Seminar: Systems Ecology</td>
<td>2 s.h.</td>
<td>Lectures and discussions on methods of systems analysis and their application to the study of</td>
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<td>the dynamics of ecosystems. Emphasis on methods of component analysis to describe and use of</td>
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<td>energetics to analyze relationships involved in predator-prey systems. Prerequisites: 37:332</td>
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<td>or equivalent and consent of instructor.</td>
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<tr>
<td>37:337</td>
<td>Problems of Developmental Cytology</td>
<td>3 s.h.</td>
<td>Development of cell organelles; differentiation and its relation to cell division; determination</td>
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<td>of cell phenotype. Examples primarily from protozoan cells and vertebrate cells in culture.</td>
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<td>Lectures, seminars, discussion. Prerequisites: 37:331 and consent of instructor.</td>
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<tr>
<td>37:341</td>
<td>Seminar: Neurophysiology</td>
<td>2 s.h.</td>
<td>Reviews of recent literature of selected topics. May be repeated.</td>
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<tr>
<td>37:360</td>
<td>Developmental Genetics</td>
<td>2 s.h.</td>
<td>Lectures, readings, discussions on gene action in development. Prerequisites: 37:310 or</td>
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<td>equivalent.</td>
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<tr>
<td>37:363</td>
<td>Seminar: Behavioral Genetics</td>
<td>1 s.h.</td>
<td>Prerequisites: 37:360.</td>
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<tr>
<td>37:387</td>
<td>Electron Microscopic Techniques I</td>
<td>5 s.h.</td>
<td>Lectures and laboratory on methods of tissue fixation, embedding, ultrathin sectioning, and</td>
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<td>staining. Theory, use, and maintenance of the electron microscope; associated photographic</td>
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<td>techniques. Prerequisites: 37:112 or equivalent and consent of instructor. 37:112 is required.</td>
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<tr>
<td>37:388</td>
<td>Electron Microscopic Techniques II</td>
<td>4 s.h.</td>
<td>Continuation of 37:387, but emphasis experimental aspects of electron microscopy, including</td>
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<td>negative staining, immunological and electron micrographic applications. Prerequisites: 37:367,</td>
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<td>37:204, biochemistry, and consent of instructor.</td>
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<tr>
<td>37:399</td>
<td>Problems in College Biology</td>
<td>1 s.h.</td>
<td>Instruction: Discussion of theoretical and practical problems; restricted to graduate students.</td>
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<tr>
<td>37:361</td>
<td>Research: Zoology</td>
<td>cr.arr.</td>
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<tr>
<td>37:363</td>
<td>Independent Study in Zoology</td>
<td>cr.arr.</td>
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</table>
Instruction in business administration and economics began at The University of Iowa prior to 1900. The School of Commerce, which was organized in 1914, was granted college status in 1921. In 1959 the name was changed to the College of Business Administration.

The College has held membership in the American Association of Collegiate Schools of Business since 1924 and its undergraduate and graduate programs are fully accredited by the association.

The programs of the College are administered through four departments: Accounting, Business Administration, Economics, and Business Education. Continuing education programs are administered through the Center for Labor and Management.

In addition to the degree programs for business and economics majors, the College offers many courses which are beneficial to students in other disciplines. The two introductory economics courses satisfy the social science core requirement in the College of Liberal Arts. Students in the Bachelor of Arts program may select economics as their major area and either economics or business administration as their minor area. Students in liberal arts and professional programs, at both the undergraduate and graduate levels, are encouraged to take appropriate economics and business administration courses as complements to their programs.

DEGREE PROGRAMS

The degree of Bachelor of Business Administration (B.B.A.) is granted by the College of Business Administration through its four departments.

The College is firmly committed to the belief that business students can receive the greatest educational benefit through experience which provides a broad education about business. Curricula offered by the College permit students to select various study plans that focus upon the development of attitudes, habits of mind, types of knowledge, and understanding that will be instrumental to graduates confronted with particular problems of business in a world-wide society. Specific studies include the examination of various institutions, structures, functions, organizations, operations, and environments which influence business and economic activities. Limited specialization is permitted at the undergraduate level, and each student is encouraged to concentrate in these areas of greatest interest and appeal. At the graduate level, there are available programs of study leading to the interdepartmental Master of Business Administration degree, to the Master of Arts degree in accounting, business administration, and economics, and to the Doctor of Philosophy degrees in business administration and in economics. (See below for details.)

FACULTY

The College of Business Administration is located in Phillips Hall, an air-conditioned building designed especially for the programs of the college and completed in 1965. In addition to classrooms of varying capacity, the building contains several seminar rooms, conference rooms, an auditorium, student lounge, and the business and economics library. Extensive research materials for business and economics are maintained in the Main Library, and the facilities of the University Computer Center are available to the students in the College.

Center for Labor and Management. The Center for Labor and Management undertakes research and conducts programs, conferences, and institutes for management, labor, and government personnel. The programs vary in duration and are designed to develop the human, technical, and conceptual skills of the participants.

The Center conducts research in the fields of personnel administration, industrial relations, executive development, labor education, and management behavior and organization. Research findings are published in business and professional journals in the Center's Monograph, Conference, and Reprint Series.

UNDERGRADUATE ADMISSION

Students who anticipate transferring to the B.B.A. degree program are enrolled as pre-business majors in the College of Liberal Arts during their freshman year. Students who have attempted 60 or more semester hours of courses normally will not be permitted to register as pre-business students and may do so only with prior approval of the Dean of the College of Business Administration.

Applications for admission to the College of Business Administration should be submitted to
For admission to the College of Business Ad-
ministration an applicant must have completed the 
following requirements:

1. The Historic Program of The University of 
Iowa. Students who have satisfied all ex-
cept the speech portion of the program may 
be granted conditional admission.

2. One of the three following common require-
ments: historical-cultural or literature or 
natural science.

3. Attained satisfactory scores on the Uni-
versity's required admission examinations.

4. Maintained a grade-point average of not 
less than 2.25 (on a 4-point system) on all 
courses undertaken, on all courses under-
taken at The University of Iowa, and on all 
courses undertaken in business and eco-
nomies.

A maximum of 66 semester hours (or the 
equivalent) will be accepted by transfer credit 
for the first two years of enrollment in a junior 
college.

Transfer credit for business and economics 
courses taken during the freshman and sopho-
more years may be counted toward the B.B.A. 
degree only if such courses are normally offered 
as lower-division courses at The University of 
Iowa.

Applications from students who have minor 
deficiencies in meeting grade-point requirements 
specified above will be reviewed by the Admis-
sions Committee of the College, and upon favor-
able recommendations of the committee such 
students may be granted conditional or proba-
tory admission.

Completion of the minimum requirements listed 
above, however, does not assure admission to the 
College of Business Administration. From those 
applicants who meet the minimum requirements, 
the Admissions Committee will select the appli-
cants who, in their judgment, appear to be best 
qualified.

SCHOLARSHIP REQUIREMENTS

A student is placed on academic probation when 
any of the following grade-point averages falls 
below 2.0:

- All courses undertaken;
- All courses undertaken at The University of 
Iowa;
- All courses undertaken in the College of Busi-
ness Administration.

A student is removed from probation when all 
of the above grade-point averages equal or sur-
pass 2.0.

A student is normally granted only one semes-
ter to return to good academic standing.

A student on academic probation who cancels 
his registration after the last day for dropping 
courses is automatically dismissed.

A student may be dismissed at any time for 
unsatisfactory scholarship. While some proba-
tionary period usually precedes a dismissal, even 
a student in good academic standing who com-
pletes a semester or term with an extremely un-
satisfactory grade-point average for that session 
may be dismissed immediately.

A student dropped from the College for poor 
 scholarship may petition the Dean of the College 
for permission to reenroll, but normally after 
the expiration of one calendar year following the 
end of the term in which the dismissal took place.

Pass-Fail Grading

Students in the College of Business Adminis-
tration may take courses on a pass-fail basis, 
subject to the following conditions: consent of 
the advisor and instructor; maximum of 33 semester 
hours; registration on a pass-fail basis during the 
first three weeks of a semester or first two weeks 
of a summer session. Courses which cannot be 
taken pass-fail: common course requirements 
with a 6A, 6B, or 6C prefix, and specific business 
courses in a major area or cognate courses design-
ated by the faculty as ineligible.

Maximum Schedule

Course schedules in excess of 18 semester hours 
during a semester or 6 hours in a summer session 
require the prior approval of the Assistant Dean.

Graduation Honors

High scholastic achievement is recognized 
through graduation with distinction. Students 
graduate with distinction based on the following 
standards:

With Highest Distinction  Highest 2 per cent
With High Distinction  Next highest 3 per cent
With Distinction  Next highest 5 per cent

GRADUATION REQUIREMENTS

The candidate for the B.B.A. degree must earn 
a minimum of 120 semester hours of credit, 
including a minimum of 48 semester hours of credit 
in courses not listed as business administration 
and a minimum of 48 semester hours of credit in 
courses listed as business administration. At 
least 24 semester hours of the credit in business 
administration subjects must be earned at The 
University of Iowa. At least 8 semester hours 
in the area of the student's major must be 
earned at The University of Iowa with a minimum 
grade point of 2.0. The last 30 semester hours
or else 45 of the last 60 semester hours offered for the degree must be earned in residence after admission to the College of Business Administration.

Courses Required
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 3 s.h.
- Sociology or Psychology (3 courses in either area) 6 s.h.
- Mathematics-Statistics-Computer 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.

Additionally, a student must satisfy either of the following two requirements:
- Two areas of concentration consisting of a minimum of three courses (9 semester hours) each, two of which must be offered by the College of Business Administration. The two areas must be approved by the student's advisor.
- A major in one of the departments of the College, listed in subsequent departmental sections.

The mathematics-statistics-computer requirement, if not satisfied by the time of admission to the College, must be undertaken in the first enrollment and continued until successfully completed.

The accounting and economics requirements, if not satisfied at the time of admission to the college, must be undertaken in the first enrollment and continued until successfully completed.

Courses in finance, legal environment, management, and marketing normally should be undertaken prior to the end of the junior year.

GRADUATE ADMISSIONS

In addition to a baccalaureate degree from an accredited college or university and a satisfactory grade-point average, an applicant to the advanced degree programs in business administration must attain satisfactory scores on the Graduate Record Exam, a Graduate Record Exam, and an applicant to the economics programs must attain a satisfactory score on the Graduate Record Examination.

An applicant to any advanced degree programs must be admitted to the Graduate College. (See the Graduate College section of the Catalog.) Details concerning the examinations may be obtained directly from Educational Testing Service, Box 886, Princeton, New Jersey 08540 or from the University Evaluation and Examination Services, 300 Jefferson Building, Iowa City, Iowa 52240. Conditional admission is possible if, for good reason, the graduate examinations cannot be taken prior to time of application.

Interdepartmental Programs
Master of Business Administration. The Master of Business Administration (M.B.A.) program at The University is a professional, non-thesis degree program designed to serve students from all disciplines.

The program of study for the M.B.A. is determined to a large extent by the academic preparation of the individual student. Students who have graduated from a baccalaureate school of the American Association of Collegiate Schools of Business will not be required to take the foundation program with the exception of the courses in the Quantitative Methods in Economics and Business, and Statistics for Business Decisions.

For all other students, the graduate committee will evaluate their academic preparation and structure a program of study to include no more than the 54 semester hours listed below.

The foundation program consists of the following courses:
- Financial Accounting 3 s.h.
- Principles and Employment Theory 3 s.h.
- Human Resources Management 3 s.h.
- Quantitative Methods in Economics and Business 3 s.h.

This course is waived for students who have had differential and integral calculus during the five-year period prior to entrance into the M.B.A. Program.

Statistics for Business Decisions 3 s.h.
- Financial Management 3 s.h.
- Marketing Management 3 s.h.
- Organization and Management Theory 3 s.h.
- Computer Programming 3 s.h.

The M.B.A. core includes the following courses:
- National Income Analysis 3 s.h.
- Managerial Accounting 3 s.h.
- Organization and Individual Behavior 3 s.h.
- Operations Research in Business 3 s.h.
- Managerial Economics 3 s.h.
- Business and Society 3 s.h.
- M.B.A. Seminar or Business Policy 3 s.h.
- Area of Concentration 6 s.h.
- Elective 3 s.h.
- Journalism Exercise 3 s.h.

Doctor of Philosophy in Business Administration. The Ph.D. student must demonstrate proficiency in four basic areas—economic theory, statistics and quantitative methods, behavioral sciences, and social environment—and in two elective and two specialized fields, and must submit an acceptable dissertation. In addition, the student must fulfill the residency requirements of the Graduate College.
E elective fields may be such broad areas as accounting, financing information theory, organizational behavior, marketing, sociology, and others. The specialized fields may be selected from among the basic and elected areas previously taken.

Departmental Programs
Information on departmental graduate programs is given below.

ADMINISTRATIVE STAFF
Dean: N. L. Barron
Dean Emeritus: C. A. Phillips
Associate Dean: Charles E. Lammens
Assistant Dean: Breun R. Cohon
Director, Graduate Studies in Business: Anthony V. Sintnicz
Director, Graduate Studies in Economics: Larry G. Segard
Librarian: Glen Plaisance
Assistant Librarian: Peter J. Hartford

Center for Labor and Management
STAFF
Director: Associate Professor Jode P. Welb
Program Directors: Professor Don B. Sheffer, Assistant Professor Edgar R. Czarnecki, Diane L. Thompson, Thomas P. Gilroy

ACCOUNTING
Chairman of Department, John H. Smith
Office, 515 Phillips Hall
In addition to courses required of all candidates for the degree of Bachelor of Business Administration, the undergraduate major in accounting is required to take a basic core of accounting courses totaling 15 semester hours as follows:

6A:15 Income Tax Accounting
6A:120 Accounting for Management Analysis and Control
6A:121 Financial Accounting: Assets and Liabilities
6A:122 Financial Accounting: Special Topics
6A:144 Auditing Concepts and Procedures
In addition to this basic core, the student must elect five credits from the following:
6A:231 Cost Analysis and Budgeting
6A:341 Advanced Tax Accounting
6A:345 Special Problems in Accounting
A maximum of 12 semester hours of credit in accounting courses may be counted toward the Bachelor of Business Administration degree.

Graduate Degree Requirements
The Master of Arts degree is awarded upon successful completion of a minimum of 30 semester hours of graduate study. A total of 20 semester hours must be earned in accounting courses including:
6A:230 Accounting Theory
6A:231 Research Methods in Accounting
The balance of the 15 semester hour requirement may be selected from:
6A:202 Accounting Information Systems
6A:203 Audit Theory: Philosophy and Current Issues
6A:205 Governmental and Regulatory Accounting
6A:293 Corporate Issues in Accounting
6A:341 Advanced Tax Accounting

The remaining 15 semester hours will be in courses other than accounting, and they 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 he may receive 3 semester hours of accounting credit, or he may elect a nonthesis option. In either case, the candidate must complete credit in the fields included in his program of study. This decision will be made by the student's academic advisor near the end of the student's program.

STAFF
Assistant Professors: John W. Kenneally, Blaise A. Britte, John H. Smith, Valerie J. Vanasse, William B. Kinney, Jr.

COURSE DESCRIPTIONS

Primary for Undergraduates
6A:1 Introduction to Accounting I 3 a.h.
A survey and analysis of contemporary accounting information systems. Primary emphasis in this course is upon external reporting by the firm to its investors. Corporate earnings reports and their relation to investor decisions form the basis for the discussion. Prerequisite, satisfaction of the University requirements for the Historic Program.

6A:2 Introduction to Accounting II 3 a.h.
A survey and analysis of contemporary accounting information systems. Primary emphasis in this course is upon the preparation of information for decision-making by organization, internal reports, and their relation to decision models employed by firms form the basis for the discussion. Prerequisite, 6A:1.

6A:3 Introduction to Accounting 6 a.h.
A accelerated course for superior students integrating the major areas of 6A:1 and 6A:2, and allowing greater flexibility of scheduling for special students. Prerequisite, satisfaction of the University requirements for the Historic Program and consent of the department.

6A:15 Income Tax Accounting 3 a.h.
Introduction to federal tax administration, structure, and procedure: implications for individuals and business decisions-making. Prerequisite, 6A:3 or 6A:14.

For Undergraduates and Graduates
6A:114 Financial Accounting 3 a.h.
A survey of current practice and thought relating to external reporting by the firm to its investors. Discussion focuses upon the rationale and criticism of current external reporting methods and their alternatives. Primarily for M.B.A. students without undergraduate accounting; not open to undergraduate business majors. Prerequisite, junior standing or admission to the Graduate College.

6A:120 Accounting for Management Analysis and Control 3 a.h.
A study of the concept and methods used in internal financial information systems. The behavioral dimensions of organizational decision systems and their feedback for accounting information are the major topics of discussion. Prerequisite, 6A:2 or equivalent.

A study of the concepts and methods of corporate external financial reporting. The theoretical and empirical analysis of external reporting practices is analyzed in the context of investor information needs and the behavioral implications. Interpretation of major external reports—earnings statements, balance sheets, and fund statements—as discussed. Prerequisite, 6A:2 or equivalent.
6A:132 Financial Accounting: Special

Topics 3 s.h.

6A:136 Cost Analysis and Budgeting 3 s.h.
Advances in managerial decision making and their implications for accounting information systems. Deals heavily with cost budgeting, operational behavior, and cost analysis of production alternatives. Topics include: statistical cost analysis, probabilistic standard costings, behavioral impact of budgets and control procedures, parameteric control of decision models. Prerequisite: 6A:132; Business Administration 6B:138 recommended.

6A:141 Advanced Tax Accounting 3 s.h.
Partnership, corporation, estate, trust, and internal tax problems. Tax planning and research. Prerequisite: 6A:15.

6A:143 Advanced and Contemporary Accounting 3 s.h.
Areas of current or continuing interest to professional accountants relative to preparation of external reports. Reporting for international operations, fiduciary accounts, and accounting for nonprofit organizations. Selects advanced topics in consolidations, and temporary issues. Prerequisite: 6A:125.

6A:144 Auditing 3 s.h.
Review of internal controls in accounting systems and consideration of the audit objectives, standards, and procedures necessary to test the integrity of an accounting system and financial reports. Prerequisite: 6A:132 or equivalent.

6A:148 Professional Accounting Problems 3 s.h.

6A:214 Accounting for Management 3 s.h.
Internal financial information systems. Accounting information is analyzed and used in the context of management decision models and systems. Relevant concepts are developed. Emphasis is employed as a basis for the assembly and display of accounting data. Prerequisite: 6A:211 or equivalent.

Primarily for Graduates

6A:215 Financial Information for Internal Users 3 s.h.
Concepts and methods of corporate external reporting. The theoretical basis of current reporting practices is analyzed in the context of internal decision models and persons making decisions for which consolidated financial information is necessary. Prerequisites: 6A:132 or equivalent.

6A:220 Accounting Theory 3 s.h.
An overview of historical development of accounting theory and practice. Prerequisite: 6A:216 or equivalent.

6A:221 Research Methods in Accounting 3 s.h.
Methods of research and their relationship to accounting problems. Consideration is given to problem formulation, research design, and research methodology. Each student is expected to complete a research project. Prerequisite: 6A:215 or equivalent.

6A:222 Accounting Information Systems 3 s.h.
Management information systems—managers' control systems. Emphasis is on communication and the information content of accounting and related systems that impact on the decision-making process. Prerequisites: 6A:224 or equivalent; Computer Science 6B:130 and Business Administration 6B:138 recommended.

6A:223 Audit Theory and Current Issues 3 s.h.
Historical and modern developments in audit theory and practice. Consideration of the use of auditing as a control function through internal auditing, computer auditing, and external audits of published financial statements. A review of current literature in the field and relationship to current business developments. Prerequisite: 6A:215 or equivalent.

6A:225 Governmental and Regulatory Accounting 3 s.h.
Concepts and techniques of accounting related to the implementation of public policy through activities of government and government regulation of selected industries. Prerequisites: 6A:214 and 6A:215 or equivalent.

6A:230 Contemporary Issues in Accounting 3 s.h.
Major concepts and problems in particular areas of accounting as reflected in current literature. Emphasis is on contemporary issues and their implications for accounting. Prerequisite: 6A:225 or equivalent.

6A:241 Research in Tax Accounting 3 s.h.
Current tax practices and preparation for continuing research in taxation. Reporting on current and problem areas. Prerequisite: 6A:144 or equivalent.

6A:270 Research: Accounting cr.arr.
Prerequisite: graduate standing.

6A:280 Seminar in Accounting Thought 3 s.h.
The evolution of accounting thought through a survey of significant works and selected materials. Materials are evaluated in terms of their relevance to current and future development of the field. Prerequisite: for doctoral program students. Prerequisites: 6A:223 or equivalent.

6A:286 Seminar in Accounting Research cr.arr.

6A:281 Seminar in Selected Accounting Topics cr.arr.
Seminars in which the professor and students have an opportunity to pursue a particular research interest in accounting. The topic may vary from semester to semester as circumstances dictate. Prerequisite: 6A:280 or equivalent.

6A:290 Thesis: Accounting cr.arr.
Prerequisite: consent of adviser.

BUSINESS ADMINISTRATION
Chairman of Department, Robert R. Miller
Office, 128 Phillips Hall
The student in the Department of Business Administration can select between two different options in fulfilling the degree requirements:

1) In addition to courses specified in the College general statement above, students must complete three-courses sequence (usually 9 credit hours) in areas of concentration approved by the College Administration. Two of the courses in each area must be offered by the College of Business Administration.

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In addition to courses outlined is the general statement, students must elect a major in one of the following areas by satisfying the specified requirements.

Requirements for the Major in Financial Economics:
- Economics 211 Investments 3 h.
- Economics 314 Commercial Banking 3 h.
- Economics 316 Real Estate and Urban Land Economics 3 h.
- Economics 317 Short-Term Financing 3 h.
- Economics 318 Corporate Finance 3 h.
- Economics 319 International Finance 3 h.
- Economics 320 Microeconomic Theory 3 h.
- Economics 321 Macroeconomic Theory 3 h.
- Economics 322 Money and Banking 3 h.

Requirements for the Subj ect in Insurance:
- Economics 211 Investments 3 h.
- Economics 212 Property and Casualty Insurance 3 h.
- Economics 213 Life and Health Insurance 3 h.
- Economics 214 Insurance Mathematics 3 h.
- Economics 215 Risk Management 3 h.
- Economics 216 Independent Study 3 h.

Requirements for the Major in Industrial Relations:
- Economics 214 Human Resource Management 3 h.
- Economics 315 Labor-Management Relations and Public Policy 3 h.
- Economics 316 Labor Economics and Manpower Resources 3 h.
- Economics 317 Labor Law 3 h.

Requirements for the Major in Marketing:
- Economics 214 Human Resource Management 3 h.
- Economics 315 Labor-Management Relations and Public Policy 3 h.
- Economics 316 Labor Economics and Manpower Resources 3 h.
- Economics 317 Labor Law 3 h.

Requirements for the Major in Business Administration:
- Economics 214 Human Resource Management 3 h.
- Economics 315 Labor-Management Relations and Public Policy 3 h.
- Economics 316 Labor Economics and Manpower Resources 3 h.
- Economics 317 Labor Law 3 h.

The candidate for the M.A. degree must elect a major area and organize a schedule of studies under the guidance of an adviser in his major field. This program provides for concentrated study in a major field of interest. The M.A. degree is awarded after the satisfactory completion of 30 semester hours or more, which may include 3 to 6 semester hours of thesis. The minimum program for the M.A. degree will contain the following:

Major Area 9 h.
Minor Area 6 h.
Economics and/or Business Organization 6 h.
Economics Elective 6 h.
Thesis 3 h.

Total 30 h.

STAFF

Professor: Clifford M. Baumback, John S. Harlow, George C. Hare, William A. Kroes, Irving Kowarsky, Charles R. Markberry, Robert M. Skoldofsky, Kenneth L. UII.

For Undergraduates and Graduates

Directed Readings in Business Administration 3 h.

Managers Economics 6 h.

Managerial Economics 6 h.

Microeconomics 3 h.

Microeconomics 3 h.

Microeconomics 3 h.

Microeconomics 3 h.

Microeconomics 3 h.
6B:112 Security Analysis 4 s.h.
Valuation of corporate securities; security markets. Prerequisites: 6B:110.

6B:114 Commercial Banking 3 s.h.
Banking structure and functions; the money market and banking system; federal and state bank regulatory agencies; banking competition and regulation. Prerequisites: 6B:112.

6B:115 Short-Term Financing 3 s.h.
Case problem approach. Methods of analyzing and projecting the seasonal money market; short-term credit; collection and discount; factors and discounting; commercial paper; extension of credit and the loan committee. Prerequisites: 6B:112.

6B:116 Long-Term Financing 3 s.h.
Case problem approach. Variety of debt and equity instruments; investment planning and strategies; timing, pricing, and underwriting of security issues; cost of money, cost of capital, and capital budgeting criteria. Prerequisites: 6B:112.

6B:120 Mathematics of Life Insurance 3 s.h.
Elements from probability and the mathematics of finance are developed and applied to problems in the determination of insurance premiums, benefits, and reserves. Same as Statistics 262-30.

6B:121 Property and Liability Insurance 3 s.h.
Business and individual needs for insurance; fire insurance, marine insurance, and allied lines; public liability, automobile, and other property and casualty coverages; insurance contracts and underwriting. Prerequisites: 6B:120.

6B:122 Life and Health Insurance 3 s.h.
Life, health, and accident contracts from the viewpoint of the individual, business, government, and insurance companies; policy types, rate making, investments, regulations, group insurance, estate planning. Prerequisites: 6B:120.

6B:123 Social Insurance 3 s.h.
History and economics of Social Security arrangements; administration; payroll taxes; health, accident, unemployment, and other social charges. Prerequisite: 6B:120.

6B:124 Risk Management 3 s.h.
Noncumulative risks in business and selected management problems; measurement of risk, financial planning, financial leverage, risk reduction, transfer of risk, risk management. May not be taken for credit if taken for 4 s.h. Prerequisites: 6B:121 and 6B:122 or senior standing.

6B:126 Real Estate and Urban Land Economics 3 s.h.
Real estate and land utilization; nature of urban real estate and market forces affecting its growth and structure of cities; housing; procedure and techniques of property evaluation; elements of property management; real estate finance and management. Prerequisites: Economics 262.

6B:129 Readings and Independent Study in Finance or Insurance 1 to 3 s.h.
Individualized guided readings on selected topics in finance or insurance not covered in regular courses. Enrollment is limited to superior students by prior permission of a professor who will supervise the work.

6B:132 Marketing Institutions and Channels 3 s.h.
Structure of distribution and management's role in the selection of channels of distribution. Extensive use of cases. Prerequisites: 6B:31.

6B:134 Marketing Information 3 s.h.
Marketing and distribution research methods and the role of marketing information as a management tool in decision-making. Prerequisites: 6B:31 and introductory statistics or consent of instructor.

6B:135 Promotional Concepts 3 s.h.
Analytical study of marketing communication and human behavior. Special emphasis on the behavioral aspects of advertising and personal selling. Same as Journalism 15118. Prerequisites: 6B:31 or consent of instructor.

6B:137 Advertising Theory and Planning 3 s.h.
Advertising as a promotional force with emphasis on the theory, planning, and resulting strategic and tactical decisions that advertising executives make. Same as Journalism 15118. Prerequisites: Junior standing or above.

6B:138 Advertising Communications 3 s.h.
Theories of communication and human behavior as they apply to advertising copy and layout. Laboratory situations are designed to give the student creative experience. Same as Journalism 15118. Prerequisites: 6B:137 or Journalism 15118.

6B:141 Senior Seminar in Marketing 3 s.h.
Selected topics not covered in other courses. Enrollment limited to superior students. Prerequisites: consent of instructor.

6B:147 Marketing Management 3 s.h.
Development of marketing management, its objectives, methods, and relationship to production and financial management. Prerequisites: 6B:31.

6B:148 Law and Business 3 s.h.
Contract, agency, and other cooperative aspects of law applied in business. Chiefly for accounting majors.

6B:190 Dynamics of Law 3 s.h.
Forces, historic and modern, that adapt law to changing industrial, economic, and political society, and that control the thrust of law. Debate of landmark situations. Prerequisites: 6B:41 or senior standing.

6B:150 Minority Rights in an Industrial Society 3 s.h.
Individual and minority rights in industry, unions, urban situations, and politics. Black history and poverty emphasized.

6B:151 Senior Topics in Industrial Relations 3 s.h.
Topics of specialized nature in industrial relations. Different topics will be offered each term, e.g., management development and training, research methods in industrial methods, and other industrial relations, etc. Prerequisites: consent of instructor.

6B:153 Labor-Management Relations and Public Policy 3 s.h.
Integration of historical, political, social, economic, and legal threats underlying public policy governing collective bargaining and labor-management relations.

6B:154 Human Resources Management 3 s.h.
Application of social science research and concepts to the design and processes involved in managing personnel in organizations. Examination of the social, technological, economic, and political environments' impact upon personnel decisions and processes. Among the processes reviewed are staffing, assessing, developing, and rewarding personnel.

6B:155 History of American Labor 3 s.h.
American labor movement from colonial times to the present. Stress will be placed on theories of the American labor movement, its current status and problems, and its future prospects.

6B:156 Quantitative Analysis 3 s.h.
Introduction to and emphasis on applying mathematical and statistical techniques and models in economic and management. Matrix algebra, classical optimization problems, measurement theory, linear programming, transportation and network flow problems, probability, and statistics in business and dynamic programming. Prerequisites: 6B:10 or consent of instructor.
68:137 Production Planning and Control 3 s.h.
Methods of setting the limits, regulation, and levels of production in the individual firm. Prerequisite: 68:36.

68:139 Management Systems 3 s.h.

68:162 Human Behavior in Organizations 3 s.h.
Human interaction and group behavior in organized industrial settings.

68:167 Administrative Theory 3 s.h.
Study of fundamental models of administrative behavior in organizational settings. Examinations control decision problems involving unique aspects of economic, technical, and human variables under varying organizational environments.

68:170 International Business 3 s.h.
Special problems confronted by firms active in foreign trade and overseas operations including investment decision-making, financial problems, and the influence of governmental policies. Prerequisites: Economics 68:11, 68:12.

68:181 Topics in Quantitative Methods 3 s.h.
Fundamentals of differential and integral calculus. Optimization of continuous functions, with examples in economics and management, interrelated primarily for students entering the M.B.A. program. Same as Economics 68:181.

Probability theory, classical statistical estimation, Bayes' theorem, Contrast of Bayesian and classical approaches to decision under uncertainty. Prerequisite: 68:181, or consent of instructor.

68:185 Seminar in Administration 3 s.h.
Current administrative theory with emphasis on applications to practical situations. For administrators and officials of government and management. Prerequisite, consent of instructorial staff.

68:189 Experimental Course cr.arr.
Available for special courses not regularly offered.

Primarily for Graduates

68:201 Directed Readings in Business 3 s.h.
Individually guided readings in selected topics in business administration.

68:209 Managerial Economic Theory—M.B.A. 3 s.h.
Theory of demand; principles of production; cost analysis; theory of the firm; empirical studies of market structure and pricing; capital budgeting, linear programming, decision theory.

68:205 Business and Society—M.B.A. 3 s.h.
Legal, cultural, and political frameworks of the American business environment, including antitrust legislation, the promotion and marketing of market structures, product regulation, and public ownership; the social responsibilities of the organizations, ethics and business; the effects of politics and pressure, policies for growth and stabilization, conservation of resources, economic security, foreign economic policy, defense, and war. Course emphasizes discussion.

Planning and evaluating profitability, cost, and allocation of funds according to economic, financial, and other selected criteria: theory, practice, and policy. Prerequisite, consent of instructor.

68:216 Financial Markets 3 s.h.
Organization, role, and regulation of capital market: influence of governmental financing; interaction of financial and other economic developments. Prerequisite, consent of instructor.

68:217 Financial Theory 3 s.h.
Examination of theoretical aspects of investment, financing, and evaluation of the law: portfolio management. Prerequisite, consent of instructor.

68:218 Financial Management of Multidivision Corporations 3 s.h.
Growth of firms by acquisition of resources, formation of investment, and control of economic efficiency of corporate divisions. Decisional financial statements for internal and public reporting purposes. Financial, economic, and management problems relating to mergers.

68:219 Capital Budgeting 3 s.h.
Alternative approaches to the cost of money-capital and to performance measurement for investment projects. Existent consideration of profitability, risk and uncertainty in selection of investment projects. Theory and applications in the private and public sectors.

68:220 Financial Aspects of Real Estate 3 s.h.
Mortgage financing, lenders, government agencies, mortgage market, real estate investing, and investment analysis. Prerequisite, consent of instructor.

68:222 Risk, Uncertainty, and Insurance 3 s.h.
Selected theoretical aspects of risk and insurance: economic and mathematical aspects; current problems in insurance.

68:224 Risk Management in Business 3 s.h.
Noncumulative risks in business and selected management devices for dealing with them: acquisition, avoidance, transfer, and reduction of risk. Risk management decisions; control of risk and reduction of losses. Case studies in risk management.

68:225 Portfolio Theory and Planning—M.B.A. 3 s.h.
An examination of the modern behavioral concepts relating to the management of the portfolio of financial institutions. Topics include portfolio models, performance of financial institutions and their relations to public construction. Prerequisites, consent of instructor.

68:231 Marketing—M.B.A. 3 s.h.
Analysis of the marketing problems of organizations. Use of behavioral science concepts to understand buyers. Emphasis on the role of the marketing manager in developing and presenting goal-oriented strategies. Study of marketing decision areas, including advertising, pricing, selling, product planning, distribution, and competition. Intended for students with no previous marketing courses.

68:233 Marketing Management I—M.B.A. 3 s.h.
Focus on understanding and responding to the internal and external environment of marketing. Selection and evaluation of behavioral science findings on the behavior of buyers. State of the art of information. Formulation of marketing goals, plans, and strategy. Prerequisites, consent of instructor.

68:233 Marketing Management II—M.B.A. 3 s.h.
Focus on marketing decision areas. Emphasis on analysis of topics in product planning, advertising and promotion, pricing, personal selling, distribution, and sales forecasting. Emphasis throughout on the role of the marketing manager in planning and control. Prerequisite, any marketing course.

68:235 Buyer Behavior 3 s.h.
Study of the behavior of consumers and industrial buyers. Emphasis on research and development of the behavioral sciences. Prerequisite, consent of instructor.

68:240 Marketing Models 3 s.h.
Examination of theoretical and operational models in
marketing with emphasis on recent advances. Focus on logical flow and quantitative models that attempt to solve marketing management problems. Criticism in depth of a number of models and participation in a model development project.

6.3.241 Marketing Measurement 3.0 h.
Focus on management's need for measuring measurements and information from internal and external sources. Analysis of secondary sources of information and methods for generating primary measurements, notably from human respondents. Development of scales of measurement and psychometric procedures. Nonparametric statistical procedures for analyzing measurements. Prerequisite, consent of instructor.

Linear programming, dynamic programming, queuing theory, queuing and other optimization models applied to business decision problems. Prerequisite, Economics 62:111; prerequisite, 62:182.

Probability, random variables, mathematical expectation, generating functions, and probability distributions. Statistical estimation and hypothesis testing. Bayesian decision theory, complexity and simplicity, and least squares. Introduction to decision-making under uncertainty. Includes for Ph.D. basic area requirement. Prerequisite, 62:283.

6.3.244 Statistics for Decision-Making II—Ph.D. 3.0 h.

6.3.245 Statistics for Model Building 3.0 h.
Forecasting and prediction. Regression analysis, discriminant analysis, factor analysis, and other special topics. Oriented toward application to management with sufficient theory covered for assuring proper use. Prerequisite, consent of instructor.

6.3.246 Statistical Methods for Research 3.0 h.
Sampling theory, including random, stratified, systematic, cluster, and other sampling designs. Design of experiments, sample size and analysis of variance. Emphasis on planning experiments and drawing conclusions from the results. Prerequisite, consent of instructor.

6.3.247 Statistical Decision Theory 3.0 h.
Basic theory of decision-making under uncertainty. Biases of decision-makers, utility, value of perfect information, Bayesian approach to decision-making and its relationship to classical statistics. Posterior, optimal fixed-size, and other forms of analysis of statistical decision problems. Prerequisite, consent of instructor.

6.3.248 Seminar in Quantitative Analysis 3.0 h.
Special topics in quantitative methods of current interest to faculty and students. Prerequisite, consent of instructor.

6.3.249 Simulation Techniques 3.0 h.
Introduction to simulation and model building using simulation languages and oriented toward mathematical models and specialized languages. Consideration of random numbers and computer hardware. Review and evaluation of simulation applications. Prerequisites, computer experience and either 62:219 or 62:242.

6.3.250 Production Management 3.0 h.
Analytical and integrated approach to the planning, operational, experimental and analysis of variance, linear modeling, and mathematical models are extensively utilized as analytical tools. Prerequisite, consent of instructor.

6.3.253 Employment Relations and Public Policy 3.0 h.
Public policy issues related to collective bargaining and labor-management relations.

COLLEGE OF BUSINESS ADMINISTRATION

6.3.254 Human Resources Administration 3.0 h.
Consideration of fundamental industrial relations topics, problems, and methodology from an interdisciplinary viewpoint. Current and future developments in the field as well as the evaluation of trends. Prerequisite, consent of instructor.

6.3.255 Organization and Management Theory—M.B.A. 3.0 h.
Examines the development of various theories of organization as a basis for organizational analysis. Structural and operational determinants of human behavior are studied with reference to organizational design and leadership. Prerequisite, consent of instructor.

6.3.256 Advanced Quantitative Methods 3.0 h.

6.3.259 Social Environment of Industry 3.0 h.
The focus is on social problems facing the country—new, ecology, the city, etc. While the primary emphasis is on industry and its role with respect to both causes and solutions, the various roles of government and citizens' groups are also considered. Prerequisite, consent of instructor.

6.3.261 Organizational and Individual Behavior—M.B.A. 3.0 h.
Human interaction and group behavior in organized industrial settings, interpersonal and intergroup conflict, motivation, leadership, behavioral science research and theory as related to organization theory.

6.3.262 Behavioral Science and Business Organizations 1 3.0 h.
An integrated, two-semester examination of the concepts, findings, and methods of the behavioral sciences which are applicable to business administration. Topics include organizational theory, small-group behavior, and individual behavior. Students will be expected to complete homework and take an intermediate-level course in either psychology or sociology. Prerequisites: 62:256 or 62:254. The course is designed to meet the basic area requirement for the Ph.D. in business administration. Each graduate student will be admitted with the consent of the instructor.

6.3.264 Behavioral Science and Business Organizations II 3.0 h.
See description for 6.3.261. Prerequisite, 6.3.263 or consent of instructor.

6.3.270 Research in Business Administration 3.0 h.
Individual guided research projects on appropriate topics in business administration. Prerequisite, consent of instructor.

6.3.271 International Business 3.0 h.
Special problems related to the operation of business in foreign environment, discussed mostly in an international economics framework. Prerequisite, consent of instructor.

6.3.277 Seminar in International Business 3.0 h.
Selected topics in international business with emphasis on the dual decision-making authority (government and business) within which business operates and on research frontier of the field. Prerequisite, consent of instructor.

6.3.278 Simulation Exercises—M.B.A. no cr. Decision-making scenarios within simulated competitive environment. Must be completed during last year of enrollment for M.B.A. degree.

6.3.279 Administrative Policy—M.B.A. 3.0 h.
Various aspects of the problem-solving and decision-making responsibilities of top management of American business. Policy formulation and implementation are examined in terms of the firm's task environment. Corporate
obtain a major in economics for the Bachelor of Business Administration degree by completing the following courses and electives.

Büßt Introduction to Mathematical Economics 3 s.h.

Economics for Undergraduates 3 s.h.

200-Level Courses
17 semester hours in 200-level economics courses including EC105 Micro-Economics and EC106 Macro-Economics. Alternatively, candidates for the B.A. degree may meet the requirements for the degree by taking, in addition to the common requirements for the College of Business Administration, two areas of concentration consisting of a minimum of three courses each for 9 semester hours, two of which must be offered by the College of Business Administration. A candidate may select courses from the areas offered by the Department of Economics to fulfill the areas of concentration requirement. The two areas of concentration must be approved by the student's advisor.

Graduate Program in Economics
The Department of Economics offers graduate instruction leading to both the M.A. and Ph.D. degrees. The graduate program is designed to provide an environment that stimulates students to develop special talents and pursue individual interests. The curriculum is intended to provide students with a rigorous basic theory and quantitative core in line with the current level of the economics profession and the training offered at other top universities.

The M.A. and Ph.D. programs are set up with a sequence of core courses so that students can complete the necessary requirements with a minimum of scheduling problems. The alternative plan under which a student may elect to complete his degree is flexible. However, the choice is not entirely at the discretion of the student. A student's progress must be approved by the director of the graduate program in economics. Students should be familiar with the requirements for their degree and be responsible for preparing their plan of study and having it approved.

Admission Requirements and Procedures
The general admission requirement is a baccalaureate degree from a college or university in good standing. The minimum overall grade-point average for admission is 3.0. To be eligible for the M.A. program, a student must have earned a C or better in each course from which he is graduated. He must complete all requirements for the undergraduate degree.

Application forms for admission and financial assistance are available from the Graduate School of the University of Iowa, Iowa City 52242.

Degree Programs
Master of Arts The Master of Arts may be earned by students enrolled in either the M.A. or Ph.D. program. For students enrolled in the M.A. program, the degree must be completed from the core courses listed below. These courses are designated to provide the student with a general background in the basic theoretical and quantitative tools of the professional economist.

Basic Theory and Quantitative Core

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC200</td>
<td>Introduction to Mathematical Economics I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EC201</td>
<td>Introduction to Mathematical Economics II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EC202</td>
<td>Introduction to Econometrics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EC203</td>
<td>Statistical Methods</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EC204</td>
<td>Theory of the Firm</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EC205</td>
<td>Wealth and Income Distribution</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>
COLLEGE OF BUSINESS ADMINISTRATION
quantitative areas of mathematics, statistics, and compu-
ter science is available. Each of the economics courses
and seminars is described in the Catalog.

Regularly scheduled departmental seminar series is an
integral and vital part of the graduate program in eco-
nomics. The main purpose of these seminars is to pro-
mote the research activities and interests of the faculty
and graduate students. These seminars are led by dis-
tinguished visiting professors and by members of the
U.S.1 faculty who present results of their own study and
research.

STAFF
Professors: Anthony Costantino, Walter Kreuz, Cliff
Schau, Charles Wright, Gerald T. Hordquist, George
Stein, Selah-Yen Wu

Assistant Professors: Robert M. Bruni, Philip C. Wanda,
Ezra D. Barnard, James Jaffers, Thomas Pagas, Ray
Bullins, L. G. Spota, Calvin Robert
Assistant Professors: William Alfred, Hyman Joseph,
Michael Reish, Joseph Swanson, Darwin Wasson, 
Samuel Williamson,


COURSE DESCRIPTIONS
Primarily for Undergraduates

Note: E121 and E122 may be taken in either order or
they may be taken simultaneously. They satisfy the social
science core requirement.

E121 Principles of Economics 4 s.h.
Organization and workings of the modern economics sys-
tem. The role of markets, prices, and competition in the
promotion of economic welfare. Regulation of business
and labor, the provision of public goods (health, educa-
tion, security), poverty and the distribution of wealth, 
economic effects on the total environment. Alternative
economic systems. Prerequisite: satisfaction of the Uni-
versity requirement in the Rhetoric Program.

E122 Principles of Economics 4 s.h.
National income and output, employment, and prices;
money and credit; price inflation; monetary and fiscal
policy; economic growth and development, inter-
national relations; economic systems. Prerequisite: satis-
faction of the University requirement in the Rhetoric
Program.

E235 Business and Economic Statistics 1 3 s.h.
Set approach to probability, assignment of probability
using elementary combinations and partitions; distribu-
tions of discrete and continuous variables; introduction
to large sample theory, introduction to estimation and tests
of hypotheses. Prerequisite: satisfaction of the Univer-
sity requirements in the Rhetoric Program and college
algebra, E231 and E232, or senior standing.

E105 Introduction to Mathematical
Economists for Undergraduates 3 s.h.
Use of mathematics in economics. Application of elemen-
tary calculus and matrix algebra to production, consumer
choice, market equilibrium, and the national economy and
employment. Prerequisites: college algebra, E121 and
E122, or senior standing.

E104 Micro-Economics 3 s.h.
Concept and methods of economic theory. Relationship
between economic theory and policy. Theories of micro-
economics. Factor allocation, relationship and impor-
tance of micro-economics to other areas of economic
theory. Prerequisites: E121 and E122, or senior standing.

E106 Macroeconomics 3 s.h.
Measurement, theory, and control of aggregate economic
activity. Prerequisites: E121 and E122, or senior standing.

Graduate Courses and Seminars
The Department of Economics offers several graduate
courses and seminars in economic theory and appli-
cations. In addition, a wide selection of courses in other
social sciences, law, business administration, and the

E121* Income and Employment
Theory 1 s.h.

E122 Economic Dynamics and
Growth 3 s.h.

E213 History of Economic
Thought I 2 s.h.

E214 History of Economic
Thought II 2 s.h.

Recommended courses for M.A. students. Ph.D. stu-
dents would probably be expected to take the entire
teaching and quantitative core.

Students are expected to take at least one course in
history of economic thought.

In addition to the core courses, students must complete
either the thesis or the nonthesis option. These options are
summarized below:

Core Courses 15 s.h.
Electives 15 s.h.
Thesis 4 s.h.
Seminar 6 s.h.

Note: Electives

*Two 200-level courses, 3 semester hours each, in which
research papers are written.

The Master of Arts degree will also be awarded to stu-
dents enrolled in the Ph.D. program who have completed
the M.A. nonthesis requirements, or who have completed
36 semester hours of coursework for the Ph.D. and
passed the written comprehensive examinations in eco-
nomic theory and policy. Work for the M.A. degree is
completed after a satisfactory final oral examination.

Doctor of Philosophy. Evidence of proficiency in
quantitative methods, economic theory, and a selected
major area must be demonstrated by passing the Ph.D.
written and oral comprehensive examinations. Three writ-
ten comprehensive examinations are required. The exa-
ninations are in quantitative methods, theory and policy,
the major area of concentration. The theory and
quantitative core courses should prepare students for the
first two examinations. No specified number of hours is
required for the major area of concentration, but the
student is expected to demonstrate competence and ma-
turity in his area of concentration. The elective areas
offered by the department are as follows:

Economic Development
Economic History
Industrial Organization
International Economics
Labor Economics
Monetary and Fiscal Economics
Public Finance
Urban and Regional Economics
Health Economics

A minimum of 9 semester hours must be taken in
courses outside the student's major and the core courses
and one-semester hours must be taken outside the econo-
my department. Courses taken outside the department are
limited to those that will enhance the student's research
capabilities.

Graduate students working normal progress in the Ph.D. program
would take the quantitative methods examination one
year after entering the program, the theory examination
two years after entering the program, and the major area
examination within three years after entering the pro-
gram. An oral examination is given fol-
lowing completion of the written comprehensive exams-
inations. The Ph.D. student is admitted to candidacy for the Ph.D.
degree and is ready to proceed with the dissertation. Work
for the degree is completed after successful completion of
a final oral examination.

In addition to these requirements, teaching and/or re-
search is a required part of the graduate program.

Graduate Courses and Seminars

The Department of Economics offers several graduate
courses and seminars in economic theory and appli-
cations. In addition, a wide selection of courses in other
social sciences, law, business administration, and the
6E:161 Industrial Organization 3.0 h.
Structure of major American industries and the effectiveness of public policy, Development of union laws and theories of market behavior. Prerequisites, 621 or senior standing.

Economic History, Systems, and Ideologies
6E:150 Institutional and Organizational Change 3.0 h.
Individual accomplishments in the context of large-scale organization, researched and analyzed with reference to responsibility for economic change. Emphasis considers the changing role of government in both commercial and monographate sectors of the economy. Prerequisites, 621 and 622 or senior standing.

6E:151 American Economic History 3.0 h.
Analysis of American economic past on the basis of theoretical model cast in terms of the process of economic growth, development. Special emphasis is placed on demographic factors, the role of governments, capital markets, and structural change. Prerequisites, 621 and 622 or senior standing.

6E:152 Economic History of Economic Thought 3.0 h.
Economic concepts and doctrines against background of the evolution of urban-industrial society. Classical, neoclassical, Keynesian, and modern economic thought. Prerequisites, 621 and 622 or senior standing.

6E:153 Economic Systems 3.0 h.
Functions performed by all economic systems; origins and application of some contemporary economic models to the modern industrial state. Prerequisites, 621 and 622 or senior standing.

6E:155 Comparative Labor Movements 3.0 h.
Labor movements of major industrial nations including England, Germany, Australia, Scandinavia, Russia, and the United States. Theoretical aspects and economic aspects of unions and collective bargaining. Prerequisites, 621 and 622 or senior standing.

6E:156 Quantitative Methods I 3.0 h.
Introduction to the basic techniques for more in-depth quantitative work in the social sciences. Prerequisites, 621 and 622 or senior standing.

6E:157 Quantitative Methods II 3.0 h.
Further applications of calculus and matrix algebra to economics, emphasis on the ability of linear programming and game theory. Introduction to topology of economics. Prerequisites, 621 or 622.

6E:158 Seminar in Economics cr.arr.
Prerequisite, consent of instructor.
Prerequisite, consent of instructor.

*By registering for 6E.130, saliety qualified students may be permitted to work in courses listed for graduate students.

Primarily for Graduates

6E.200 Research in Economics cr.arr.
Prerequisite, consent of instructor.

6E.291 Readings in Economics cr.arr.
Prerequisite, consent of instructor.

6E.302 National Income Analysis 3 s.h.
Foundations in macro-economic theory; contemporary theory with respect to aggregate demand, consumption, investment, employment, and output; economic forecasting; economic policy for stable growth. For M.B.A. students.

6E.303 Managerial Economic Theory 3 s.h.
Theory of demand; principles of production; cost analysis; theory of the firm; empirical studies of market structure and pricing; capital budgeting; linear programming; decision theory. For M.B.A. students.

6E.304 Price Theory 3 s.h.
Advanced topics in price theory. Methodological foundations. Recent developments in the theories of consumer choice and the firm. The importance of uncertainty. General equilibrium of production, consumption, and exchange. Dynamics of the price system. Prerequisite, 6E.103.

6E.305 Welfare and Distribution Theory 3 s.h.

6E.309 Seminar in Economic Theory cr.arr.
Prerequisite, consent of instructor.

6E.310 History of Economic Thought I 3 s.h.
Economic doctrines and the social and political background influencing the development of economic thought. Ancient and medieval economics, mercantilism, physiocracy, classical economics, historical school, and socialist doctrines. Prerequisite, consent of instructor.

6E.311 History of Economic Thought II 3 s.h.
Development of marginalist, neoclassical, and Keynesian thought. American economic thought including institutional economics. Varieties of socialist economics; the utopian and progressive schools. Prerequisite, consent of instructor.

6E.314 Income and Employment Theory 3 s.h.

6E.315 Economic Dynamics and Growth Theory 3 s.h.

6E.316 Regional Economics 3 s.h.
Principles of regional analysis, planning, and policy in a regional context. Study of the economics of location and agglomeration, urban land utilization, and technology in a dynamic spatial setting. Design and use of regional econometric and economic models for regional analysis, policy formulation, and planning. Prerequisite, 6E.135 or consent of instructor.

6E.218 Urban Economics 3 s.h.
Examination of selected economic problems facing a city. Prerequisite, consent of instructor.

6E.231 Introduction to Econometrics 3 s.h.
Analysis of variance; classical decision theory; multiple linear regression; experimental design. Prerequisite, 6E.183.

6E.232 Statistical Methodology and Forecasting 3 s.h.
Consideration of forecasting data available; uses and limitations of such data in statistical forecasting. Prerequisite, 6E.148 or consent of instructor.

6E.233 Statistical Methods of Sampling 3 s.h.
Methods of sampling useful in business and economic research. Determination of sample size for a given degree of reliability. Prerequisite, 6E.221 or consent of instructor.

6E.235 Mathematical Economics 3 s.h.

6E.236 Econometrics 3 s.h.
Construction of micro- and macro-economic models for annual and simultaneous equations techniques and related topics. Prerequisite, consent of instructor.

6E.229 Seminar in Quantitative Analysis 3 s.h.
Prerequisite, consent of instructor.

6E.230 Economic Development I 3 s.h.
The process of economic development in underdeveloped countries: emphasis on theories of development. Prerequisite, consent of instructor.

6E.231 Economic Development II 3 s.h.
The process of economic development in underdeveloped countries: emphasis on policy alternatives in development. Prerequisite, 6E.230 or consent of instructor.

6E.232 Economics of Underdeveloped Regions: Asia East 3 s.h.
Economic structure of the countries constituting the region: economic, political, social, and cultural forces influencing development. Prerequisite, consent of instructor.

6E.233 Economics of Underdeveloped Regions: Latin America 3 s.h.
Economic development in Latin America: emphasis on major current issues and problems. Prerequisites, 6E.230 and 6E.231 or consent of instructor.

6E.239 Seminar in Economics Development cr.arr.
Prerequisite, consent of instructor.

6E.240 International Economics I 3 s.h.
Theory of foreign trade: tariff theory and policy; customs union theory and policy. Prerequisite, consent of instructor.

6E.241 International Economics II 3 s.h.
Theory of foreign exchange: balance of payments adjustment; the assignment problem; exchange controls; international investment. Prerequisite, consent of instructor.

6E.249 Seminar in International Economics cr.arr.
Prerequisite, consent of instructor.

6E.251 Labor Economics and Relations 3 s.h.
Economic analysis of the labor market via wage theory. Institutional entities of the labor market via models of union and management behavior. Economic impact of collective bargaining on employment conditions on the total economy.
6E:352 Comparative Labor Movements 3 s.h.
Origins, growth, and economic role of labor movements in selected countries of Europe, Latin America, South Asia, and Japan. An introduction to the historical and theoretical perspectives on labor movements. Prerequisite: consent of instructor.

6E:357 Seminar in Economics of Human Resources 3 s.h.
Prerequisite, consent of instructor.

6E:359 Seminar in Labor Economics . cr.arr.
Prerequisite, consent of instructor.

6E:360 Industrial Development of Western Europe 3 s.h.
European economic growth since the Industrial Revolution; emphasis on population trends and labor force growth, the evolution of capital markets, patterns of capital accumulation, and resultant rates of economic growth. Analysis of technological progress and growth of open economies relative both historical and theoretical considerations. Prerequisite, consent of instructor.

6E:361 Economic Development of the North American Economy 3 s.h.
Analysis of long-term growth patterns of the American economy with a focus on special theories of economic development. Emphasis on recent research on demographic, geopolitical, and technological change, and the scale of organization. Prerequisite, consent of instructor.

6E:362 Twentieth-Century United States Economic Growth 3 s.h.
An aggregate analysis of structural change and income growth in the American economy during the period 1900-1965. Particular attention is given to the impact of monetary and fiscal policies in raising income growth. Case study of the impact of World War II on the economic structure of the U.S. and its aftermath as a setting for comprehensive analysis of the economic impact of the Federal Reserve, the Federal Government, and the financial markets. Prerequisite, consent of instructor.

6E:363 Seminar in Economic History 3 s.h.
Prerequisite, consent of instructor; may be repeated for credit.

6E:366 Comparative Economic Systems 3 s.h.
Functions performed by all economic systems. Origins and attributes of major contemporary economies. Capitalism, socialism, communism, fascism, and developing economies of the "backward" countries. Prerequisite, consent of instructor.

6E:367 Business and Government 3 s.h.
Review of the American industry. Evaluation of antitrust laws and regulatory policy in terms of their effects on major economic objectives. For M.B.A. students. Prerequisite, consent of instructor.

6E:368 Industrial Organization 3 s.h.
Evolution of the modern theory of the business firm and market structures. Detailed study of patterns of market structure in the United States, types and forms of market conduct of buyers and sellers and ultimate market performance. Antitrust and administrative treatment of competitive and non-competitive laws and public policies affecting monopoly, oligopoly, competition. Prerequisite, consent of instructor.

6E:369 Seminar in Economic Policy 3 s.h.
Prerequisite, consent of instructor.

6E:370 Monetary Theory 3 s.h.
Systematic study of modern monetary economics, prerequisites: economic analysis of the United States and Western Europe. Prerequisites, 6E:370 and consent of instructor.

6E:372 Advanced Monetary Economics 3 s.h.
Current problems and policies: critique of doctrines; unresolved conceptual and theoretical considerations with respect to money, interest, and capital. Prerequisites, 6E:370 and consent of instructor.

6E:373 International Monetary Economics 3 s.h.
Theories, institutions, and policies with respect to international financial adjustments; balance of payments analysis; capital movements and investments; international disequilibrium; international repudiations of United States' monetary policies. Prerequisites: 6E:370 and consent of instructor.

6E:379 Seminar in Monetary and Fiscal Policy cr.arr.
Prerequisite, consent of instructor.

6E:380 Economics of the Government Sector: Taxation 3 s.h.
The role and effects of taxation in the modern economy; effects of major taxes upon the allocation of resources, distribution of income, and economic growth and stability; debt finance as an alternative to tax finance. Prerequisite, consent of instructor.

6E:381 Economics of the Government Sector: Expenditures 3 s.h.
Economic functions and effects of government spending; economic functions of government; alternative means of carrying out government functions; determination of expenditure levels; budgetary processes; centralized vs. decentralized decision-making; intergovernmental fiscal relations. Prerequisite, consent of instructor.

Prerequisite, consent of instructor.

Prerequisite, consent of instructor.

6E:399 Seminar in Health Economics 3 s.h.
Prerequisite, consent of instructor.

6E:390 Seminar in Urbanization 3 s.h.
Same as Urban and Regional Planning 190:221.

BUSINESS EDUCATION
Chairman of Department, Norman F. Kallaus, Office, 651 Phillips Hall

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.

The following courses are required of all business education majors:

- 100 Office Calculating
- 103 Business Typewriting
- 112 Administrative Communication
- 120 Data Processing in Business
- 181 Principles of Business Education

*For teacher certification, students must take terminal course at the U of I.
COLLEGE OF BUSINESS ADMINISTRATION

Required for teacher coordinators of office education programs. Summer session only.

68:196 Individual Instruction Techniques 2 s.h.
Problems of correlating classroom instruction with on-the-job training in office and distributive education re-
quirement programs. Required for teacher coordinators of office education programs. Summer session only.

68:197 Philosophy of Vocational Education 2 s.h.
Study of vocational education programs with special em-
phasis on curriculum development, work experience, job analysis, and the changing vocational needs of business
and society. Required for teacher coordinators of office education programs. Summer session only.

68:198 Business Education Workshop 0 to 1 s.h.
Offered alternate summers.

Primarily for Graduates

68:203 Seminar: Basic Business and
Economic Education 2 to 3 s.h.
Techniques and materials of instruction, behavioral ob-
jectives, and the implications of research for teaching in
the area of basic business and economic education.

68:204 Seminar: Teaching
Bookkeeping 2 to 3 s.h.
Accounting principles and analytical analysis. Comparison of
the various approaches, techniques, and materials avail-
able. Research findings applied to the various accounting
phases. Analysis of automated, mechanical, and man-
ual processes.

68:205 Seminar: Secretarial
Education 2 to 3 s.h.
Research findings and experimental evidence applied to
the areas of secretarial education including office pro-
cedures and communication. Psychosocial applicable to
the skill-building process.

68:207 Seminar: Teaching Information
Processing 2 to 3 s.h.
Concepts of processing information by manual and me-
chanical techniques for the business educational teacher.
Development of materials, analysis of teaching, and eval-
uation problems.

68:216 Supervision of Business Education 3 s.h.
Principles, problems, and practices of business education
at the supervisory level. Designed for business educa-
tion administrators and those who wish to prepare for,
or improve, supervisory role in business education.

68:230 Post-Secondary Business Education 3 s.h.
Philosophy; organization and administration; principles
and problems, curriculum development and teaching pro-
cedures in postsecondary business education programs
including four-year colleges.

68:225 Seminar in Administrative
Communication 3 s.h.
Communication theory applied to the administration and
administrative process. Communication in the automated
system. Applications to selected areas of business. Pre-
requisite, 48:168 or equivalent.

68:235 Foundations in Business Education 3 s.h.
Philosophy and objectives of the business education pro-
gress and its role in secondary and higher education.

68:406 Seminar in Business Education 2 or 3 s.h.
For advanced graduate students only. Current issues in
business education and business teacher training. Pre-
requisite, consent of instructor.

68:246 Administrative Management
Seminar 3 s.h.
Philosophy of administrative management and basic sys-
tem concepts. Current and projected developments in
administrative services. Applications to selected areas
of business, industry, and government. Prerequisites:
68:225 or equivalent and graduate standing.

68:265 Directed Readings cr.arr.
Individually guided readings in business education, data
processing, communication, or office management. Pre-
requisites, graduate standing and consent of instructor.
May be repeated to a maximum of 8 semester hours.

68:370 Research: Business Education cr.arr.

68:375 Research Seminar: Business
Education 2 s.h.
Analysis of research methods and design. Formal re-
port in within the total framework of a research project,
including business teacher education, office management,
secretarial education, and data processing.

68:380 Seminar: Business Education
Policy 2 to 3 s.h.
Required of and limited to, doctoral students in business
education. An advanced analysis and synthesis of busi-
ness education policies involving the total framework
of business education, with emphasis on teacher education.

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; 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 in dentistry at Iowa, leading to the degree Doctor of Dental Surgery (D.D.S.), comprises three years of preprofessional study and four years of study in the College of Dentistry. The dental curriculum consists of five basic units:

- **Basic sciences**: gross, general radiographic, and developmental anatomy; neuroanatomy; biochemistry; general microanatomy; physiology; general pathobiology; oral pathobiology; pharmacology; microbiology; clinical pathobiology; and oral biology.

- **Restorative dental sciences**: gross, microscopic and radiographic dental anatomy; dental materials; endodontics; operative dentistry; fixed partial prosthesis; and removable prosthesis.

- **Oral medicine**: physiology of mastication, introduction to diagnosis and therapy, preventive dentistry, oral diagnosis, dental radiology, anesthesiology and pain control, oral surgery, periodontology, internal medicine, therapeutics, and bioclinical conference.

- **Community dentistry**: ethics, history of dentistry, biometry and the scientific method, research design and planning, epidemiology, nutrition, preventive dentistry and community health, principles of human behavior, dental economics, dental jurisprudence, and practice management.

- **Pediatric dentistry**: pedodontics and orthodontics.

To achieve a close correlation of the basic sciences with clinical disciplines, the student is introduced to actual clinical work during the freshman year. The sophomore program includes comprehensive training in effective coordination of auxiliary personnel. Classroom instruction in this area is followed by practical experience which is offered in conjunction with the dental hygiene program.

- As juniors, dental students rotate through a series of clinical "workshops" which provide them with a meaningful exposure to each of the eight clinical disciplines.

- Senior dental students are involved in delivery of comprehensive dental care in an environment which simulates closely the conditions existing in private dental practice. Seniors also get exposure to various extramural health programs at state and university hospitals and the State Department of Health.

The dental curriculum provides a summer preceptorship program in which senior dental and dental hygiene students assist in selected dental offices throughout Iowa. The program exposes 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 program**: A dental student may satisfy his departmental requirements by examination in lieu of course participation. The time 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. Enrichment program may consist of electives taken for credit; advanced clinical training; research; or any combination of these activities. It may also provide a means to fulfill some Graduate College requirements, if the student's objective is a combined Dentistry-Graduate College degree.

- **Teacher training**: In close cooperation with the Graduate College and the Colleges of Education and Liberal Arts, the College of Dentistry offers one of the few programs preparing dentists to become professional educators. The program combines graduate-level coursework in dentistry, education, and the liberal arts with supervised teaching experience and research in the College of Dentistry. It leads to a master's degree in education or science. Each student's course of study is tailored to individual abilities and in-
terests. The student may elect to emphasize coursework and supervising 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, which is part of an expanded Health Science Campus for all health colleges, 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. In addition to the present structures, the campus will also include a new Basic Science Building, a new Health Sciences Library, a new College of Nursing, and a hospital addition. 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 8,000 volumes on dentistry and allied scientific subjects, and the more than 250 professional journals it currently receives.

The Dental Science Building is designed as two separate four-story buildings located on either side of a main campus mall. The building will be bridged by a connecting link joining the two structures. One building 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 second building will house a variety of teaching, administrative, and research facilities, including teaching laboratories, research laboratories, administration area, audiovisual production center, and the program in community dentistry.

ADMISSION

The closing date for applications and credentials will be February 15 for the class entering the College of Dentistry the following September. However, applicants are urged to file the completed application and the necessary official transcripts as soon as possible after July 1 of the year preceding that 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 to earn a standard bachelor’s degree upon completion of the freshman year in dentistry. Preference will be given to applicants who have a bachelor’s degree or who have completed requirements for the degree in a combined program.

General Basis for Admission

The college work outlined below meets the basic academic requirements for admission to the College of Dentistry. Each applicant must submit to the Office of Admissions the completed application form and official transcripts from all colleges attended.

College credit. The college curriculum should include at least three academic years of accredited work comprising not less than 96 semester hours, and including these required courses:

1. Rhetoric: satisfactory accomplishment in English composition and speech, communication with the academic requirements for a bachelor's degree of the college attended.
2. Physics: one year (equivalent to 6 semester hours) of which one-fourth must be laboratory work.
3. Chemistry: two years (equivalent to 18 semester hours) to include one year (equivalent to 8 semester hours) of organic chemistry with appropriate laboratory work in all courses, of which one-fourth must be laboratory work.
4. Biology: one year (equivalent to 8 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.
5. Electives: additional courses to make a minimum of 96 semester hours; chosen electives should give the applicant a well-rounded educational background; they should be selected from courses in social sciences, philosophy, psychology, history, foreign languages, higher mathematics, or chemistry.

The 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 his potential for dental profession are deemed to be 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 into the College of Dentistry.

The applicant should maintain a cumulative grade-point average of 2.5. Since the quality of coursework in predental science is basic to success in dentistry, special consideration to such college work is given by the Admissions Committee. The grade-point average is based upon The University of Iowa’s marking system in which a grade of “A” is equivalent to four points. Other
Liberal Arts preceding enrollment in the College of Dentistry satisfies the college residence requirement.

Fullfilsment of the specific requirements listed for admission does not insure admission to the College of Dentistry. From the applicants meeting the minimum requirements, the Admissions Committee will select those who appear to be best qualified for the study and practice of dentistry. For Committee considers applicants’ academic averages, the scores on the required Dental Admission Test, and several other factors.

Since the available places in the freshman class of the College of Dentistry are limited, preference will be given applicants who are residents of Iowa under the University’s regulations on residence. If it is found possible to consider a limited number of applicants who are nonresidents of Iowa, under the University’s regulations, preference will be given to applicants having the highest scholastic standing.

SCHOLARSHIP REQUIREMENTS

Grading System

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</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</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>Fail</td>
<td>0</td>
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<tr>
<td>I</td>
<td>Incomplete</td>
<td>0</td>
</tr>
<tr>
<td>P</td>
<td>Pass</td>
<td>0</td>
</tr>
</tbody>
</table>

Absent, students are subject to living on the first day of the school year and are expected to participate in all academic activities to which they are scheduled.

Promotions and graduation. Student promotions and graduation are determined by the respective class performance committees appointed by the Dean from among those faculty members who are 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 grade-point average, when he is deemed general unfit to be promoted or enter the dental profession.

Committee on appeals. This ad hoc committee will be appointed by the Dean from the faculty of the College and will be chaired by the Dean or his designee. The committee will consider such matters as student scholastic achievement, promotion, absences, and his general fitness to enter the dental profession. The decision reached by the committee will be final.
Changes in rules and regulations. The right is reserved by the faculty to make changes at any time in any rules and regulations.

GRADUATION REQUIREMENTS

The candidate for graduation shall be of legal age and of good moral character, shall pass a satisfactory examination in the branches taught, and shall prove his general fitness for the practice of dentistry. The minimum academic average required for graduation is a C on all work attempted in the College of Dentistry. The time of study shall include attendance during four academic years, the last two of which will be in this College.

State boards of examination. All states require an examination before a Board of Dental Examiners before license to practice is issued. The Iowa law provides two examinations yearly by the Iowa State Board of Dental Examiners. These are given on dates which coincide with the time of graduation.

Student organizations. All dental students automatically have membership in the Junior American Dental Association. Students who rank in the upper 12 per cent of the senior class are eligible for Omicron Kappa Upsilon, national scholastic honorary dental society. Two national dental professional fraternities, Delta Sigma Delta and Psi Omega, have chapter houses at Iowa, and both have wives' auxiliaries. There is also a Dental Student Wives Club.

EXPENSES

Students are provided with an opportunity to rent most of the dental instruments from the College of Dentistry. The rental fee amounts to $400 per year, out of which $100 represents a refundable instrument breakage deposit. A limited number of additional instruments must be actually purchased each year.

FINANCIAL ASSISTANCE

Under the Health Professions Educational Assistance Act, eligible students may borrow up to $2,500 each year of their undergraduate professional studies. Eligible students may also apply for federal scholarships. Preference is given to students who would not otherwise be able to finance health profession studies. Loans are issued at low interest rates and are repayable within thirteen years after the recipient concludes his course of study.

A number of short-term loans are available from the American Dental Association, the Iowa Dental Association, the Kalon Foundation, and other sources, to help students in emergency situations. Short-term loans average $500 at interest rates from 3\% to 4\% per cent.

Dental students are also eligible for much of the assistance provided through all-University resources administered by the Office of Student Financial Aids.

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.

ADMISSION TO GRADUATE AND POSTGRADUATE STUDY

Programs of study leading to the Master of Science degree are offered by the following departments of the College of Dentistry: Crown and Bridge Prosthesis, Dental Hygiene, Denture Prosthetics, Operative Dentistry and Endodontics, Oral Diagnosis, Oral Pathology, Oral Surgery, Orthodontics, Pedodontics, and Periodontics.

Prerequisites for admission to any of the graduate programs in the College of Dentistry are the satisfaction of all requirements for admission to the Graduates College (see Graduates College), possession of the degree of Doctor of Dental Surgery 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 those indicated above for graduate programs. A certificate is awarded upon satisfactory completion of the postgraduate program.

ADMINISTRATIVE STAFF

Dean: Donald J. Gallogly

Associate Dean and Coordinator of Research: Jesse Hayden, Jr.

Associate Dean and Coordinator of Curriculum: Robert Morehouse

Chairman of Clinic: C. Frederic Jahn

Coordinator, Student Affairs: Ralph C. Ageeley

Director, Dental Education: Bever E. Kipp

Librarian: Margery R. Czamkowski

PRECLINICAL SCIENCES

COURSE DESCRIPTIONS

Below are listed required science courses offered by departments in addition to courses for the undergraduate students.

17:119 The Science of Nutrition 2 s.h.


60:101 Gross Anatomy for Dental Students 6 s.h.

Lecture-experimental approach to gross and neuroanatomy with emphasis on head and neck. Graduates must have consent of department head.

60:102 Microscopic Anatomy for Dental Students 6 s.h.

Cells, primary tissues, and organs. Development of the head and oral structures. Freshman year.
CROWN AND BRIDGE PROSTHESIS

Head of Department, Keith E. Thayer
Office, 3D Dental Building

STAFF

Professor: Keith E. Thayer
Professor Emeritus: F. W. Hebb
Associate Professor: John E. Johnson
Assistant Professors: Kenneth W. Feliz, Arthur N. Kellum
Instructor: Malcolm J. Busby
Visiting Assistant Professor: Sami J. Alkilany
Instructor: Clifford T. Motley, Richard K. Mohamad

Graduate Program

The Department of Crown and Bridge offers a graduate training program in graduate studies in fixed prosthodontics. This degree is granted through the Graduate College of The University of Iowa. The program satisfies the formal training requirements for eligibility for the American Board of Prosthodontics examination. The primary purpose of this graduate program is to train and prepare dentists for a career in dental education and/or dental research. It is also acceptable for those individuals wishing to further prepare themselves for private practice in the area of fixed prosthodontics. The graduate student in cooperation with the head of the department and/or his advisor constructs an individual curriculum for his program which best fulfills his interests, goals, and desires while meeting all of the requirements of the department and of the Graduate College necessary for the granting of the master's degree. This type of individual attention is possible since no more than two graduate students are accepted into the program each year.

Admission Requirements

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 GSE is required.

Master's Degree Requirements

A research project and thesis are required for the master's degree in crown and bridge. The major emphasis of coursework is in fixed prosthodontics and treatment along with seminar courses in other specialties of dentistry. A course in research methodology as well as a course in histopathology or elementary statistical influences in medicine will be required. Some coursework is the general area of prosthodontics or in one of the basic science areas

CROWN AND BRIDGE PROSTHESIS

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Office, 3D Dental Building

STAFF

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DENTAL HYGIENE
Chairman of Department, Pauline Brine
Office, 32 Dental Building
The Department of Dental Hygiene offers programs of study in dental hygiene on both the undergraduate and graduate levels. The undergraduate major in dental hygiene leads to the Bachelor of Science degree offered by the College of Liberal Arts. The Master of Science curriculum prepares dental hygienists for careers in dental hygiene education and/or administration. For information regarding admission requirements, see College of Liberal Arts, Graduate College, and Interdisciplinary Programs.

DENTURE PROSTHESIS
Acting Head of Department, Keith E. Thayer
Office, 32 Dental Building
STAFF
Professor: Keith E. Thayer
Professor Emeritis: Earle S. Smith
Associate Professor: Leo F. Deaconter, Thaxter H. Miller, Forrest R. Smeadett
Instructor: Ronald R. Steger
Affiliated Staff: Nathan Q. Callahan, William E. LeVelle, Paul R. Maxwell, M. O. Obayon, James W. Schwindt, John H. Thompson, Gene A. Zach
Advanced Training Programs
Usually not more than a total of two students will be accepted per year for advanced training in the department, beginning in September. Applications may be sent in at any time, and application forms can be obtained by writing to the Director of Admissions, The University of Iowa, Iowa City 2929. The completed application form, together with transcripts, should be returned to the Director of Admissions for evaluation prior to June 15 for September enrollment.
To be considered for admission, the applicant must have a D.B.S. or D.M.D. degree, and proficiency will be given to those who have a master's degree. The applicant must have a grade-point average of 2.5 for admission in the status of a graduate student. It will be necessary for the student to successfully pass the Graduate Record Examination Aptitude Test. The applicant will be notified of the decision on his application by the Director of Admissions. He will be registered in the College of Liberal Arts and will be required to pay all regular fees. The student may be required to furnish some of his own instruments, upon notice of acceptance, the instrument list will be sent to him. The dentist of the department or his designated representative will be the student's adviser.
The following requirement was approved by the House of Delegates of the American Dental Association in October 1966. Each board shall require for eligibility for certification as a diplomate a minimum of two academic years of advanced education in recognized institutions, or two calendar years of advanced education if the program involves hospital internships and residencies. Although enforceable, the period of advanced study need not be continuous, nor completed within successive calendar years. An advanced education program equivalent to two academic years in length, successfully completed on a part-time basis over an extended period of time and as a graduated sequence of educational experience, may be considered acceptable in satisfying this requirement. Short continuations and reduction of courses and teaching experience in specialties other departments in dental schools will not be accepted in meeting any portion of this requirement.

Program Information
It is intended that the advanced training programs in removable prosthodontics at The University of Iowa be flexible to the extent that the goal of the individual student may be realized. The department takes no consideration that one set program is not in the best interest of all students nor of the profession. The requirements are considered flexible to the extent that as many students may fully fulfill the needs of each individual student. With this in mind, the department offers two advanced training programs:

1. The Certificate Program (postgraduate level)
2. The Master of Science Degree Program (graduate level)
An outline of each of these programs follows.

Certificate Program
The certificate program is intended for those individuals whose primary interest is in clinical prosthodontics. The certificate program usually requires 22 months of advanced study for successful completion. The program includes courses in the Colleges of Dentistry, Medicine, and Liberal Arts. Certain courses will be suggested as requirements, and others as electives. The final decision on the choice of courses will rest entirely with the student and the director. The following are current suggested courses for the certificate program:

1. Basic Science Courses
a. Required
   - 62:202 Basic Otolaryngology Science Review 2 s.h.

b. Electives
   - 62:161 Oral Biology (includes physiology of mammalian 2 s.h.
dENTAL PROSTHESIS

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The following requirement was approved by the House of Delegates of the American Dental Association in October 1966. Each board shall require for eligibility for certification as a diplomate a minimum of two academic years of advanced education in recognized institutions, or two calendar years of advanced education if the program involves hospital internships and residencies. Although enforceable, the period of advanced study need not be continuous, nor completed within successive calendar years. An advanced education program equivalent to two academic years in length, successfully completed on a part-time basis over an extended period of time and as a graduated sequence of educational experience, may be considered acceptable in satisfying this requirement. Short continuations and reduction of courses and teaching experience in specialties other departments in dental schools will not be accepted in meeting any portion of this requirement.

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1. Basic Science Courses
a. Required
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b. Electives
   - 62:161 Oral Biology (includes physiology of mammalian 2 s.h.
dental prosthetics) 3 s.h.
   - 72:202 Advanced Neuro-Physiology 3 s.h.
   - 80:101 Pathologic Processes (basic 3 s.h.
   - 82:207 Advanced Dental Therapeutics 3 s.h.

2. Clinical and Related Courses
a. Required
   - 82:104 Monumental Review Prosthodontics 3 s.h.
   - 82:204 Seminar Prosthodontics (complete and removable partial dentures) 2 s.h.
   - 82:202 Advanced Clinical Prosthodontics 2 s.h.
   - 82:201 Theory 2 s.h.
   - 68:301 Prosthodontic Radiology 2 s.h.
   - 68:401 Seminars in Material Science 2 s.h.
   - 68:451 Clinical Care of Patients with Special Needs 2 s.h.
   - 68:402 Practice Teaching Prosthodontics 2 s.h.
   - 68:403 Research 2 s.h.
   - 82:203 Seminar in Ceramic and Bridge 2 s.h.
   - 82:202 Advanced Clinical Crown and Bridge 2 s.h.
COLLEGE OF DENTISTRY

General Information

The field of prosthodontics has expanded in recent years to include the following career areas: removable prostho-
dontics (complete and removable partial dentures); fixed prosthodontics (crowns and bridges); and maxillofacial prosthodontics.

In the advanced training programs in removable prosthodontics at The University of Iowa, certain courses have been suggested that will provide for a good basic two-year program. Two of the required clinical courses, 42:420 Advanced Clinical Prosthodontics and 42:430 Clinical Maxillofacial Prosthetics, will provide the opportunity to treat prosthodontics patients in a hospital environment. Here the student learns to treat patients as a member of the dental-medical team, a team of dental and medical specialists whose interests lie in the treatment of the en-
tire body, not just the oral cavity and locally related areas.

Maxillofacial prosthodontists, the department, in cooperation with the Department of Oral Surgery and Maxillo-
facial Surgery, also offers a three-year program for special-
ty training in maxillofacial prosthodontics. Individuals in-
terested in the maxillofacial program should request additional information.

Dental education. Individuals interested in a career in dental education are urged to register for or audit as many of the following courses as their time and schedule will permit:

42:310 Methods of Instruction in Dentistry cr.arr.
42:320 Tissue Measurements in Dental Education cr.arr.
42:321 Educational Psychology for Dental Teachers cr.arr.
42:322 Curriculum Development for Dental Education cr.arr.
42:324 Design and Evaluation of Research in Dental Education cr.arr.
42:325 Ethics in Dental Education cr.arr.
42:326 Organization and Administration of Dental Education cr.arr.
42:327 Probationary Work in Dental Education cr.arr.

These courses are sponsored by the College of Dentis-
try's Division of Educational Resources.

COURSE DESCRIPTIONS

42:40 Prosthodontic Technic Lecture 2 s.h.

42:41 Prosthodontic laboratory procedures in the construction of complete and removable partial dentures. 30 clock hours. Sophomore year.

42:42 Prosthodontic Technic Laboratory 4 s.h.

42:43 Laboratory procedures in the construction of complete and removable partial dentures. 20 clock hours. Sophomore year.

42:44 Prosthodontic Technic Lecture 2 s.h.

42:45 Prosthodontic Technic Laboratory 4 s.h.

42:46 Clinical Prosthodontics 3 s.h.

42:47 Clinical experience in constructing more complicated cases of complete and removable partial dentures. Senior year.

primarily for Graduates

42:90 Literature Review Prosthodontics cr.arr.

42:93 Methods Prosthodontics cr.arr.

42:96 Advanced Clinical Prosthodontics cr.arr.

Student working under one demonstrator completes ass-
geigned cases in sequence of difficulty.

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OPERATIVE DENTISTRY AND ENDODONTICS

Head of Department, Wallace W. Johnson
Office, D1 Dental Building

STAFF
Professor: Arts M. Bjorndal, Director, Endodontics; Wallace W. Johnson, Director, Operative Dentistry.
Professor Emeritus: James W. Want.
Assistant Professor: Devere E. Killip, Director, Teacher Training.
Assistant Professor: Koi Chu Chin, Mohamed A. Khoury, Gerald E. E отзывы, Lloyd A. Lewis.
Instructor: James L. Fuller.

Graduate Programs
Two programs of study leading to the Master of Science degree are available.

Degree program in endodontics. The program of study in endodontics is designed to provide a level of training that 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 English language.

Unless the preparatory training of the candidate had included sufficient work in mathematics and chemistry, it will be necessary for him to complete these studies through correspondence courses, and quantitative analysis before undertaking a research project. Completion of the course will usually entail two calendar years of full-time effort. The applicant must be financially prepared to undertake, unencumbered, his preparatory studies through his own arrangements. Qualified persons may apply for Predoctoral Fellowships from the National Institutes of Health or the National Science Foundation; however, these fellowships should be received prior to matriculation.

In compliance with the basic regulations of the Graduate College for programs of higher education in dentistry, the following requirements for a degree must be met:

1. The satisfactory completion of a minimum of 48 semester hours of graduate-level courses to be divided as follows:
   a) 24 semester hours in the major field of clinical endodontics and selected courses offered by other departments of the College of Dentistry.
   b) 3 semester hours in a minor field of medicine, physiology, microbiology, hygiene, or midwifery.
   c) 10 semester hours in the contributing areas of mini-aanatomy, chemistry, statistics, and analytical chemistry.

2. The preparation of an acceptable thesis based on original research. Not more than 18 semester hours of research credit and 1 semester hours of thesis preparation credit may be counted in satisfying the 48-semester-hour minimum for this degree.

3. The work for this degree culminates in a comprehensive examination on course work and research, which is of a functional character and does not duplicate semester examinations.

The director of the degree program will act as the student's advisor and chairman of the examining committee. Upon recommendation of the Dean of the Dental College, the student will be eligible for a degree.

Degree program in operative dentistry. The program of study 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 that may be of particular interest to him. Relevant courses of study have been arranged in the biological sciences, materials sciences, and education. An applicant for this program must be a graduate of a recognized school of dentistry, and must be able to comply with the requirements for admission to the Graduate College of the University. An interview with the applicant may be requested.

In addition to requirements of the Graduate College for advanced degree programs, the following departmental requirements must be met:

1. Satisfactory completion of 48 semester hours of graduate-level courses. These may be distributed as follows:
   a) 24 semester hours of graduate-level courses within the College of Dentistry. These may include clinical dentistry and practical teaching.
   b) 24 semester hours of graduate-level courses in other areas. These may include courses in statistics and education.
   c) 3 semester hours in original research and thesis preparation.

2. The preparation of an acceptable thesis based on original research. The student should plan to furnish his own financial support for the research and thesis.

3. Formal defense of the thesis and examination of the assistant may be arranged at the convenience of the student. The director of the degree program will act as advisor to the student and chairman of the examining committee. The degree that is awarded will be from the Graduate College of the University of Iowa.

COURSE DESCRIPTIONS

Endodontics

82:1 Endodontic Laboratory 1.0 h.
Endodontic procedures on extracted teeth. Review of dental anatomy and technical methods of opening foros, the tooth chambers, and the root canals. Principles and mechanics of biomechanical treatment of the root canal. 28 clock hours, 40 apprentice hours.

82:109 Endodontics 1.0 h.
Basic principles; indications and contraindications of pulp-preservation and pulp-extraction techniques. 28 clock hours, 40 apprentice hours.

82:115 Clinical Endodontic Practice 1.0 h.
Clinical endodontic practice. Clinical symptoms are evaluated. Administration of treatment of each individual case is followed by the student's practical application on simple, suitable cases. 36 clock hours. Prequisite: 82:109. Junior year.

82:116 Clinical Endodontic Practice 1.0 h.
Advanced clinical clinical practice. Treatment of more difficult cases in color and binominal teeth. 68 clock hours. Prerequisite: 82:115. Senior year.

Primary for Graduates

82:250 Endodontic Literature Review* 1.0 h.
Reading and research.

82:251 Endodontic Technical Methods* 1.0 h.
Advanced review of all technical procedures. Student prepares an analysis of specific technological procedures.
82.114 Advanced Clinical Operative Dentistry 5 cr.arr.
Continuation of 82.107 involving all types of preventive, operative, and restorative dentistry. 260 clock hours. Senior year.

Primarily for Graduates
82.200 Operative Dentistry Literature Review 1 cr.arr.
Assigned reading and preparation of abstracts.
82.301 Operative Dentistry Technical Methods 4 cr.arr.
Advanced review of all technical procedures. Student studies and performs specific technical procedures.
82.302 Clinical Demonstrations in Operative Dentistry 1 cr.arr.
Assigned cases in sequence of difficulty completed under one demonstrator.
82.303 Research in Operative Dentistry 1 cr.arr.
Preparatory. Education TP-345.
82.304 Seminar in Operative Dentistry 3 cr.arr.
Conferences and discussions of current literature.
82.305 Practice Teaching in Operative Dentistry 2 cr.arr.
For students wishing to enter the field of dental education. Assigned teaching obligations by adviser. Prerequisite. Education TP-321.

82.358 Thesis Preparation in Operative Dentistry 1 cr.arr.
Prepares for publication a narrative article on the assigned research project, replete with graphic illustrations, charts, and photographs.
82.307 Advanced Dental Therapeutics 4 cr.arr.
Advanced study of the pharmacology and application of drugs used in dentistry.

*May be taken during any semester with permission of department head.

Operative Dentistry
82.254 Dental Anatomy 2 cr.
Lectures and seminars concerning dental morphology; detailed anatomy, eruption patterns, and occlusion of the human primary and permanent dentition. 64 clock hours. Freshman year.
82.253 Dental Anatomy Laboratory 4 cr.
Detailed study of human teeth morphology and function utilizing a wax replacement method and natural and plastic teeth. 188 clock hours. Freshman year.
82.4 Operative Dentistry 3 cr.
Lecture and seminars concerning dental morphological, anatomical, and functional anatomy of the mouth and orofacial region, with emphasis on clinical observation of restorative materials, and the use of instruments in procedures pertaining to operative dentistry.
82.5 Operative Dentistry Laboratory 4 cr.
Study and application of the procedures involved in the preparation of human teeth to receive a dental restoration. Students will prepare all classes of cavities in natural and plastic teeth, and use the various dental materials in the simulated fabrication of restorations. 186 clock hours. Freshman year.
82.6 Dental Anatomy for Hygienists 4 cr.
Nomenclature, maxillary forms, group structure, and microscopic structure of the teeth and investing tissues, gross and histological. 216 clock hours. Junior year.
82.7 Dental Technology for Hygienists 1 cr.
Survey to develop a familiarity with dental materials used in the clinical practice of dentistry. 14 clock hours.
82.107 Operative Dentistry 5 cr.
Lectures, seminars, and clinical demonstrations correlated with supervised patient treatment for each dental student in the clinical practice. Students perform all forms of operative treatment for ordinary patients and gain an understanding of the psychological and aesthetic importance of restorative treatment to their patients. 260 clock hours. Junior year.
82.109 Dental Therapeutics 1 cr.
Uses and administration of drugs commonly employed in dental practice. 16 clock hours. Junior year.
82.114 Dental Therapeutics Laboratory 1 cr.
Survey of drugs used in dentistry, the pharmacology, and dosage.
COLLEGE OF DENTISTRY

82:223 Curriculum Development for Dental Education* cr.arr.
An analytic approach to the problem of selecting course content into the context of institutional and departmental objectives, then ordering these courses with continuity, sequence, and integration to make a meaningful college curriculum. A philosophy of undergraduate, graduate, and continuing education will be developed from a survey of educational literature.

82:224 Design and Evaluation of Research in Dental Education* cr.arr.
An opportunity to order the scope of the research process into a meaningful sequence that will permit a practical written work format for dental educational research. Prerequisites: Introductory statistics.

82:225 Media in Dental Education* cr.arr.
Problems related to the selection, production, design, and utilization of visual materials for dental education will be explored and related to classroom teaching practices.

82:226 Organization and Administration of a Dental College* cr.arr.
Examination of present-day administrative theory and managerial psychology as related to the organization and function of a dental college. Prerequisite: Introductory course in educational or industrial administration.

82:227 Professional Problems in Dental Education* cr.arr.
Detection and causal effect investigation of the problems of training professional attitudes and habits to dental students. Theory of the literature in the psychology of attitude formation and methods to accomplish change will be the main emphasis of this seminar.

*May be taken during any semester with permission of department head.

ORAL BIOLOGY
Acting Head of Department, Richard M. Jacobs
Office, 209 Dental Building

STAFF
Professor: Richard M. Jacobs
Associate Professor: Narender H. Soni, Dennis F. Welsh
Assistant Professor: Devendra M. Kohlihar

COURSE DESCRIPTIONS
83:101 Oral Biology 2 s.h.
Lecture and laboratory course covering recent advances in oral biology; dynamic concepts of tissue mineralization; prevention of oral disease; use of fluorides and other agents in dentistry; physiology of mastication.

83:102 Oral Biology 2 s.h.
Lecture-seminar-laboratory course; craniofacial malformations; speech pathology; genetic counseling; physiology of mastication; clinical evaluation.

83:103 Problems in Oral Biology cr.arr.
Problem-solving projects in the broad field of oral biology.

Primarily for Graduates

83:201 Mineral Metabolism and Dental Caries 2 s.h.
Formation and mineralization of dental tissues; chemical composition of teeth; surface active agents; the enamel surface and dental caries.

83:202 Physiology and Structure of Bone 2 s.h.
Histology, physiology, and pathology of bone with a special reference to mammary and mandible; development, growth, maintenance, and functional adaptation of bone; bone pathology.

83:203 Topics in Oral Biology 2 s.h.
Seminar on recent developments in oral biology.

83:204 Research Techniques in Oral Biology 2 s.h.
Theory and practice of preparation of tissue for light and electron microscopy; study and application of special techniques for histopathology; preparation of hard tissues for microtomography; techniques used in radiology.

83:205 Research in Oral Biology cr.arr.
83:206 Biology of the Periodontium and Pulp 2 s.h.
Normal structures of the periodontium and pulp, their growth and development.

83:207 Practice Teaching cr.arr.
Supervised practical experience in the classroom and laboratory teaching.

ORAL DIAGNOSIS
Admissions
Head of Division, Director of Clinics
C. Frederic Erbe
Office, 223 Dental Building

Dental Radiology
Head of Division, R. D. Fleming
Office, 113E Dental Building

ORAL DIAGNOSIS
Acting Head of Division, J. D. Whisnand
Office, 113E Dental Building

STAFF
Assistant Professor: C. Frederic Erbe, R. D. Fleming, Harold L. Hammond
Instructor: Philip S. Huyton, G. C. Kienzle, Richard L. Maresh, P. H. Sippy, Carl J. Smith, J. D. Whisnand

COURSE DESCRIPTIONS
Admissions
85:107 Ethics and Practice Management I 1 s.h.
Ethical concepts and professional relationships between doctor and patient; 18 clock hours. Junior year.

85:108 Practice Management II 1 s.h.
Organization and management of a dental office with applications of accounting and budgeting; 18 clock hours. Senior year.

86:5 Dental Radiology for Dental Hygiene Students 1 s.h.
Lectures and instruction in instrumental techniques, radiation hygiene, film processing and mounting; 16 clock hours. First year.

86:8 Clinical Dental Radiology for Dental Hygiene Students 1 s.h.
Supervised clinical experience in taking dental radiographs, processing and mounting films; 30 clock hours. Second year.
86:206 Dental Radiology Literature Review cr.arr.
86:207 Seminar: Dental Radiology cr.arr.
86:208 Research: Dental Radiology cr.arr.
86:209 Practice Teaching: Dental Radiology cr.arr.

86:210 Thesis Preparation: Dental Radiology cr.arr.

86:2 History of Dentistry 1 s.h.
86:104 Oral Diagnosis and Treatment Planning 1 s.h.
86:110 Clinical Oral Diagnosis 1 s.h.
91:350 Law in a Technological Society 2 s.h.

86:200 Dental Diagnosis Literature Review cr.arr.
86:201 Seminar: Oral Diagnosis cr.arr.
86:202 Seminar: Treatment Planning cr.arr.
86:204 Practice Teaching: Oral Diagnosis cr.arr.

86:205 Thesis Preparation: Oral Diagnosis cr.arr.

86:205 Thesis Preparation: Oral Diagnosis cr.arr.

General Information

The main objectives of the Department of Oral Pathology are basic instruction of dental and other health professional students on diseases affecting oral structures. Advanced instruction is provided for graduate-level students from health sciences and related fields, and preparation of especially qualified students for careers in teaching and research. A program leading to a Certificate of Graduation in Oral Pathology is offered to dental students within pathology seminar courses. The curriculum is designed to orient students toward careers in oral pathology. A longer and more comprehensive program is also available to students who wish to pursue research training leading to the Master of Science degree. The laboratory diagnostic service, which the Department of Oral Pathology provides for the clinics of the College of Medicine, includes consultation to all phases of the department's educational effort. The laboratories are equipped for work in paraffin pathology; histology, and serologic procedures in clinical chemistry. Special facilities for studies in biochemistry and histologic tissue metabolism are used mainly for graduate student and staff research. Additional training, particularly in pathologic anatomy, is available in the Department of the Pathology of the College of Medicine in which most members of the Department of Oral Pathology hold joint appointments.

Admission Requirements

The size of the departmental staff and facilities limits the number of applicants who can be accepted for the Certificate in Oral Pathology and the Master of Science degree programs. Therefore, it is necessary that each prospective applicant have an opportunity for interview with the departmental executive prior to submission of an application for admission. The entrance requirements for admission to the College are established in the Graduate Record Examination. A satisfactory score in the Graduate Record Examination is requested. Final decision on acceptance of any applicant making the request for admission to a program of studies for admission will rest with the departmental staff.

Certificate in oral pathology. This program covers academic studies and the preclinical laboratory procedures necessary to prepare the student to take the oral pathology boards. The program requires completion of all required courses with a passing grade, and completion of satisfactory performance in the preclinical oral pathology and a satisfactory grade in a final comprehensive examination before an examination committee composed of members of the graduate faculty drawn from the Departments of Pathology and Oral Pathology.

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Although additional courses may be elected if circum-
stances permit, the required courses in this program are:
85:201 Pathologic Processes 6 a.h.
37:211 Cytology 3 a.h.
37:212 Cytology 3 a.h.
85:209 Basic Oral Microbiology 3 a.h.
85:212 General Pathology 3 a.h.
85:213 Clinical Pathology 3 a.h.
85:214 Diagnostic Pathology 3 a.h.
85:203 Clinical Pathology 8 a.h.
Master of Science degree with thesis. Candidate must 
write an original thesis. Investigations in the general field of medi-
cal and dental science and related subjects is called for, and the thesis 
will be defended in open manner at the end of the academic year. 

Evaluation of the thesis will determine the student's eligibility 
for graduation. The student will be required to complete at least 
30 semester hours of study for the degree. The thesis is the final 
requirement for the degree and must be approved by the faculty. 

85:103 Clinical Pathology 2 a.h.
85:103 Clinical Pathology
85:201 Pathologic Processes 3 a.h.
85:202 Clinical Pathology 3 a.h.
85:204 Research in Oral Pathology 3 a.h.

Primarily for Graduates

85:201 Pathologic Processes 3 a.h.
85:202 Clinical Pathology 3 a.h.
85:204 Research in Oral Pathology 3 a.h.

ORAL SURGERY

Head of Department, Melode L. Hale
Office, 207 Dental Building

STAFF

Professor: Marla L. Hale
Associate Professor: John C. Montgomery
Assistant Professor: Leslie R. Higa, James W. Tholze
Instructor: Larry A. McCray

For graduate oral surgery, see Oral Surgery, College of

Mediticine.

ORAL SURGERY

87:102 Anesthesia 1 a.h.
87:102 Oral Surgery I 1 a.h.
87:102 Oral Surgery II 1 a.h.
87:102 Oral Surgery III 1 a.h.
87:102 Oral Surgery IV 1 a.h.

COURSE DESCRIPTIONS

85:5 Pathology for Dental Hygienists 3 a.h.
Lectures and readings on the fundamental processes of disease and a survey of the more common diseases of the oral cavity and related areas.

85:102 Oral Pathology 4 a.h.
Diseases of the teeth, jaws, and related structures. Lectures, demonstrations, and histopathological examinations.

85:103 Clinical Pathology 2 a.h.

Diagnosis of oral diseases by laboratory methods. Lectures, demonstrations, clinical practice. 48 clock hours. Junior year.

85:104 Clinical Pathology 2 a.h.
Continuation of 85:103. 48 clock hours. Junior year.

85:201 Pathologic Processes 3 a.h.
Basic processes of cell life with emphasis on cellular phenomena.

85:202 Clinical Pathology 3 a.h.
Investigation of clinical oral disease by laboratory meth-

85:204 Research in Oral Pathology 3 a.h.

May be taken during any semester with permission of department head.

85:204 Research in Oral Pathology 3 a.h.

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ORTHODONTICS
Head of Department, George F. Andrews
Office, 306 Dental Building

STAFF
Professor: Richard M. Jacobs, W. M. Olin
Associate Professor: George Andrews, Charles R. Kramersak.
Assistant Professor: Steven Berbara, Robert Staley
Assistant Clinical Professor: William DeKook, Bruce Therborn.

COURSE DESCRIPTIONS
89:101 Orthodontic Technique 1 a.h.
Basic technical procedures used in clinical orthodontics, explained and performed in the laboratory. 20 clock hours. Sophomore year.

89:103 Dental and Facial Growth 2 a.h.
Growth changes in the face and jaws and their relationship to general body growth. Effects of specific growth aberrations on the dentition. 32 clock hours. Sophomore year.

89:104 Principles of Orthodontics 1 or 2 a.h.
Biological and mechanical principles involved in classification, diagnosis, and etiology of dentofacial anomalies. 36 clock hours. Sophomore year.

89:105 Preventive Orthodontics 1 a.h.
Interceptive orthodontics with emphasis on guidelines to normal occlusion. Recognition of malocclusions, design and manipulation of minimal treatment appliances. 32 clock hours. Senior year.

Primarily for Graduates
89:200 Bone Biology 2 a.h.
Reaction of tissues and bone to various types of orthodontic force. 20 clock hours.

89:201 Orthodontic Theory and Diagnosis 2 a.h.
Recent concepts and techniques are discussed. Topics stressed include guidelines to normal occlusion, etiologic factors influencing malocclusion, cephalometrics, and diagnostic aids.

89:202 Diagnosis and Treatment Planning 2 a.h.
Prerequisite: 89:201. Philosophies of treatment with special reference to multidisciplinary techniques.

89:203 Advanced Orthodontic Technique 2 a.h.
Laboratory course dealing with multidisciplinary techniques. 32 clock hours.

89:204 Biomechanics 1 or 2 a.h.
Fundamental principles of mechanics relevant to clinical orthodontics.

89:205 Facial Growth 1 or 2 a.h.
Development of the face, including growth of bone and muscle tissues, from the embryonic period to adulthood.

89:206 Facial and Dental Growth 2 a.h.
Continuation of 89:205 with emphasis on the clinical implications of dentofacial growth and development to diagnosis, treatment, and prognosis.

89:207 Case Analysis 2 a.h.
Seminar dealing with the analysis of mixed dentition cases, including discussion of the rationale and underlying principles of oral extractions procedures utilized in North America and Europe.

89:210 Orthodontic Seminar CR.
Review of current literature.

PEDODONTICS
Head of Department, Frederick M. Parkins
Office, 316 Dental Building

STAFF
Associate Professor: Frederick M. Parkins
Assistant Professor: Clemens A. Pull, Ronald Johnson, Stephen Hsin Yu Wei
Instructor: Jerry D. Walker.

COURSE DESCRIPTIONS
90:101 Pediatric Dentistry Diagnosis and Treatment 2 a.h.
Concepts of growth and development, behavior management, and preventive-restorative techniques for the pediatric patient. 20 clock hours. Sophomore year.

90:104 Clinical Pedodontics 2 a.h.
Comprehensive clinical management of the pediatric patient. 20 clock hours. Junior year.

Primarily for Graduates
90:200 Pediatric Literature Review I CR.
Discussion of growth and development, behavior management, preventive-restorative techniques, and diseases of the pediatric patient.

90:201 Pediatric Literature Review II CR.
Discussions of preventive orthodontics, fluoride therapy, health and nutrition guidance, anesthesiology, pharmacology, and minor oral surgery as related to the pediatric patient.

90:203 Pediatric Literature Review III CR.
Discussion of behavior management, preventive-restorative techniques, and multidisciplinary care for the handicapped child.

90:203 Pediatric Literature Review IV CR.
Discussion of community responsibilities and practice management, hospital affiliations, and advanced pharmacology for the pedodontist.

90:204 Advanced Clinical Pedodontics CR.
Comprehensive clinical management of the pediatric patient in the areas of preventive orthodontics, operative therapy, endodontics, and minor oral surgery.

90:205 Research Pedodontics CR.

90:206 Practice Teaching Pedodontics CR.
Observation and practice in current teaching procedures.

90:207 Thesis Preparation CR.
Preparation of an original research project and completion of a thesis.
COLLEGE OF DENTISTRY

92:308 Introduction to Advanced Pedodontics 3 s.h.
For first-year graduate students with emphasis on growth and development, child management, and therapy.

PERIODONTOLOGY
Head of Department, C. M. Praylegh
Office, BS Dental Building

STAFF
Professor: C. M. Praylegh
Assistant Professor: Phillip A. Leipso, William C. Subrick
Instructor: John J. Bergquist, Frank I. Munsberry
Affiliated Staff: James H. Balint, Paul J. Collins, David L. Deall, Larry L. Reish, Martin B. Raddit

COURSE DESCRIPTIONS
92:14 Periodontic Methods 3 s.h.
Preclinical survey of the rationale and methods of periodontic practice. 20 clock hours. September to May.

92:108 Periodontology 5 s.h.
Lectures, demonstrations, and clinical practice in the diagnosis and treatment of periodontal disease. 152 clock hours. Junior year.

92:108 Clinical Periodontology 5 s.h.
Clinical practice in diagnosis and treatment of periodontal disease. 152 clock hours. Junior year.

92:110 Periodontology for Dental Hygienists 3 s.h.
An understanding of periodontal problems and therapy.

92:212 Clinical Periodontology for Dental Hygienists 3 s.h.
Introduction to periodontology.

Primarily for Graduates
92:201 Periodontology 3 s.h.
92:202 Seminar: Periodontology 3 s.h.
92:203 Periodontics 3 s.h.
92:204 Research: Periodontology 3 s.h.
92:205 Methods of Instruction in Periodontics 3 s.h.
92:206 Periodontology Literature Review 3 s.h.
92:207 Practice Teaching in Periodontics 3 s.h.
92:208 Recent Advances in Periodontics 3 s.h.
92:209 Techniques in Dental Research 3 s.h.
92:210 Periodontology Pathology Seminar 3 s.h.

PREVENTIVE AND COMMUNITY DENTISTRY
Head of Department, W. Philip Phair
Office, 109 Dental Building

COURSE DESCRIPTION
111:102 Preventive Dentistry and Community Health 3 s.h.
Lecture and discussion. Divided into three segments: an introduction to public health at the national, state, and local levels, including environmental and sociological problems; social and political factors in the delivery of dental care; and a critical evaluation of the scientific literature and a study of the delivery of dental care across the country. 120 clock hours. Senior year.

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The College of Education prepares teachers and other professional personnel for positions in elementary and secondary schools and in colleges and universities. The various curricula are based on the assumptions that teachers should have a liberal education and that they should possess a detailed knowledge of their major teaching areas. In addition, their professional education should provide an understanding of the human learning process, a knowledge of the function and organization of the school, and professionally supervised laboratory experience.

There are seven divisions in the College of Education:
Division of Social Foundations, Adult and Higher Education, and Educational Media
Division of Educational Administration
Division of Elementary Education
Division of Educational Psychology, Measurement, and Statistics
Division of Secondary Education
Division of Counselor Education
Division of Special Education

The University of Iowa is accredited by the National Council for Accreditation of Teacher Education (NCATE) for the preparation of elementary and secondary teachers and school personnel, with the doctor's degree as 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-six per cent of the 155 members with academic rank hold earned doctorates in their teaching fields, and 86 per cent have had teaching or administrative experience in the public schools. A major strength of the College is the close working relationship with the College of Liberal Arts. With few exceptions, professors on the College of Education faculty also hold rank in the College of Liberal Arts. Eighteen of the twenty-two professors who teach secondary school methods have a Ph.D. degree in their teaching discipline as well as preparation in education and hold academic rank both in their academic department and in education.

The faculty has a strong commitment to teaching and to the applications of new methods and media in their own classes. Most members employ modern audiovisual media, and field experiences are emphasized in such areas as teacher education, counseling, special education, curriculum, and administration.

In addition to independent research studies by individual faculty members, fourteen state, foundation, and federal research grants have been awarded research proposals submitted through the College since 1965. More than twenty professional books have been authored or coauthored by members of the education faculty during this period. In addition, most members of the faculty are active in professional societies. Several recently have held or now hold key offices in national organizations.

FACILITIES

The University High School. One of the laboratories of the College of Education is the University High School. The school provides opportunities for University students and staff to obtain experiences through observation, practice, and supervision which prepare them for positions of responsibility and leadership in education. The school also provides a facility for research and experimental teaching. It is a service center designed for Iowa teachers and other members of the profession in such areas as demonstration teaching, curriculum analysis and revision, and making available speakers, discussion leaders, and panel members.

Every attempt is made to provide a superior learning environment at the secondary level. The school is organized on the six-year basis, including grades seven through twelve, and is accredited by the North Central Association.

The University Elementary School. This school is made up of the kindergarten and first six grades and operates as one of the laboratories of the College of Education. It serves the University and the state through five main channels by operating as an experimental center where new theories, methods, materials, and research in education may be tried out; helping in the preparation of new course-of-study materials which may be appropriate for use in other schools of the state; serving as a laboratory for the training of supervisors and school administrators; providing classes for observation by students in the University and
by groups of teachers in the state who arrange visits to the school, and through conferences, letters and lectures, the staff of the school assists superintendents and teachers in the state in solving their teaching problems.

The University Hospital School is located in a building of its own just west of the General Hospital. It contains two unique sections within the same complex, the Children’s Rehabilitation section and the Pine School section. The College of Education, in cooperation with the University Hospital School, studies and develops curricular procedures and materials for both sections of the University Hospital School.

The Children’s Rehabilitation section has three main functions: the education, care, and treatment of children who can be educated, but who are so severely involved physically that they cannot attend or progress optimally in the regular schools; specialized training for workers and trainees in all areas concerned with handicapped children; and clinical research pertaining to causes and prevention of handicapping conditions in children and to management of handicapped children.

The Pine School section provides special help on a day-school basis for selected preschool and elementary school children in the Iowa City area who are mentally retarded. Educational research, teacher education, and broad services are the main functions of this section. Opportunity for student teaching and supervised clinical practice is available.

Basic medical 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.

A School Program for Emotionally Disturbed Children is located in the child psychiatry unit of the Psychopathic Hospital. The children attending this school are residential patients in the child psychiatry unit. This school program is supported by the Psychopathic Hospital and is directed by the College of Education. Opportunities are available for student teaching and practicum in school psychological services.

The Reading Clinic makes possible investigations into the fundamental causes of reading deficiencies and experimentation with methods of overcoming these deficiencies. It provides opportunity for observation and practice in the diagnosis and teaching of severely retarded readers.

The Curriculum 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 maps and games, other materials needed in curriculum development, and the Resource Collection of approximately 10,000 volumes. It is staffed by two professional librarians, two assistants, and four, 000 hours of student help.

The Educational Media Instructional Area contains a variety of instructional equipment and materials. Laboratory facilities provide opportunities to develop skills in the design and production of instructional materials and in the operation of instructional equipment of all types.

The Statistical Laboratory contains a variety of calculating equipment. It provides experience in the application of such equipment to the analysis of statistical data and provides facilities for the analysis of research data.

The Iowa Educational Information Center maintains with the State Department of Public Instruction a computer-based file of educational data for research purposes and provides computer services to Iowa schools.

The Education-Psychology Library, with approximately 10,000 volumes, 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. The library is staffed by three professional librarians to assist in the reference and research in the many areas of the above-mentioned fields, four full-time assistants, and eight hours of student help.

UNIVERSITY COUNSELING SERVICES

The facilities of the University Counseling Services are available to students in counseling psychology for research and practicum purposes.

DEGREE PROGRAMS

Elementary Education

Program Objectives. To satisfy the elementary teacher certification requirements, the undergraduate student must successfully complete an elementary education major. This major is a joint offering of the College of Liberal Arts and the College of Education and is part of a four-year program in the College of Liberal Arts leading to a Bachelor of Arts degree.

The elementary education curriculum is based on two fundamental assumptions: that a broad liberal arts background accompanied by a study in depth of at least one area is the best foundation for teacher preparation; and that maximum emphasis in professional coursework should be placed on methods and laboratory practice.
Throughout the teacher preparation program, flexibility in planning is encouraged so that the student and his faculty adviser can respond to the student’s unique interests and abilities. The elementary education major is designed specifically to prepare teachers for the kindergarten through the sixth grade. In addition, a special program emphasis is available for selected students desiring specialization at the nursery school-kindergarten level. This special program is available only to students completing requirements for both regular elementary certification and the specified nursery school-kindergarten certification. Such students should consult with their adviser no later than registration for the first semester of the junior year. Students interested in teaching such areas as art, music, and physical education in the elementary school should consult with their advisers concerning the special certification requirements which must be met. Students interested in becoming certified to work with special education classes at the elementary level must complete all requirements for the elementary education major as well as the requirements for the special education major of their choice.

Admission Procedures. The following application procedures are designed to accomplish two objectives: to provide prospective elementary education majors with professional assistance and guidance from the beginning of their preparation programs; and to insure that only those students who have the qualifications needed for successful teaching are permitted to enter and complete the program.

Admission to elementary education. All students planning to major in elementary education must complete a formal application for admission to the College of Education Teacher Education Program. A form for making this application may be obtained from the Admissions Office, Room 1, Jessup Hall, or from the College of Education Office, Room 200, Jefferson Building. The completed application should be returned to the Admissions Office in Jessup Hall.

All students applying to the elementary education program prior to or during the first semester of their freshman year must meet the following minimum requirements for eligibility to the program:

1. Admission to The University of Iowa as a degree candidate;
2. Completion of the American College Tests;
3. Evidence of good standing in the University and freedom from any physical handicap or health impairment which precludes teaching success.

All students applying to the elementary education program after having completed one or more semesters in the University or any other college or university must meet the above requirements and, in addition, must have achieved the following grade-point averages:

1. A 2.2 in all coursework attempted;
2. A 2.2 in all coursework taken at The University of Iowa.

Students will not be accepted as advisees by College of Education faculty until their applications have been approved.

After having been admitted, students may continue in the program as long as they maintain the minimum grade-point averages stated above, together with the other minimum standards for graduation. The status of all elementary education majors will be reviewed at the end of the freshman and sophomore years. At the time of each review, any student not maintaining the standards for continuation will be dropped from the program. Such students and all other students not currently accepted in the program may apply for admission at any time the minimum standards are met, until the end of their junior year. At that time all students planning to enter and/or continue in the program must meet the requirements for the senior professional semester.

Admission to the professional semester. All elementary education majors must enroll in a professional semester sequence during one of the semesters of their senior year. Work taken during this semester is devoted entirely to methodological procedures, curriculum organization, and actual teaching experience.

All juniors planning to complete the major in elementary education must formally apply for admission to the professional semester sequence. The requirements for admission to the professional semester are:

1. Admission to the Elementary Teacher Education Program;
2. Completion of no less than 8 semester hours during one semester or one summer session in residence in The University of Iowa;
3. Completion of the junior year prior to September 1 of the academic year in which the student enters the professional semester;
4. A cumulative grade-point average of 2.2 in:
   a. all college work attempted;
   b. all coursework attempted at The University of Iowa;
   c. all work taken in the major field; this will be based upon no fewer than five courses taken from the Foundation Courses portion of the Elementary Education major. In cases where at least five courses have not been completed by the end of the junior year, the application for the professional semester will be reviewed at the time the five courses are completed.
5. Completion of formal application for admission to the professional semester;
6. Departmental approval of the Application for Admission to the professional semester. Application forms will be available at spring registration at the College of Education tables, or in 208 Jefferson building following registration. The application for admission to the professional semester must be on file in the College of Education Office by April 1 for all resident students who plan to enroll in the professional semester during the subsequent academic year. For students who transfer to the University after the April 1 deadline, the professional semester application must be filed no later than July 1. For transfer students or resident students unable to meet all requirements for the professional semester prior to the beginning of the academic year immediately following, their application will not be considered for admission until the next regular admission deadline, i.e., April 1 of the following year. A student faced with this problem should consult the Assistant Dean of Personnel in the College of Education concerning procedures to be followed.

Graduate students admitted to the elementary teacher certification program are subject to the same application deadlines, admission and course requirements as are undergraduates except that their grade-point averages must meet the requirements for admission to the Graduate College. (See Graduate College section of the Catalog.) For purposes of determining eligibility under this section, grade-point averages will be computed on the basis of all coursework completed prior to the academic year during which the applicant desires to enroll in the professional semester.

Course Requirements for Elementary Education Majors

Liberal Arts Requirements
1. Proficiency in the following areas: rhetoric (reading, writing, and speaking), physical education, mathematics, and a foreign language.
2. Satisfaction of core course requirements in the areas of literature, natural science, historical-cultural studies, and social science.

All students who have not satisfied the natural science and social science core requirements prior to their decision to major in elementary education should consult with their education advisers about alternatives for satisfying these area requirements. Elementary education majors may substitute the two-semester Science Foundations (97:55 and 97:56) for the natural science requirements. All majors must complete one course in American Government or the equivalent. Course 20:1 Introduction to American Politics or 30:100 The American Political System satisfy this requirement. Either of these courses may also be applied to the social science core requirement. If possible, students should plan to satisfy this requirement during their freshman or sophomore year.

Area of concentration. A minimum of 20 semester hours of approved credit must be completed in one of the majors offered by the College of Liberal Arts. Since this requirement is intended to provide indepth study of a specific major, only those courses which can be used to fulfill the requirements for the major selected will be approved for use in the area of concentration. Completion of a second education major does not satisfy this requirement. When possible, it is recommended that elementary education majors continue work in their area of concentration until the second major is completed. Students should consult the University Catalog for listings of courses applicable to a given major.

For students anticipating a nursery school-kindergarten-enforcement, the following areas of concentration are relevant: psychology, sociology, child development, and home economics (family development).

Major in elementary education. The major in elementary education consists of at least 29 semester hours of professional coursework. The professional courses are designed to provide the student with an understanding of the nature of the teaching-learning process and a background of appropriate skills and knowledge. The Teacher Education Program culminates in the professional semester, which is an intensive period devoted to methods of instruction and laboratory practice.

1. Foundation courses. (13 s.h.) Elementary Education students must complete at least 13 semester hours from the required and selected courses which constitute the preparation in foundations (a and b below). This work should be completed prior to the senior year. Students may elect more than the required minimum in this area.

- Required courses: (Sophomore or Junior year)
  - TE:100 Introduction: Elementary Teaching 2 s.h.
  - TP:75 Educational Psychology 3 s.h.

- Selected requirements (Junior year) (Minimum of 3)
  - TV:110 Selection and Utilization of Educational Media 2 s.h.
  - TE:120 Methods and Materials: Music for the Classroom Teacher 3 s.h.
  - TE:112 Elementary School Physical Education 3 s.h.
  - TE:122 Methods and Materials: Art for the Classroom Teacher 3 s.h.
  - TE:123 Children's Literature 3 s.h.
c) Additional required courses for early child-
hood emphasis: (Junior year)
TE: 157 Methods: Early Childhood Education I 3 a.h.
TE: 158 Observation and Participation in Pre-Primary Education 4 a.h.

2. Professional semester. (16-18 a.h.*) The pro-
fessional semester course offering consists of six
methods courses and student teaching. The
student must register for a minimum of four
methods courses and the laboratory practice during
the professional semester. The methods courses
meet daily during the first half of the semester.
The laboratory practice assignment consists of
an all-day classroom teaching assignment during
the last half of the semester and a seminar which
meets weekly throughout the semester.

Courses offered in the professional semester:
TE: 160 Methods: Elementary School Language Arts 2 a.h.
TE: 161 Methods: Elementary School Social Studies 2 a.h.
TE: 162 Methods: Elementary School Science 2 a.h.
TE: 163 Methods: Elementary School Mathematics 2 a.h.
TE: 164 Methods: Elementary School Reading 2 a.h.
TE: 167 Methods: Early Childhood Education II 2 a.h.
TE: 183 Laboratory Practice in the Elementary School 8 a.h.

*Graduate students' registration adjusted to meet the
15-semester-hour maximum established by the Graduate College.

Special Education

Program requirements for graduation. Students
intending to major in special education can select
one of two options:
1. Complete the requirements in special educa-
tion to qualify for certification to teach in the
area of special education for which they are pre-
pared. The major is listed in the College of
Liberal Arts and may have one of three em-
phases: teaching the mentally retarded, teaching
the physically handicapped, or teaching the deaf.
Interested students should consult with the staff
in the Department of Special Education regarding
the specific course requirements. Included are
courses in elementary education or secondary
education, but this option does not provide for
certification as an elementary or secondary school
teacher in other than special education pro-
grams.
2. Students may elect to meet the requirements
in special education and also in elementary or
secondary education. Students preferring this
option should refer to the Elementary Education
section or the Secondary Teacher Education
section of the Catalog and plan to include all of
these requirements plus the special education
requirements as they progress toward a degree.
Successful completion of this total program quali-
dies the student for nursing certification as either
an elementary or secondary teacher and also in
an area of special education.

The major is teaching the mentally retarded or
physically handicapped. The major in special
education emphasizing teaching the mentally re-
 retarded or physically handicapped is limited to
the minimum concentration of 20 semester hours
in the respective area of special education.

Students interested in teaching the mentally
retarded have the following four options: certi-
fication to teach elementary education classes
and special education classes for the mentally re-
tarded at the elementary level, secondary educa-
tion classes in a major field and special education
classes for the mentally retarded at the secondary
level, special education classes for the mentally
retarded at the elementary level, and special ed-
ucation classes for the mentally retarded at the
secondary level.

Students interested in teaching the physically
handicapped have the following three options:
certification to teach elementary education and
special education for the physically handicapped,
secondary education and special education for
the physically handicapped, and special educa-
tion for the physically handicapped at the ele-
mentary and secondary level.

A professional semester in special education is
required for the students emphasizing teaching
the mentally retarded and the physically handi-
capped. The professional semester is ordinarily
taken during one semester of the senior year.
Students getting dual certification will be assigned
to one program. Students teaching in the other
area of certification. Students majoring in the
education of physically handicapped ordinarily
take the professional semester in that during the
spring semester. Formal admission and student
standing are prerequisites to register for either
the elementary, secondary, or special education
professional semester.

The student emphasizing teaching the mentally
retarded at the elementary level should complete
the following courses:

A. Courses that must be taken prior to admission
   to the professional semester:
   TU: 120 Exceptional Children (31:117) 3 a.h.
   TU: 135 Mental Retardation 3 a.h.

   or

   TP: 102 The Learner 3 a.h.

   TP: 148 Social Development of the
   School-Age Child 2 or 3 a.h.

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B. The special education professional semester consists of two methods courses in mental retardation which meet for five hours a week during the first half of the semester, a laboratory practicum assignment consisting of an all-day classroom teaching experience during the last half of the semester, and a seminar type course which meets one day a week throughout the semester.

Courses taken during the professional semester:
TU:145 Curriculum Development and Methodology for the Mentally Retarded I 3 a.h.
TU:146 Curriculum Development and Methodology for the Mentally Retarded II 3 a.h.
TU:147 Cases and Problems in Teaching the Mentally Retarded 2 a.h.
TU:192 Laboratory Practice in the Education of the Mentally Retarded Child 8 a.h.

C. Recommended electives:
34:1 Introduction to Sociology: Principles 4 a.h.
TP:131 Psychology of Reading 3 or 4 a.h.
TU:135 Teaching the trainable Mentally Retarded 3 a.h.
TU:137 Education of Gifted Children 2 a.h.
TU:145 Vocational Resources for the Mentally Retarded 3 a.h.
TP:117 Philosophies of Education 2 or 3 a.h.
TP:135 John Dewey and Education 2 or 3 a.h.
31:13 Psychology of Adjustment 3 a.h.
31:15 Introduction to Social Psychology 3 a.h.
31:111 Child Development (TP:106 and E:190) 3 a.h.

Other: Additional methods courses such as language arts, science, etc. that might not have been taken in the regular elementary teacher preparation.

The student wishing to receive certification to teach only at the secondary level for educable mentally retarded should:
A. Declare a major in psychology and complete the following courses:
31:117 Exceptional Children 3 a.h.
31:1 Elementary Psychology 3 a.h.
31:13 Psychology of Adjustment 3 a.h.
31:15 Introduction to Social Psychology 3 a.h.
31:43 Psychological Measurement 3 a.h.
Additional courses agreed upon with the advisor.

B. Complete the following (or their equivalent):
TU:135 Mental Retardation 3 a.h.
TU:143 Vocational Resources for the Mentally Retarded 3 a.h.
TU:145 Curriculum Development and Methodology I 3 a.h.
TU:146 Curriculum Development and Methodology II 3 a.h.
TU:192 Laboratory Practice (Secondary Level) 8 a.h.
TP:75 Educational Psychology and Measurement 3 a.h.
TP:102 The Learner 3 a.h.
or
TP:143 Social Development of the School-Age Child 2 or 3 a.h.
TE:120 Methods: Elementary School Language Arts 2 a.h.
TE:124 Methods: Elementary School Reading 2 or 3 a.h.
TV:110 Selection and Utilization of Educational Media 2 a.h.
TV:100 Introduction: Secondary School Teaching 3 a.h.
7C:101 Principles of Guidance 2 or 3 a.h.
34:1 Introduction to Sociology: Principles 4 a.h.
34:143 Juvenile Delinquency 3 a.h.

If a student wishes a dual certification—special education and secondary education—he must complete the requirements for both programs.

The student emphasizing teaching the physically handicapped should complete the following courses:
TU:130 Exceptional Children (TU:117) 3 a.h.
TU:139 Orientation to the Rehabilitation of the Physically Handicapped Child 3 a.h.
TP:102 The Learner 3 a.h.
or
TP:148 Social Development of the School-Age Child 2 or 3 a.h.
31:15 Introduction to Speech and Hearing Processes and Disorders (31:197) 3 a.h.

The professional semester consists of one methods course in the physically handicapped which meets for five hours a week during the first half of the semester, a laboratory practicum assignment consisting of an all-day classroom teaching experience during the last half of the semester,

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and a seminar-type course which meets one day a week throughout the semester.

Courses taken during the professional semester:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7U:138</td>
<td>Methods in Education of the Physically Handicapped</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>7U:148</td>
<td>Cases and problem in Teaching the Physically Handicapped</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>7U:191</td>
<td>Laboratory Practice in Education of the Physically Handicapped Child</td>
<td>cr.arr.</td>
</tr>
<tr>
<td></td>
<td>(3 to 8 a.h.)</td>
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</tbody>
</table>

Additional electives

Recommended electives for this program are:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>34:1</td>
<td>Introduction to Sociology: Principles</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>7F:117</td>
<td>Philosophies of Education 2 or 3 a.h.</td>
<td></td>
</tr>
<tr>
<td>7F:135</td>
<td>John Dewey and Education 2 or 3 a.h.</td>
<td></td>
</tr>
<tr>
<td>7P:151</td>
<td>Psychology of Reading 3 or 4 a.h.</td>
<td></td>
</tr>
<tr>
<td>7U:135</td>
<td>Mental Retardation</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>31:13</td>
<td>Psychology of Adjustment</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>31:15</td>
<td>Introduction to Social Psychology</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>31:111</td>
<td>Child Development (7P:106 and 5:100)</td>
<td>3 a.h.</td>
</tr>
</tbody>
</table>

The major is teaching the deaf. In addition to general liberal arts requirements, the major in special education emphasizing teaching the deaf requires a minimum concentration of 30 semester hours in professional coursework to be completed in the College of Education and the Department of Speech Pathology and Audiology in Iowa City, and a minimum concentration of 25 semester hours of professional courses to be completed at the Iowa School for the Deaf in Council Bluffs (I.S.D.). The final year of study is spent in residence at I.S.D. coursework completed there is counted as residence credit.

A. Professional courses which should be completed at U of I:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7U:130</td>
<td>Exceptional Children (31:117)</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>7P:75</td>
<td>Educational Psychology and Measurement (31:17)</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>7P:102</td>
<td>The Learner</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>7P:148</td>
<td>Socialization of the School-Age Child</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>7E:160</td>
<td>Methods: Elementary School Language Arts</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>7E:163</td>
<td>Methods: Elementary School Mathematics</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>3:15</td>
<td>Introduction to Speech and Hearing Processes and Disorders (31:167)</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>3:20</td>
<td>Phonetics of American English</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>3:110</td>
<td>Anatomy of Speech and Hearing Mechanisms</td>
<td>3 a.h.</td>
</tr>
</tbody>
</table>

3:112 Fundamentals of Speech Science 3 a.h.
3:113 Introduction to Hearing Science 3 a.h.
10S:100 General Linguistics 3 a.h.
3:114 Children's Language Development 3 a.h.
3:185 Hearing Loss and Audiology 3 a.h.
3:242 Conservation of Hearing 3 a.h.
3:244 Aural Rehabilitation 3 a.h.
3:310 Practicum: Aural Rehabilitation 3 a.h.
3:311 Practicum: Hearing Measurement 3 a.h.

B. Professional courses to be completed at I.S.D.:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7U:151</td>
<td>Language for the Deaf I</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>7U:152</td>
<td>Language for the Deaf II</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>7U:153</td>
<td>Speech Training for the Deaf I</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>7U:154</td>
<td>Speech Training for the Deaf II</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>7U:155</td>
<td>Education and Guidance of the Deaf</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>7U:156</td>
<td>Observation and Student Teaching for the Deaf I</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>7U:157</td>
<td>Teaching Elementary Subjects to the Deaf I</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>7U:158</td>
<td>Teaching Elementary Subjects to the Deaf II</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>7U:159</td>
<td>Speech Reading for the Deaf II</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>7U:169</td>
<td>Auditory Training for the Deaf II</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>7U:181</td>
<td>Anatomy of the Speech and Hearing Mechanisms</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>7U:182</td>
<td>Observation and Student Teaching for the Deaf II</td>
<td>cr.arr.</td>
</tr>
</tbody>
</table>

Secondary Teacher Education

Admission procedures. Students who have completed the basic requirements and who desire admission for the fall semester must submit applications no later than July 1 to the Office of Admissions, Room 1, Jessup Hall. For those desiring admission for the spring semester the deadline is November 1.

Applicants for admission to a teacher education program must be free of any physical handicap or health impairment which precludes teaching success.

Undergraduates, Applications for admission may be submitted only by students who have been admitted to The University of Iowa for degree candidates.
Graduates. Applicants with baccalaureate or advanced degrees must have been admitted to the Graduate College.

Admission Requirements—Undergraduates

1. Satisfaction of liberal arts requirements in rhetoric, mathematics, physical education, and at least one core area (literature, historical-cultural, natural science, or social science);

2. Completion of a minimum of 40 semester hours of credit;

3. Completion of the American College Test;

4. Cumulative college grade-point average of not less than 2.2 (based on the University of Iowa's 4-point marking system) on all college work attempted, all college work attempted at The University of Iowa, and all work attempted in major;

5. Satisfactory completion of at least one semester or one summer session of work in residence at The University of Iowa, during which at least 6 semester hours of credit were earned.

Tentative admission status may be granted to transfer students with senior standing (30 semester hours) prior to fulfillment of the residence requirement provided requirements 1, 2, 3, and 4 have been satisfied. Final admission to the program and assignment to student teaching must await the completion of the residence requirement.

Admission Requirements—Graduates

1. Cumulative grade-point average of not less than 2.5 on a 4-point marking system;

2. Satisfactory completion of at least one semester or one summer session of work in residence at The University of Iowa, during which at least 6 semester hours of credit were earned.

Tentative admission status may be granted to students prior to fulfillment of the residence credit requirement. Final admission to the program and assignment to student teaching must await completion of the residence requirement.

Once formally admitted, applicants will be continued in the teacher education program as long as their work is satisfactory. In July of each year, the achievement of all students in secondary education, as revealed by grade-point averages and other data, will be reviewed. Any student failing to maintain a grade-point average of at least 2.0 at the undergraduate level and 2.5 at the Graduate level, or having displayed marked inadequacies for teaching will be dropped from the program.

Program Requirements

A. General requirements for graduation from the College of Liberal Arts:

1. Proficiency in rhetoric (reading, writing, and speaking); mathematics; physical education, and foreign language. Students whose major is business education (in the College of Business Administration) are not required to take physical education skills, foreign language, and social science core courses.

2. Satisfaction of core course requirements in literature, natural science, social science, and historical-cultural.

B. Teaching majors and minors:

1. A sufficient number of courses to satisfy the requirements for a teaching major in a department within the College of Liberal Arts or the College of Business Administration. The completion of an academic major, as defined by the major department, in most cases, will satisfy this requirement. See College of Liberal Arts and College of Business Administration sections of the Catalog for outlines of department requirements and teaching majors.

2. It is strongly recommended that students earn sufficient credits in a field outside the area of the major to obtain approval by the University for teaching in this second field (18 to 35 semester hours). Copies of approved patterns of courses for this purpose may be obtained from the Dean, College of Education.

C. State requirement, state of Iowa, 2 semester hours of credit in American history or American government.

D. Required courses in education (20 to 34 semester hours):

Junior year—75:100 Introduction to Secondary Teaching, 3 semester hours (first semester); 75:75 Educational Psychology and Measurements, 3 semester hours (second semester).

Majors in art, music, and physical education must earn credit in elementary and secondary special methods and in elementary and secondary student teaching.

Graduate students may be permitted to substitute appropriate graduate courses for 75:75 and 75:100.

Senior year—Special Methods, 6 semester hours. The entire 6 semester hours may be required in the student's major or 3 semester hours may be in his major and 3 semester hours in his minor teaching field. Students who do not declare a minor will be expected to elect a 3-semester-hour course in some other area of professional education such as audovisual methods.

Professional semester in education. The professional semester in education consists of six
hours of methods and eight hours of teaching. The methods courses meet daily during the first half of the semester.

The student teaching assignment consists of an all-day classroom assignment during the last half of the semester. Formal admission and senior standing are prerequisites to registration for the professional semester.

In order to register for 75:141 Observation and Laboratory Practice, the student must have:

1. Satisfactorily completed courses 7P:75 and 7S:100;
2. Maintained a cumulative grade-point average of not less than 2.2 (2.5 if a graduate student) on all college work attempted, all college work attempted at The University of Iowa, and all work attempted in his major;
3. Filed application for an assignment by April 1 preceding the academic year during which student teaching is desired. Students transferring to The University of Iowa as seniors or graduate students must submit applications for admission to the professional semester prior to October 1;
4. Consulted with and been recommended by the appropriate department head in the University High School and the Coordinator of Student Teaching.

The department heads in the University High School serve as supervisors of student teaching and as advisers to students in their respective academic fields of art, business education, English, foreign language, home economics, mathematics, music, physical education for boys, physical education for girls, science, social studies, and speech.

Graduate Programs

Graduate study in the College of Education proceeds under the general regulations of the Graduate College with certain additional requirements imposed by the Dean and faculty of the College of Education. Graduate students in education register in the Graduate College and receive their degrees from that College and therefore must meet all admission and graduation requirements of the Graduate College.

The course organization consists of a series of introductory and advanced courses offered throughout the academic year in each of the following areas: elementary education, secondary education (including joint programs in some teaching fields), adult education, educational administration, educational psychology, school psychology, remedial reading, tests and measurement, educational media, counseling and guidance (including secondary and elementary school guidance), college student personnel work and rehabilitation counseling, special education, statistical methods, social foundations, comparative education, and higher education.

In the first year of graduate study, emphasis is upon breadth rather than intensive specialization. Graduate programs should include at least two fields in education if a minor outside the College of Education is declared. If there is no declared minor, the program should include three fields in education.

In addition to the traditional programs leading to the M.A. and Ph.D. degrees in education, the Graduate College has authorized the offering of a nonthesis M.A. program, a Master of Arts in Teaching (M.A.T.) program, and a Specialist in Education (S.A.) program.

Professional M.A. The nonthesis M.A. program provides for a somewhat more specialized professional preparation than is available in the traditional M.A. program, by permitting the substitution of approved coursework for the thesis. The curricula in the nonthesis programs are more closely prescribed and require a minimum of 30 semester hours of coursework. Most curricula require more than the minimum, generally ranging from 32 to 35 semester hours. The College of Education currently has nonthesis M.A. programs in adult education, educational administration, educational media, educational psychology, measurement and statistics, elementary education, elementary administration, developmental reading, guidance and counseling, college student personnel, rehabilitation counseling, higher education, remedial reading, school psychology, special education, secondary education, secondary administration, secondary curriculum and supervision, and various teaching areas in secondary education.

Students planning to continue graduate study beyond the master's degree should follow the M.A. program with thesis. Applicants for candidacy for the Ph.D. degree who have not completed a master's degree shall be regarded as having completed an organized research project or other evidence of their ability to carry on independent investigations.

Master of Arts in teaching. The M.A.T. programs offer graduates from four-year liberal arts colleges an opportunity to acquire certification for secondary school teaching while participating in specialized graduate curricula. These curricula are specifically designed for students who majored in one of the core areas of study taught in the public schools and who possess superior academic records.

The M.A.T. curricula include a minimum of 20 semester hours of graduate work in professional education including at least two courses from educational psychology, history of education, philosophy of education or introduction to secondary school teaching, and courses in special areas of teaching and student teaching or an internship. In addition to the professional educa-
tions, a minimum of 18 semester hours of approved graduate coursework in the student's teaching field must be completed.

Specialist in Education. Curricula for the Specialist in Education degree (Ed.S.) are authorized in guidance and counseling, college student personnel work, educational administration, educational media, elementary administration, higher education, science education, secondary administration, school psychology, and special education. The Ed.S. degree constitutes Graduate College recognition of the student's successful completion of a prescribed two-year postbaccalaureate program. Twenty-eight of the 80 semester hours are prescribed in the area of specialization; the others are in cognate fields, supervised experience, electives, and successful completion of a comprehensive examination. Four semester hours of research culminate in a written report.

Students admitted to programs in education leading to a master's or specialist's degree should locate an advisor and file their degree programs before their second registration. Detailed information about these degree programs may be obtained from the Office of the Dean, College of Education.

Doctor of Philosophy. Graduate programs leading to the Ph.D. degree are offered in adult education, art education, educational media, business education, college student personnel, counseling and guidance, curriculum development, educational administration, educational psychology, elementary education, English education, higher education, social foundations, mathematics education, music education, rehabilitation counseling, school psychology, science education, secondary education, social studies education, special education, and statistics and measurement. The Ph.D. programs are individually planned to complement the general preparation of the candidate and to satisfy the requirements of the area of specialization.

The applicant for admission to a Ph.D. program should possess a superior academic record and should present evidence of successful professional experience. Information about specific Ph.D. programs may be obtained from the Office of the Dean, College of Education.

CERTIFICATION

Certificates for teachers are issued by certification agencies in the respective states. In Iowa, this agency is the State Department of Public Instruction. Most states require that applicants for original certificates be recommended by the institution in which they complete their program of study. Although each state has its own certification requirements, a majority of the 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.

Application forms for Iowa certificates may be obtained at the Office of Admissions. The student in his last semester should complete an application for Iowa certification and submit it to the Office of Admissions. Students who wish to obtain certificates in other states should contact certification agencies in those states or the Office of Admissions, 1 Jessup Hall.

EDUCATIONAL PLACEMENT OFFICE

The University maintains placement services for those interested in teaching and administrative positions. The services of the office are available to current University of Iowa graduates and to alumni. University and college positions as well as public and private school vacancies are reported to the office.

It is strongly recommended that students completing certification programs register with the Educational Placement Office and establish a permanent credential file before they leave the campus. This can be used in seeking placement opportunities currently or in the future. The office is located in C105 East Hall. Requests for information may be addressed to Miss Judith Henderson, Acting Director.

EXPENSES

See Admissions-Registration-Fees and Housing sections of the Catalog.

ADMINISTRATIVE STAFF

Dean: Howard W. Jones
Dean Emeritus: Emerson P. Peterson*
Associate Dean: Lauren A. Von Dyne
Associate Dean Emeritus: Henry D. DeKock
Assistant Deans: Stuart C. Gray, Ray A. Munton, Owen L. Spring

University Schools: Director, Wesley A. Erbe; Principal, High School, Kent H. Winser; Principal, Elementary School, Robert E. Gunter

University Hospital School: Principal, Sigurd B. Walden

Iowa Testing Program: Director, William E. Colman

Iowa Center for Research in School Administration: Dean, Franklin D. Quinlan; Associate Director, William G. Moomah, Robert Stephenson

Iowa Educational Information Center: Director, Walter J. Foley

Educational Placement Office: Acting Director, Judith D. Henderson

Education-Psychology Librarian: Librarian, Anne G. Evans

Curriculum Laboratory: Librarian, Grace M. Wynn

CHAIRMEN OF DIVISIONS

TC:336 Workshop: College Union

Program 2 s.h.
Develops a deeper understanding of the role of union pro-
gressions in relation to higher education, the adminis-
tration of college student, and the academic life of the campus.
Prerequisites: an understanding of program content and cur-
current practices in union programming. Lecture, group ses-
sions, and discussions. Prerequisite: permission of instructor.
Same as Recreation Educa-
tion 214:250.

TC:341 Introduction to Rehabilitation

Services 2 s.h.
Historical and legal background of rehabilitation. Role of
rehabilitation workers and nature of rehabilitation re-
sources. Same as Psychology 21:323.

TC:342 Rehabilitation Counseling 2 s.h.
Counseling process in a rehabilitation setting. Approval
and counseling procedures. Same as Psychology 21:328.

Prerequisites: consent of instructor.

TC:347 Medical Aspects of Disability 4 s.h.
Orientation to medical evaluation as part of the rehabili-
tation process. Body systems, medical terminology, and
medical description of disabilities to include exami-
nation, interpretation of medical information with the social,
psychological, and vocational aspects of disabling condi-
tions.

TC:348 Medical Aspects of Disability 4 s.h.
Continuation of TC:347. Prerequisites: TC:347 or consent
of instructor.

TC:351 Vocational-Educational Counseling 3 s.h.
A survey of theories and techniques of counseling clients
with vocational and educational problems.

TC:354 Appraisal in Counseling 3 s.h.
Counselor's role in developing an interview, the techniques
in the counseling interview, and preparing and performing
the interview. Laboratory period in test administration, scro-
ing, and interview techniques.

TC:355 Vocational Psychology 3 s.h.
Comprehensive review of theory and research on voca-
tional psychology and development. Two units: vocational
choices and vocational adjustment.

TC:359 Individual Instruction in Counselor
Education 3 s.h.
Prerequisites: consent of instructor.

TC:300 Counseling: Theories, Issues, and Process 2 or 3 s.h.
Current theoretical concepts in counseling and the pro-
cesses of therapy. Emphasis on the counseling client.
Prerequisites: consent of instructor.

TC:302 Advanced Practicum in School
Counseling 2 s.h.
Supervised practice in counseling. Intensive analysis of
the counselor's role and use of methods. For advanced
students. Prerequisites: consent of instructor.

TC:330 Introduction to Student Personnel
Work 2 or 3 s.h.
Recent developments and concerns in higher education;
the role of the college counselor; trends in counseling for
students; characteristics of college students; and the conse-
quencies of higher education for the college counseling
function. Lecture, case studies, and discussions. Same as
Counseling Studies 21:323.

TC:331 Seminar: The College Student 2 or 3 s.h.
Characteristics of college students, their implications for
guidance, and the impact of college on student characteris-
tics. Lecture and group interaction. Same as Recreation Educa-
tion 214:250.

TC:332 Seminar: Student Personnel
Work 2 or 3 s.h.
Intensive study and seminar presentation of current issues,
problems, and trends related to student personnel administra-
tion at higher education. May be repeated. Prerequisites:
consent of instructor.

TC:333 Practicum in Personal Services 2 s.h.
Practicum in college student personnel agencies.
Prerequisites: consent of instructor. May be repeated.

TC:335 Administration of College Student
Personal Services 2 s.h.
Organization theory, administrative principles, student
administration, personnel relations, and other aspects of
management for college student personnel workers.

TC:336 Seminar: College Student
Personal Research 1 or 3 s.h.
Lectures, discussions, and seminars on selected college
student personnel research studies. May be repeated for
credit.

TC:341 Seminar: Placement in Vocational
Rehabilitation 1 s.h.
Prerequisites: consent of instructor. Same as Psychology
21:328.

TC:342 Seminar: Psychological Aspects
of Disability 1 s.h.
May be repeated. Same as Psychology 21:328.

TC:351 Supervised Practice in
Rehabilitation Procedures 2 s.h.
May be repeated. Same as Psychology 21:422. Prerequisites:
consent of instructor.

TC:352 Supervised Field Work:
Rehabilitation Procedures 2 s.h.
Full-time work. Mandatory. Taken on a pass/fail basis.
Same as Psychology 21:322. Prerequisites: consent of in-
structor.

TC:353 Personal-Adjustment Counseling 2 s.h.
A survey of theories and techniques of counseling clients
with personal and interpersonal problems. Prerequisite:
TC:355.

TC:354 Experimental Approaches in
Counseling Research 3 s.h.
Application of experimental methodology and laboratory
procedures to the study of counseling and vocational
phobias.

TC:355 Counseling Processes and
Outcomes 3 s.h.
Review of research on counseling processes and outcome
variables. Prerequisites: TC:352.

TC:360 Supervising the Counseling
Practicum 3 s.h.
Supervision of students enrolled in a counseling practi-
cum. Prerequisites: consent of instructor.

TC:356 M.A. Thesis in Counselor
Education 2 s.h.
Prerequisites: consent of instructor.

TC:404 Practicum in Vocational-Educational
Counseling 2 s.h.
Practicum in counseling clients with vocational and inter-
personal problems and supervised experience in the Univer-
sity Counseling Service. Prerequisites: TC:325, TC:404.

TC:453 Practicum in Personal-Adjustment
Counseling 2 s.h.
Practicum in counseling clients with personal and interper-
sonal problems and supervised experience in the Univer-
sity Counseling Service. Prerequisites: TC:325.
COLLEGE OF EDUCATION

TD:294 State and Federal Financing of
Public Education 2 or 3 s.h.
Economic implications of public administration. Determination of policy and practice in financing of public schools by local, state, and federal agencies. Developing principles of adequate tax programs and designing systems of state support of public schools.

TD:295 Financial Management of Local
School Systems 3 s.h.
The administrative process. Leadership and organizational development. Techniques of financial management. Budgeting, financial planning, fiscal administration, and evaluation.

TD:297 Theory in Administration
3 s.h.
The administrative process. Leadership and organizational development. Techniques of financial management. Budgeting, financial planning, fiscal administration, and evaluation.

TD:299 Legal Aspects of Educational
Administration 2 or 3 s.h.
Principles of law as derived from court decisions. Statutory and constitutional provisions affecting education. Legal status (powers and responsibilities) of school board members, superintendents, principals, teachers, and pupils.

TD:301 Seminar: Urbanization
1 to 4 s.h.
Same as Geography 46:370, Political Science 30:300, and Sociology 34:370.

TD:304 Seminar: Elementary Supervision
and Administration 2 or 3 s.h.
For experienced supervisors and administrators. Bibliography, study of the issues of major significance to elementary school organizational and instructional practices. Evaluation of policy, research and the consideration of research proposals. Prerequisites: TD:291 or the equivalent and consent of the instructor.

TD:323 Seminar: Problems in Public
Administration 2 to 4 s.h.
Exploration of the structure and functioning of school government and general government; status and trends in the public sector; decision making in the public sector; administration; model building. Same as Political Science 30:323.

TD:350 Seminar: Computer Applications
3 s.h.
Research and practice in the application of the computer in educational administration, instruction, and research. Prerequisites: TD:293 and TD:306.

TD:360 Seminar: School Business
Management Administration 1 to 3 s.h.
Problems of school business management are explored with emphasis on management techniques. The student is expected to be able to conduct self-studies in the local school district as a result of this course. Some laboratory work will be involved.

TD:370 Seminar: Research Design
1 to 4 s.h.
For graduate students and toward the doctorate. Development of dissertation topics and prospectus. Defining the problem, methods of data gathering, design, language, form.

TD:371 Research Practicum
2 s.h.
Small-scale research projects (graded in difficulty) will be developed and assigned; supervised experience in planning, design, management, analysis, and reporting of research activities; student assumes a major responsibility. Assignments to current and pertinent current research projects. Consent of instructor.

TD:375 Seminar: Systems Evaluation in
Educational Decision-Making 2 or 3 s.h.
Development of strategies, processes, and mechanisms of evaluation and design. Course content centers on inter-
speaking, listening, and observing. Techniques developed through discussion of methods and materials and through observation at University Elementary School.

TE:161 Methods: Elementary School

Social Studies 2 s.h.

Objectives and content for grades kindergarten through sixth. Development of work-study skills and the problem-solving techniques through observation in University Schools.

TE:162 Methods: Elementary School

Science 2 or 3 s.h.

Principles and concepts of science instruction in the elementary school for preservation instruction of elementary education majors. Emphasis upon techniques which characterize the new approaches to science.

TE:163 Methods: Elementary School

Mathematics 2 s.h.

Methods used in kindergarten and grades 1 through 6. Teaching number system and arithmetical operations meaningfully.

TE:164 Methods: Elementary School

Reading 2 s.h.

Basic methods, trends, recent materials, and crucial issues in reading programs of kindergartens, primary, and upper elementary grades.

TE:167 Methods: Early Childhood

Education II 2 s.h.

Acquaintance with current educational literature in all curricular areas. Special emphasis to application of educational theory and to instructional materials for the kindergarten, first, and second grades. Observation in the University Elementary School. Open only to seniors.

TE:171 Reading Clinic: Teaching 3 to 5 s.h.

Supervised teaching of children with reading disabilities. Five teaching hours and staff meet once weekly. Prerequisites, teaching experience, reading methods course, consent of instructor.

TE:172 Reading Clinic: Teaching 3 to 5 s.h.

Continuation of TE:171 or may be taken as a separate course. Prerequisite, TE:171.

TE:177 Workshop: Kindergartens

Instruction 2 or 3 s.h.

Emphasis on exposure to most recent developments in curriculum materials and supporting theoretical background. Application to these materials and development of new materials for specific instructional situations. Includes direct observation of children. Enrollment by permission.

TE:180 Elementary School Patterns 2 s.h.

Recommended procedures and materials; the problem or unit method of teaching; organizing the school program; communication patterns affecting child development; relationship of instructional techniques to learning objectives. Applicable to the methods requirement for either the elementary or secondary teachers seeking supervisory or administrative certification.

TE:182 Music Workshop for Classroom Teachers and Elementary Music

Teachers 2 or 3 s.h.

TE:183 Supervision of Science in the Elementary School 3 s.h.

Objectives, selection, and grade placement of course; classroom procedures; and evaluation of results. Teaching aids such as books, demonstration equipment, visual aids, and field trips.

TE:184 Practicum in School Libraries 3 s.h.

Same as TE:192 and Library Science 211.

TE:185 Elementary Art Workshop 2 s.h.

Curriculum content for elementary school art. Emphasis on recent procedures, new methods, and materials in includes studio practice, field trips, demonstrations, and observations.

TE:186 Curriculum Foundations 2 or 3 s.h.

Elementary and secondary background developments in curriculum, definitions, elements, perspective, philosophy, theories of knowledge, models, learning theories, directions of development, and shaping forces. Same as TE:186.

TE:191 Laboratory Practice in Elementary Education 2 or 3 s.h.

Supervised teaching and observation in elementary school classrooms. Prerequisite, consent of instructor.

TE:192 Laboratory Practice in Elementary Education 2 or 3 s.h.

Supervised teaching and observation in elementary school classrooms. Prerequisite, consent of instructor.

TE:201 Literature and Storytelling for Younger Children 3 s.h.


TE:204 Analysis and Selection of Literature for the Classroom 3 s.h.

Development of criteria and methodologies appropriate in literature programs in elementary schools. In-depth analysis of books, research techniques in literature, and resources in the multimedia approaches to learning. Prerequisite, TE:126.

TE:241 Physical Education for Elementary School 2 or 3 s.h.

Same as Physical Education for Men 241.

TE:242 Seminar: Improvement of Instruction in Physical Education in the Elementary School 2 s.h.

Same as Physical Education for Women 342.

TE:243 Supervision of Art Education 3 s.h.

Organization of the supervision program in elementary school and high school; special projects in philosophy, curricula, and techniques. Same as Art 214:3 and TE:243.

TE:245 General Music in the Elementary School 3 s.h.

Same as TE:245.

TE:246 Problems of Science Instruction in the Elementary School 2 s.h.

Special research projects. University Elementary School and other school situations will be utilized as experimental design is considered; pilot studies conducted, and techniques of research at this level are practiced. For graduate students interested in evaluation techniques and the supervision of all beginning graduate students at this level who have little or no previous experience with research.

TE:251 Construction of Teaching Materials for Science Instruction 3 s.h.

Preparation of special laboratory materials for instruction in the new elementary, junior, high, and high school courses. Some attention to physics, chemistry, and biology is given separately. Students will work in small groups at the problem level of an activity or in small groups at the design level. Open to students teaching the subject, with permission.

TE:260 Supervision of Elementary School Language Arts 2 or 3 s.h.

Methods and materials relating to current issues in language arts instruction. Emphasis on improvement of la
TE.321 Supervision of Elementary School
Social Studies 2 or 3 h.
Curriculum content used in the instruction of modern classroom procedures; the cooperative problem assignment, provision for individual differences, functional development of study skills; observation in University Elementary School.

TE.323 Advanced Techniques of Teaching
Science in the Elementary School 3 h.
Theories of teaching science at the elementary school level. Emphasis upon procedures which enable implementation of modern philosophies characterizing science education. Primarily for experienced elementary school teachers with at least a bachelor's degree; graduate students in science education may also find consideration of these concepts of value.

TE.344 Supervision of Elementary School
Mathematics 2 or 3 h.
Methods of instruction, nature of arithmetic processes, number system; testing, use of proof, drill, research, selection, and gradation of arithmetic content.

TE.345 Supervision of Primary Grade Reading 2 or 3 h.
For superintendents, supervisors, and teachers. Pertinent research, specific teaching materials, current used materials, organization for instruction, and use of reading in other curricular areas.

TE.355 Supervision of Intermediate Grade Reading 3 h.
For teachers, principals, and supervisors. Reading with comprehension, provision for individual differences, responsibility for reading, the extension of skills taught in the primary grades.

TE.367 Improvement of Instruction in Primary Surveys 2 or 3 h.
Crucial and current problems in selection and organization of the curriculum and in methods of teaching to promote learning. Involves both theory and practice.

TE.368 Supervision and Curriculum Development in Pre-Primary Education 2 or 3 h.
History and trends, curricular problems and instructional materials for primary school and kindergarten education. Recent research pertinent to the development of pre-primary programs. Reading, discussions, and guided observations.

TE.380 Observation and Conference in Supervision 2 or 3 h.
Teachers and supervisors study intensively practices in the University Elementary School. Requires two hours of observation per week (between 9:00 and 11:00) for each hour of credit, a conference hour in the afternoon, reading contributing to the solution of problems related in supervision, conferences. Prerequisite, consent of instructor.

TE.393 Individual Instruction in Elementary Education cr.arr.
Prerequisites, consent of instructor.

TE.300 Elementary Curriculum 2 or 3 h.
Major issues; modern selection, sequential arrangement, and organization of content; relationship of time to methods of presentation; utilization of instructional aids; instructional procedures; staff participation in curriculum development. Basic requirement in supervision and administration programs.

TE.361 Seminar: Theory Underlying Early Childhood Education 3 h.
History and trends of kindergarten education, particular problems, instructional materials, and appropriate knowledge base from related fields such as educational psychology and child psychology. Recent research pertinent to the development of kindergarten programs. Readings and class discussions coordinated with observations in the University Elementary School.

TE.382 Science Curricula in the Elementary School 3 h.
Analysis of major science series and curricular materials. Rational, historical, and report of evaluative studies for each program will be considered. Sample programs will be developed under supervision and use in the classroom with peers. For graduate students interested in supervision, adoption, or college teaching.

TE.383 Seminar: Elementary Education 3 h.
Consideration of major problems, research, findings, and current developments in elementary school instructional programs. Prerequisite, consent of instructor.

TE.384 Seminar: Elementary Education 2 h.
Continuation of TE.383, but may be taken independently with consent of instructor.

TE.385 Seminar: Teaching Children's Literature 2 h.
Development of curriculum content for college courses in children's literature. Construction of course in literature will be required. Emphasis placed on the development of adequate background for teaching and supervised experience will be arranged. Prerequisite, TE.383 and consent of instructor.

TE.386 Seminar: Elementary School Language Arts 3 h.
For advanced students in elementary education who have taken the systematic course (e.g., TE.386). Opportunity to do further intensive study on specific topics. Prerequisite, consent of instructor.

TE.386 Seminar: Current Research and Concerns in Science Education 2 h.
Trends and modern research. Advanced investigation in which original research reports will be read, discussed, and discussed. Emphasis on learning theory. Prerequisite for advanced graduate students.

TE.386 Seminar: Elementary School Mathematics 2 h.
Intensive study and seminar discussion of curricular and instructional questions in elementary school mathematics instruction. Emphasis on understanding of the multiplication operation by various processes or repeated addition situation; geometric terms or set representations to receive major emphasis in developing basic notions of rational number concept of elementary school mathematics to play a major or minor role in instruction.

TE.386 Seminar: Elementary Reading 2 h.
For advanced students in elementary education who have taken the systematic course (e.g., TE.386 or TE.393). Opportunity to do further intensive study on specific topics. Prerequisite, consent of instructor.

TE.386 Reading Clinic: Supervision cr.arr.
Prerequisite, consent of instructor.

TE.386 Supervision of Science 3 h.
Special work with the articulation of a K-12 program and situa-
TIP:110 Education for International Understanding 2 or 3 s.h.

Political, cultural, and economic problems that impinge on individual lives and influence educational policies present to improve understanding and adjustment of these problems; contribution of various disciplines and the work of various organizations, including UNESCO; applying such knowledge to teaching.

TIP:130 Educational Sociology 2 or 3 s.h.

Introductory survey of the principal educational philosophers and psychologists that have influenced Western education. Given in light on how philosophical ideas and conflicts have served to shape our contemporary educational goals.

TIP:135 John Dewey and Education 2 or 3 s.h.

Dewey's philosophy of "instrumentalism" with particular emphasis on his theories of knowledge, valuation and esthetics, especially as they apply to educational theory and practice.

TIP:205 British Education 2 or 4 s.h.

Offered summers only, in Cambridge, England. Lectures, discussions, field trips in affiliation with The University of Cambridge and the British Ministry of Education. Seminars conducted evenings by course instructor. This course is also offered on campus during the spring year for 2 semester hours.

TIP:230 Scandinavian Education 2 or 4 s.h.

Offered summers only, in Scandinavia. Lectures, discussions, field trips in affiliation with The University of Gothenburg and with ministry of education. Seminars conducted mornings by course instructor.

TIP:310 Individual Introduction in Social Foundations and Comparative Education 2 or 4 s.h.

Prerequisite, consent of instructor.

TIP:311 Seminar: Social Philosophy and American Higher Education 2 or 4 s.h.

Comparative analysis of applying social philosophy, their theoretical bases, and their practical influence on contemporary American higher education. Prerequisite, consent of instructor.

TIP:330 Seminar: Problems of Higher Education 2 or 4 s.h.

Philosophical and historical approaches to higher education in the United States. Comparative study of related developments in European higher education.

TIP:330 Seminar: Value Problems in the Administration of American Education 2 or 4 s.h.

Philosophical and sociological ideas that underlie the American system for the administration of public education. Investigation of various ideas as to the place of education of public education in a democratic society and a democratic educational system. Contemporary issues
will be used to provide the focus for the examination of these ideas. (Same as TF:390.)

**TF:393** M.A. Thesis in Social Foundations and Comparative Education cr.arr.


Prerequisite, consent of instructor.

**Higher Education**

**TH:100 Problems and Policies in Higher Education** 3 cr.

A study and analysis of current, selected functions, problems, and policies in American higher education; a basic course open to nonmajors and undergraduates.

**TH:175 Post-High School Faculty Development Workshop** 0 to 2 cr.

This workshop is designed to provide post-high school instructors with work in either the discipline area or in some aspect of professional education. Workshop topics may include programs for the upgrading of administrative and supportive personnel as well as faculty members in post-high school institutions.

**TH:185 Higher Education Colloquium** 0 to 6 cr.

Students and faculty are invited to submit seminar topics and other projects for consideration. Projects must be sponsored by at least one faculty member in higher education, and must be approved by the departmental executive. No project can be offered more than twice under this course description. Students may repeat the course once for credit up to a total of 6 credits.

**TH:211 Problems in College Teaching** 2 or 3 cr.

Principles of course planning, teaching procedures, evaluation techniques, and assessment of instructional objectives and outcomes.

**TH:212 Structure and Organization of American Higher Education** 2 or 3 cr.

Functions of various types of institutions: community college, college, universities, technical, and professional institutions. Policy determination at federal, state, and institutional levels.

**TH:230 Intern Seminar** cr.arr.

Designed to prepare interns to assume faculty or administrative roles in a community college setting. Prerequisite, enrollment in the community college teacher preparation program or preparing to enroll in a community college internship program during the fall term.

**TH:233 Seminar: Teaching Modern Languages** 1 cr.

Research and practices in materials and methods of instruction in French and Spanish at the college level; recent contributions by structural linguistics to modern language teaching. Primarily for graduate assistants in French and Spanish but open to others by permission. Same as French 9:233 and Spanish 35:233.

**TH:324 Seminar: Teaching Modern Languages** 1 cr.

Prerequisite, TH:233 or equivalent. Same as French 9:234 and Spanish 35:234.

**TH:240 Workshop: Higher Education** 0 to 2 cr.

**TH:250 Administration of Technical Education Programs** 2 or 3 cr.

Administrator's role in post-high school occupational education. Legal, financial, and staffing aspects of vocational-technical and nonprofessional education.

**TH:341 The Community College** 2 or 3 cr.

Survey of problems in organization, administration, and curricula.

**TH:345 Iowa Community College Workshop** 0 or 1 cr.

**TH:393 Individual Instruction in Higher Education** cr.arr.

Prerequisite, consent of instructor.

**TH:301 Seminar: Higher Education** cr.arr.

Analysis of special problems; preparation and presentation of one major research project.

**TH:305 Seminar: Recent Research in Higher Education** 2 cr.

Assessments of college environments and student potentials; effects of college experiences upon student achievements, aspirations, and personal development.

**TH:315 Curriculum Development in Higher Education** 2 or 3 cr.

Prerequisite, consent of instructor.

**TH:317 Administrative Decision-Making in Higher Education** 2 or 3 cr.

Administrative problems in higher education using simulated materials.

**TH:321 Seminar: Administration in Higher Education** 2 or 3 cr.

Prerequisite, consent of instructor.

**TH:323 Practicum in Higher Education** 0 to 6 cr.

Prerequisite, consent of instructor.

**TH:333 M.A. Thesis in Higher Education** cr.arr.

Prerequisite, consent of instructor.

**TH:493 Ph.D. Thesis in Higher Education** cr.arr.

Prerequisite, consent of instructor.

**Educational Psychology, Measurement, and Statistics**

**TH:715 Educational Psychology and Measurement** 3 cr.


**TP:102 The Learner** 3 cr.

Characteristics related to classroom learning; individual differences in physical, emotional, and intellectual factors.

**TP:103 Child Development** 3 cr.

Same as Child Behavior 3:100 and Psychology 31:11. Not open to sophomores.

**TP:106 Personality and Mental Hygiene** 3 cr.


**TP:160 Socialization of the School-Age Child** 2 or 3 cr.

Social development, preschool influences, development of attitudes and interests, effects of social class on social development.

**TP:162 Educational Psychology** 3 or 4 cr.

Principles in teaching and learning. Developmental concepts, social processes, language and thought, personality and mental health, modes of teaching and research, theory and motivations of the learning process. Same as Psychology 31:11.
TP:133 Adolescence 3 a.h.
Readings and discussion relating physical, psychological, and cultural dimensions of adolescent behavior in contemporary society. Traditional academic literature on adolescence supplemented by fiction, films, and materials reflecting current youth culture. Prerequisites, consent of instructor.

TP:134 Introduction to Programmed Learning 2 a.h.

TP:143 Introduction to Statistical Methods 3 a.h.
Analysis and interpretation of research data. Descriptive statistics (frequency distributions, central tendency, variability); introduction to statistical inference (normal curve, sampling theory, simple t-test); introduction to correlation and linear regression. Same as Statistics 220:143 and Psychology 21:143.


TP:149 Statistical Methods in Educational Research 3 a.h.
A continuation of TP:148. Model II ARGOVA, the classical test theory, Bayesian inference with the classical model, simple and multiple regression in many groups, a prospective of academic prediction systems with emphasis on guidance technology. Same as Statistics 220:149. Prerequisites, TP:148.

TP:150 Educational Measurement for the Classroom Teacher 3 a.h.
Interpretation and use of standardized test results. Development of classroom tests and evaluation of pupil achievement. Elementary statistical concepts relating to interpretation of test scores.

TP:170 Psychology of Reading 3 or 4 a.h.
Psychological and linguistic analyses of reading process, implications for teaching methods, and materials. Credibility of program. Prerequisite, TP:175.

TP:175 Reading Clinic: Diagnosis 3 or 4 a.h.

TP:181 Theories and Conditions of Classroom Learning 3 a.h.
Review of contemporary theories of learning. Application of learning principles to the classroom setting.

TP:182 Cognitive Processes in Classroom Learning 3 a.h.

TP:186 Group Processes in Classroom Learning 3 a.h.
Interaction processes in the classroom. Application and evaluation of techniques for improving the structure and process, and the climate of the classroom atmosphere.

TP:193 Special Readings and Projects 3 a.h.
Supervised individual study. Prerequisites, senior standing and consent of instructor.

TP:231 Problems of Adult Learning 3 a.h.
Designed for students whose interests and professional responsibilities involve work with older adults and adults. Course content includes a survey of learning theories and their possible practical applications, consideration of self-concept in relation to motivation and learning, and exploration of adult learning literature. Due to diversity of student backgrounds, the course provides opportunities for both large and small-group interaction with the instructor, and independent study projects.

TP:234 Advanced Programmed Learning 3 a.h.
A survey and critical review of current views of the programmed instruction of primary emphasis on systems approaches to the organization of instructional programs.

TP:243 Selected Applications of Statistical Techniques 3 a.h.
For the student planning to take only one course in statistical methods beyond the scope of a single elementary course. Not equivalent to TP:245. Application and interpretation of correlation techniques, chi-square, the t- and F-tests, interval estimation and simple cases of analysis of variance. Prerequisites, TP:143 or equivalent.

TP:245 Advanced Statistical Methods 3 a.h.
Logic of statistical inference. Chi-square and other tests of statistical hypotheses, small sample theory, interval estimates, introduction to the analysis of variance and selected parametric methods. Prerequisites, TP:243 or equivalent. Same as Statistics 225:245.

TP:246 Correlation Methods 3 a.h.
Regression analysis and correlation techniques. Multiple, partial, curvilinear, linear, and multiple correlations; discriminant analysis; correlation ratio; sampling theory applied to regression analysis and correlation. Prerequisites, TP:143 and TP:245 or equivalent. Same as Statistics 225:246.

TP:247 Application of Multivariate Statistical Techniques 2 or 3 a.h.
Application of selected multivariate statistical techniques in educational research. Techniques include factor analysis, multivariate analysis of variance, multiple regression, and discriminant analysis. Same as Statistics 225:247.

TP:249 Design of Experiments 3 a.h.

TP:254 Distribution Free Statistical Methods 3 a.h.
Theory and development of selected nonparametric techniques. Includes measures of association and analysis of special distributions. Prerequisites, TP:245 or equivalent.

TP:355 Construction and Use of Classroom Tests 2 or 3 a.h.
Role of testing, test planning, preparation, testing, test administration, scoring and interpretation of scores, analysis, and grade scaling. Prerequisites, TP:145 or consent of instructor.

TP:355 Educational Measurement and Evaluation 3 a.h.
The use of standardized tests. Sources of test information and criticism, evaluation of reliability and validity data, and interpretation of scores and profiles. Prerequisites, TP:255 or equivalent.

TP:356 Theory and Technique in Educational Measurement 3 a.h.
Mathematical and logical theory underlying educational and psychological measurements. Philosophical issues in achievement test construction, estimation of test reliability and validity.
validity, derivation of norms, scaling and equating test batteries. Prerequisite, TP:356 and TP:357 or equivalent and consent of instructor.
TP:393 Individual Instruction in Educational Psychology, Measurement, and Statistics cr.arr.
Prerequisite, consent of instructor.
TP:393 Seminar in Advanced Psychodiagnosis 2 s.h.
Same as Psychology BI:280.
TP:393 Seminar: Educational Psychology I: Research and Teaching cr.arr.
The profession of educational psychology. Current issues and developments, critical evaluation of research in educational psychology. Prerequisite, consent of instructor.
TP:393 Seminar: Educational Psychology II: Psychology of Learning cr.arr.
Psychology of learning as related to classroom practices and curriculum organization. Prerequisite, consent of instructor.
TP:393 Seminar: Educational Psychology III: Social Psychology of Education cr.arr.
Educational aims and societal values; the school as a social system; individuals and subcultures; nature and dynamics of the instructional group. Prerequisite, consent of instructor.
TP:394 Seminar: Educational Psychology IV: Mental Hygiene in School Practice cr.arr.
Mental health, adjustment, normality, maturity; integrative and disruptive forces in education; behavior problems in the classroom; professional role, personal development of teachers. Prerequisite, consent of instructor.
TP:396 Seminar: Educational Psychology VI: Advanced Readings in Educational Psychology cr.arr.
Review and evaluation of recent literature in educational psychology. Prerequisite, consent of instructor.
TP:396 Seminar: Data Processing cr.arr.
Computer data processing with special emphasis on the FORTRAN language used by the computer at the University Center. Use of the Computer Center statistical library. Preparation of programs for input to the computer. Use of computer in effecting statistical analyses and research data. Prerequisite, consent of instructor.
TP:396 Seminar: Statistical Analysis cr.arr.
Restricted to education majors in division other than the Division of Educational Psychology, Measurement, and Statistics. Prerequisite, consent of instructor.
TP:395 Seminar: Educational Measurement cr.arr.
Prerequisite, consent of instructor.
TP:371 Seminar: Experimental Approaches to Psychology of Reading cr.arr.
Experimental investigations of the reading process; emphasis on discrimination, association, and language variables. Analysis of theory, experimental methods, research findings, and problem areas. Prerequisite, consent of instructor.
TP:375 Seminar: Reading Disability cr.arr.
Problems in defining disability; determining criteria of skills necessary for successful reading; adjusting instruction to needs of individual learners; administrative and instructional means of preventing failure; survey of remedial procedures, their theoretical bases, and evidence of their effectiveness. Prerequisite, consent of instructor.
TP:392 Field Service Project in Educational Psychology, Measurement, and Statistics cr.arr.
Prerequisite, consent of instructor.
TP:393 M.A. Thesis in Educational Psychology, Measurement, and Statistics cr.arr.
Prerequisite, consent of instructor.
Prerequisite, consent of instructor.

Secondary Education

15:100 Introduction to Secondary School Teaching 3 s.h.
Historical and philosophical foundations of American education. Role of the teacher in curriculum development, guidance, school and community relationships, professional organizations, code of ethics, test construction and administration. Opportunities and requirements for teachers.
15:105 Methods: Secondary School Art 3 s.h.
For art majors only.
15:110 Methods: Office Education 3 s.h.
Same as Business Education 61:110.
15:111 Methods: Basic Business Education 3 s.h.
Same as Business Education 61:111.
15:112 Supervision of School Publications 3 s.h.
Basic methods course in high school journalism; school newspaper and yearbook. Same as Journalism 16:112.
15:115 Methods: High School English 3 or 6 s.h.
Instruction in methods, materials, and organizational techniques in teaching high school English. During laboratory sessions, integrated with lectures and discussions, students will receive experience in simulated teaching situations. Same as English 81:117.
15:120 Methods: High School Foreign Languages 3 s.h.
May be taken for credit in one of the languages. For certification purposes, registration must be under the 76:120 number. Same as French 91:120, German 91:120, Latin 91:120, Spanish 91:120, and Russian 41:120.
15:124 Language Laboratory Procedures 1 s.h.
Planning a laboratory, purchasing of equipment, simple maintenance procedures, scheduling of laboratory classes, classification and storage of tapes, laboratory organisations, methods of recording, evaluating student responses. Same as French 91:121 and Spanish 91:121.
15:125 Methods: High School Home Economics 3 s.h.
Same as Home Economics 17:125.
15:126 Materials and Methods in Family Life Education 2 s.h.
Same as Home Economics 17:126.
73:130 Newspapers in the Classroom of a Free Society 0 or 1 a.h.
Same as Journalism 10:114.
73:135 Methods: High School
Mathematics 6 a.h.
Survey of modern subject matter, organization of content, and methods of teaching. Prerequisite, Mathematics 22M:50 or consent of instructor.
73:140 Methods and Materials: Junior and Senior High School Music 3 a.h.
Both high school and elementary school methods are required for a certificate. Required of all music education majors.
73:143 Instrumental Techniques 1 to 3 a.h.
Same as Music 25:128.
73:144 Instrumental Techniques 1 to 3 a.h.
Same as Music 25:128.
Course in theory to be taken concurrently with 73:191.
73:146 Methods: High School Physical Education for Girls 3 a.h.
Same as Physical Education for Women 25:113.
73:147 Choral Methods and Conducting 3 a.h.
Same as Music 25:106.
73:148 Choral Literature and Conducting 3 a.h.
Same as Music 25:106.
73:150 String Techniques and Methods 2 or 3 a.h.
Same as Music 25:132.
73:151 Methods: Secondary Physical Science 3 a.h.
Specific methods peculiar to the modern secondary courses in this area. Observation and interpersonal experiences will be a central part of the course. Specific courses will be structured and the various "national" curricula will be explored.
73:152 Methods: Secondary Biological Science 3 a.h.
Methods suggested and explored in teaching biology. Involved in the biology program in the laboratory school will be a focus. Practice with specific courses, laboratories, and classroom situations will provide the basis for discussions and learning procedures.
73:155 Introduction to Alcohol Education 2 a.h.
Basic information on alcohol use and abuse and the physiological problems for elementary and secondary teachers. Value to teachers preparing alcohol education units in biology, chemistry, the social sciences, driver education, driver, physical education, health education, and other subject areas.
73:160 Methods: High School Speech 3 a.h.
Same as Speech 25:67.
73:170 Methods: High School Social Studies 3 a.h.
Open only to seniors. Majors in anthropology, economics, geography, history, political science, psychology, sociology, or social studies must take practice teaching 73:181 and 73:148 concurrently. Organizing social studies content for teaching purposes, building classroom tests, learning procedures, and new practices in teaching.
73:171 Methods: High School Social Studies 3 a.h.
Majors in the social studies area must register for 73:170 and 73:171 concurrently. Minor in social studies register for 73:170. Practicum work including micro-teaching, observation, student case studies, and class interaction analyses.
73:172 Workshop in Economic Education 3 a.h.
Same as 73:151.
73:173 Workshop in Economic Education 3 a.h.
Same as 73:151.
73:182 Practicum in School Libraries cr.arr.
Same as 73:184 and Library Science 25:25.
73:186 Curriculum Foundations 2 or 3 a.h.
Elementary and secondary background developments in curriculum, definitions, historical perspective, philosophies, theories of knowledge, models, learning theories, directions of development, and shaping forces. Same as 73:186.
73:189 Observation: Practice in High School cr.arr.
Weekly conferences on problems encountered while teaching. Work in individual laboratory on selection and use of audio and visual materials. Prerequisite, consent of instructor.
73:192 Observation and Laboratory Practice in High School cr.arr.
Continuation of 73:192, but may be taken as an independent unit. Prerequisite, consent of instructor.
73:193 Literature for the Adolescent 3 a.h.
Reading and evaluation of literature suitable for the junior and senior high school student. Same as Library Science 25:180 and English 25:69.
73:194 Reading in High School and College 2 or 3 a.h.
Problems of adolescence and adult reading. Methods and materials used in instruction in remedial and developmental reading.
73:203 Preprofessional Seminar (M.A.T.) 3 a.h.
Open to M.A.T. candidates only prior to professional semester. Offered fall semester only.
73:210 Supervision of Business Education 3 a.h.
73:217 Workshop for Junior and Senior High School Teachers of English 2 a.h.
Same as English 25:55.
73:220 Supervision of Foreign Languages 3 a.h.
Research and practice in methods of instruction in the foreign language at the secondary school level.
73:235 Supervision of Mathematics 3 a.h.
Same as Mathematics 25M:55. Prerequisite, 22M:59 or equivalent or consent of instructor.
73:236 The Teaching of Geometry 3 a.h.
Current practice and thinking in the teaching of secondary school geometry. History and organization of content, and development via discovery.
73:240 Supervision and Administration of Music 2 a.h.
Open to graduate students and experienced teachers with consent of instructor.
73:241 Instrumental Workshop in Music Education 0 or 3 a.h.
Same as Music 25:220.
73:243 Supervision of Art Education 3 a.h.
Same as Education 26:242 and Art 12:242.
75:245 Methods and Principles in Physical Education 3 s.h.
For teachers of physical education for secondary school boys. Covers foundations of method, basic concepts and techniques of method, techniques of methods applied to specific activities, and evaluation of the effectiveness of teaching methods. Utilizes a textbook in physical education for secondary school boys.

75:246 Supervision of Physical Education for Boys 3 s.h.
Same as Physical Education for Men 21:159.

75:250 Problems of Science Education cr.arr.
Research design characterizing specific studies in science education. Laboratory school will provide the classroom setting for quality of its investigations. Special ideas may be structured and tried prior to the preparation of a proposal for a thesis.

75:351 Construction of Teaching Materials for Science Instruction 2 s.h.
Preparation of special laboratory materials for instruction in the new elementary, junior high, and high school courses. Some attention to other learning materials where there is a special interest. Students will work individually or in small groups at the academic level of most concern. Open to teachers with teaching experience. Same as 75:241.

75:352 Advanced Methods: Science Education 3 s.h.
Implementing a modern philosophy of science teaching; experience with science teaching as a formality; major methodological trends reflected in the current secondary and college teaching. Required of all graduate students.

75:353 The Science Curriculum 3 s.h.
National programs of the secondary and college levels; observation and involvement with parts of the programs; analysis of similarities, differences, trends.

75:354 Supervision of Science 3 s.h.
Problems, practices, responsibilities, and techniques characterizing the practice of science teaching. Special work with the articulation of a K-12 program and situations arising from coordinating programs at the same levels (elementary, junior high, and high school). Science curriculum at the regional, state, and national levels will be considered. "Practicing" science supervisors will be utilized. Primarily for supervising teachers and advanced students. Same as 75:306.

75:355 Structure of Science and its Application in Science Teaching 3 s.h.
Relationship between the nature of science and teaching science. Primary purpose is one of bringing the science teacher to understand the peculiar, and perhaps unique, structures within which the facts and ideas of science fit. Emphasis upon how this information affects methodology, curriculum, structure of specific courses, etc. Required of all Ph.D. candidates. Prerequisite, previous work in one of the natural sciences.

75:356 History of Science and its Role in Science Instruction 3 s.h.
Extends the science teacher's knowledge of science history and his ability to apply that knowledge in designing and teaching science courses. Concerns tracing the persistence and growth of certain great themes in science with systematic consideration of the use of such materials in science education. Portions of the course is focused upon the use of certain scientific papers, case-studies, and historical material in teaching and course construction. Required of all Ph.D. candidates. Prerequisite, previous work in history or philosophy of science.

75:360 Teaching of Speech 3 s.h.
Same as Speech 36:377.

75:261 Speech for Educators 3 s.h.
Same as Speech 36:321. For administrators, teachers, and other adults who desire opportunity to study and develop their speech abilities and attributes to serve the professional and social situations in which they desire to exercise influence and leadership in their schools and communities. Emphasis on preparation, performance, criticism, and evaluation in speaking and discussion, and conference leadership. Individualized assignments in reading and performance.

75:262 Workshop in Teaching Speech 0 to 4 s.h.
Same as Speech 36:178.

75:370 Curriculum Development in the Social Studies 2 or 3 s.h.
For school administrators, curriculum specialists, and experienced social studies teachers. Major areas will include the present status of the social studies curriculum, trends for the future in curriculum development, and specific problems in curriculum development and supervision. An investigative study will be required.

75:371 Building Resource and Teaching Units in the Social Studies 3 s.h.
For the instructor teacher who wishes to build resource or teaching units. Course emphasizes the rationale and provides a model for building resource or teaching units. Special emphasis is placed on the incorporation of recent developments.

75:372 Current Issues, Approaches, and Materials in Social Studies Teaching 3 s.h.
For experienced social studies teachers and curriculum coordinators. Investigates the implications of current research conducted by Project Social Studies Centers and design lessons using inquiry, case study, and simulation approaches. Strategies for incorporating behavioral, social, and advanced skills in social studies curriculum planning and social studies curriculum development.

75:380 Junior High School Organization and Administration 2 or 3 s.h.
Development of planning for the junior high school; nature of the junior high school population; problems of organizing planning of the junior high school; evaluation of junior high school; seminar in junior high school administration; seminar in junior high school curriculum and behavior. Development of planning for the junior high school; nature of the junior high school population; problems of organizing planning of the junior high school; seminar in junior high school administration; seminar in junior high school curriculum and behavior.

75:381 Junior High School Curriculum 2 or 3 s.h.
Current practice and trends in the program of the junior high school; objectives and content in the various subject areas; curriculum planning.

75:382 Improving Instruction in the Secondary School 3 s.h.
Upgrading the instructional program and consideration of special instructional problems in secondary schools.

75:391 Secondary School Curriculum 2 or 3 s.h.

75:392 Individual Instruction in Secondary Education cr.arr.
Prerequisite, consent of instructor.

75:350 Humanities and Fine Arts

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75:315 Seminar: English Education cr.arr.
A discussion of significant recent developments in English education from primary and secondary schools. Prerequisite, English 2155.

75:316 Seminar: English Education cr.arr.
A discussion of significant recent developments in English education from primary and secondary schools. Prerequisite, English 2155.

75:331 High School Journalism 1 or 2 s.h.
Advisers Workshop 0 or 1 s.h.
Same as Journalism 19:218.
COLLEGE OF EDUCATION

7S:441 The Psychology of Teaching Music 2 s.h.
The nature of musi cality and its relationship to age, race, intelligence, aesthetic reaction, learning and teaching methods, etc.

7S:442 Music Education: Advanced Observation and Laboratory Practice 3 s.h.
Prequisite, consent of instructor.

7S:443 Evaluation and Measurement in Music 2 s.h.
Techniques of evaluation, test construction, and standardizing test in music.

7S:444 Research in Music Education 0 or 2 s.h.
Prequisite, consent of instructor.

7S:445 Social and Psychological Factors in Music Education 0 or 2 s.h.
Prequisite, consent of instructor.

7S:490 Seminar: Secondary Education cr.arr.
Survey and experimental procedures. Special areas of instruction, remedial work technique, and individualized classroom techniques.

7S:493 Ph.D. Thesis cr.arr.
Prequisite, consent of instructor.

Special Education

7U:30 Introduction to and Observation of Exceptional Children I 5 s.h.
The various types of exceptional children and their educational problems. Includes instruction in five hours a week of observing and working with children with various types of handicaps. Restricted to majors in special education. Offered first semester of a two-semester sequence.

7U:31 Introduction to and Observation of Exceptional Children II 5 s.h.
Continuation of 7U:30 and required for special education majors. Prerequisite, 7U:30.

7U:130 Exceptional Children 2 s.h.
Problems and methods of teaching exceptional children. For teachers and school or clinical psychologists. Same as Psychology 3133.

7U:133 Teaching the Educationally Disadvantaged 3 s.h.
Educational methods for teaching the culturally disadvantaged child of school age. Relevant research on impact of disadvantaged background on learning potentials of students.

7U:335 Mental Retardation 3 s.h.
The mentally retarded child and his problems. Causes, diagnosis, and psychological problems of retarded. Principles, factors, and conditions in learning of educable mentally retarded in the public school setting.

7U:138 Teaching the trainable Mentally Retarded Child 2 or 3 s.h.
Selection of pupil, organization of program, management of the trainable child. Curriculum content; specific materials and methods for instructing trainable children.

7U:137 Education of Gifted Children 2 s.h.
Identification and characteristics of gifted children. Methods of teaching, curriculum.

7U:138 Methods in Education of the Physically Handicapped Child 3 s.h.
For teachers and supervisors in special education. Emphasis on learning and emotional problems of the physically handicapped. Coordination with therapists and treatment, Prerequisite, 7U:135 or consent of instructor.

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TU:139 Orientation to Rehabilitation of the Physically Handicapped Child 3 s.h.
Medical, therapeutic, and educational aspects. The several professions involved in the evaluation, treatment, and general management of handicapped children. Nature of the various handicapping conditions, their causes, and special considerations of each.
TU:141 Workshop in Parent-Teacher Relationships 3 s.h.
TU:143 Vocational Resources for Exceptional Children 2 or 3 s.h.
Programs involved in developing programs for all students who need or wish job experience at the high school level. Job analysis, involvement of related professions, and relevant community agencies. Undergraduates need permission of instructor.
TU:145 Curriculum Development and Methodology for the Mentally Retarded 1 2 or 3 s.h.
Basic aspects of curriculum development for educable mentally retarded at the preschool, primary, and intermediate levels; major objectives, selection in the organization of curriculum content; specific materials and methods for instructing mentally retarded; evaluation techniques; observation in public schools. Meets the requirements for certification to teach the mentally retarded.
TU:146 Curriculum Development and Methodology for the Mentally Retarded II 2 or 3 s.h.
Continuation of TU:145, but with emphasis on junior and senior high school programs for educable mentally retarded; objectives, curriculum content, evaluative techniques, high school credit and graduation requirements, for mentally retarded; development and coordination of work study programs; observation in public schools. May be taken following completion of TU:145. Meets the requirements for certification to teach educable mentally retarded.
TU:147 Cases and Problems in Teaching the Mentally Retarded 2 s.h.
Taken in conjunction with student teaching. Provides the student in the professional semester with assistance on problems specifically related to teaching: services available, procedures, the role of the teacher in the education of the mentally retarded; problems encountered in the classroom; the role of the mentally retarded individual in society. Class includes study of selected cases of mentally retarded individuals.
TU:148 Cases and Problems in Teaching the Physically Handicapped 2 s.h.
Taken in conjunction with student teaching. Provides the student in the professional semester with assistance on problems specifically related to teaching: services available, procedures, the role of the teacher in the education of the physically handicapped; problems encountered in the classroom; the role of the physically handicapped individual.
TU:151 Language for the Deaf I 3 s.h.
Rationale for multiple approach, in presenting language to deaf child; techniques for teaching the deaf child; understanding and use of language, particularly in first four years of school; selection and use of teaching materials.
TU:152 Language for the Deaf II 3 s.h.
Continuation of TU:151. Language requirements of second four years of school. Prerequisite, TU:151.
TU:153 Speech Training for the Deaf I 2 s.h.
Principles underlying methods for meeting communica
tion needs of deaf speech development goal: phonetics as related to articulation, speech production and pronunciation.
TU:154 Speech Training for the Deaf II 2 s.h.
Continuation of TU:153.
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TU:238 Administration and Supervision of Special Education 3 s.h.
For supervision of elementary and secondary programs of special education. Organization of programs, examination, selection, and classification of children for special services. Objectives, methods, and instructional materials in various fields of special education.
TU:237 Practicum in School Psychological Services I cr.arr.
Supervised practice in psychological and educational evaluation in various University facilities and in community schools. Prerequisite: TU:236 and consent of instructor.
TU:238 Problems in Psychoeducational Assessment of Children 3 s.h.
Techniques of psychoeducational assessment. Supervised practice in psychological and educational assessment in university, school, and community programs. Prerequisite, consent of instructor.
TU:240 Seminar: Community and Regional Services for the Mentally Retarded 3 s.h.
Organization of community and regional services for the mentally retarded, i.e., day care, clinic, residential care, sheltered workshops, and activity centers. Experiences will be provided in assessing need for services as well as planning for the implementation of services.
TU:241 Medical Aspects of Mental Retardation and Allied Disorders 3 s.h.
Open to graduate students in special education and allied fields. Includes prenatal and postnatal factors as they affect future growth and development, exposure to medical factors during pregnancy, and the neurologically handicapped child. Demonstrates the multidisciplinary approach to prevention and treatment of the handicapped child, including mental retardation, neurological impairment, and learning problems.
TU:243 Practicum in School Psychological Services II cr.arr.
Continuation of TU:237. Prerequisite, TU:237 and consent of instructor.
TU:245 Advanced Problems in Psychoeducational Assessment of Children 3 s.h.
Personality assessment of children and adolescents. Special emphasis on projective techniques, specifically the TAT with respect to personality theory, test construction, and validity. Prerequisite, consent of instructor.
TU:244 Educational Programs for Children and Youth With Behavior Disorders 3 s.h.
Systematic examination of an ecological model of behavior disorders and of interdisciplinary services within various community settings providing psycho-social-educational programs for children and youth with behavior difficulties. Prerequisite, consent of instructor.
TU:246 Educating Children and Youth With Behavior Disorders I 3 s.h.
Tutorial: function, causes, problems, issues, methods, and procedures of specific educational programs unifying educational practices for children and youth with behavioral dysfunctions. Prerequisite, consent of instructor.
TU:247 Educating Children and Youth With Behavior Disorders II 3 s.h.
Supervised practice with children and youth with psycho-educational disorders. Taken concurrently with TU:246 and TU:248. Prerequisite, consent of instructor.
TU:248 Practicum: Educating Children and Youth With Behavior Disorders II 5 s.h.
TU:249 Seminar: Educating Children and Youth With Behavior Disorders I 1 s.h.
Integration of the theories and practical experience of the previous semester. Taken concurrently with TU:246 and TU:247.
TU:250 Seminar: Educating Children and Youth With Behavior Disorders II 1 s.h.
Continuation of TU:249. Taken concurrently with TU:246 and TU:249. Prerequisite, consent of instructor.
TU:251 Individual Intelligence Testing 3 s.h.
Administration of individual intelligence tests and interpretation of results. Issues in psychological testing. Favor which influence performance. Prerequisite, TU:245 or TP:350 or consent of instructor.
TU:252 Advanced Laboratory Practice in Education of the Exceptional Child 3 s.h.
Observation, experimentation, and individual instruction pertaining to problems of teaching, guidance, and administrative evaluation. Construction, evaluation, and organization of curriculum materials for the mentally retarded. Prerequisites, TU:245 or TU:246 and consent of instructor.
TU:253 Individual Instruction in Special Education 1-2 s.h.
Prerequisite, consent of instructor.
TU:257 Seminar: Rehabilitation of the Physically Handicapped Child 3 s.h.
Prerequisites, TU:230 and graduate standing.
TU:255 Seminar: Advanced Problems in the Education of Children and Youth With Behavior Disorders 3 s.h.
In-depth readings and discussions of psychology, specific community programs, and psycho-social-educational processes. Preparation and presentation of a research paper. Prerequisites, consent of instructor and completion of an M.S. program in behavior disorders.
TU:256 Seminar: Clinical Supervision for Practicum Supervisors—Behavior Disorders 3 s.h.
Practical problems and procedures in clinical supervision with practice students, relationships between supervisor and student, psychological processes of involvement, confrontation, interaction, and projection. Prerequisite, consent of instructor.
TU:307 Seminar: Advanced Problems in Research on Educational Practice for Children and Youth With Behavior Disorders 3 s.h.
Thematic issues dealing with the relationship of personality, practice, psychological processes, and educational practices. Limited to doctoral students. Prerequisite, consent of instructor.
TU:308 Seminar: Advanced Problems in Teacher Education for Prospective Teachers of Children and Youth With Behavior Disorders 3 s.h.
Perspective on problems dealing with program design; program goals, methods, experiences, and evaluation practices; recruitment, selection; certification; supervision; 255
and practice processes. Limited to doctoral students. Prerequisite, consent of instructor.

TU342 Seminar in School Psychological Services 3 s.h.

Selected topics: preparation and presentation of research projects. Doctoral students only. Prerequisite, consent of instructor.

TU340 Internship in Curriculum Development for the Mentally Retarded 3 s.h.

Process of curricular development and the design of instructional materials. Supervised experience will be provided in a laboratory setting as well as in a field situation such as in a community and/or at the regional or state level. Open only to students with teaching experience.

TU344 Seminar: Research Practicum in Advanced Problems in Exceptional Children 3 s.h.

Prerequisite, consent of instructor.

TU361 Seminar: Special Problems 3 s.h.

Areas of needed research in mental retardation will be explored. Small-scale research projects will be designed. Particular situation will be given to planning, managing, and reporting research. Students will be assigned to current research projects for practicum experience in research.

TU366 Seminar: Special Education: Advanced Problems in the Administration of Special Education 3 s.h.

Taken concurrently with an internship. Field experience integrated with theory and practice. Prerequisites, TU326 and consent of instructor.

TU393 Field Service Project in Special Education Internship 3 s.h.

Prerequisite, consent of instructor.

TU394 Ed.S. Research Project in Special Education 3 s.h.

Prerequisite, consent of instructor.

TU395 Field Service Project in School Psychology 3 s.h.

Prerequisite, consent of instructor.

TU493 Ph.D. Thesis in Special Education 3 s.h.

Prerequisite, consent of instructor.

EDUCATIONAL MEDIA

TV101 Operation of AV Equipment 0-1 s.h.

Principles and practices in operating still and motion picture projectors, tape recorders, record players, slide duplicators, copy machines, and the dry running press.

TV110 Selection and Utilization of Educational Media 2 s.h.

Primarily for students who expect to teach, but open to nontechnical majors of education. Selection, evaluation, utilization of instructional materials and methods. Basic techniques for developing teacher-made instructional materials. Prerequisite, TV101, which may be taken concurrently.

TV120 Theory and Practice of Educational Communications Technology 3 s.h.

The relationship of audiovisual communication to problems of teaching and learning. The "state of the art" of "new media technology" research evidence from the behavioral sciences and innovative instructional programs.

Prerequisites, TV101, which may be taken concurrently.

TV127 Planning and Production of Instructional Materials 1-3 s.h.

Theory and practice of planning and producing instructional materials that can be developed by the classroom teacher. Experience is designing, developing, producing, preparing, duplicating, and simple lettering and photographic techniques. Prerequisites, TV110 or TV128.

TV128 Planning and Production of Instructional Materials 11 3-5 s.h.

The development of instructional materials using still or motion picture photography, audio tapes, or advanced graphic techniques. These skills will be covered, then students will produce self-instructional programs using selected media. Prerequisites, TV127 and consent of instructor.

TV130 Communication Through Drawing 2-3 s.h.

Principles of freehand drawing. Observation and practice in the use of lines, tones, and shapes that will be used in drawing flat and three-dimensional objects. Training in using drawings as a means of communication. No art experience necessary.

TV131 Principles and Techniques of Graphic Communication 2-5 s.h.

Landscape and design of graphic communication materials; principles from psychology and art. Experimentation in making and using graphic symbols, freehand drawing, layout and design, and simple lettering techniques. No art background necessary.

TV125 Seminar: Survey of Educational Media Research 2 s.h.

Investigation of research from the behavioral sciences, art, and technology, pertinent to educational development and/or message design problems. Prerequisites, TV110 or TV128.

TV126 Seminar: Administration of Educational Media Programs 2-3 s.h.

Selecting, distributing, financing, organizing, and managing the hardware, software, materials, and personnel in an educational institution. Prerequisites, TV110 or TV128.

TV377 Seminar: Educational Media and the Systems Approach to Instruction 2-3 s.h.

Planning for instruction through systems of management of learning using through effective utilization of men, resources, and equipment. Prerequisites, TV114, TV115, TV128, and consent of instructor.

TV393 Individual Instruction in Educational Media 2-3 s.h.

Research and practice in experimental design, evaluation, and writing for publication. Prerequisites, TV114, TV115, TV128, and consent of instructor.

TV393 Individual Instruction in Educational Media 2-3 s.h.

Opportunity to investigate areas of specific interest to the student. Prerequisite, consent of instructor.

TV310 Practicum in Educational Media 2 s.h.

On-campus, supervised administrative, and other nonteaching experiences in public schools, social agencies, or industry.

TV311 Internship in Educational Media 3 s.h.

Off-campus, supervised administrative, and other nonteaching experiences in public schools, social agencies, or industry.

TV393 M.A. Thesis: Educational Media 3 s.h.

Prerequisite, consent of instructor.

TV493 Ph.D. Thesis: Educational Media 3 s.h.

Prerequisite, consent of instructor.
From its beginning in 1857 as a course in mathematics, engineering education at Iowa has grown to the status of a college that is an essential part of a university distinguished for its broad educational environment. As one of eight professional colleges of the University that apply the physical, biological, and social sciences taught in liberal arts, engineering has maintained its close ties with the other colleges, and these ties are now being strengthened still further as the profession itself becomes an ever-more-essential part of civilized life as a whole. 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. Notable in this regard is the five-year option leading to degrees from both the College of Liberal Arts and the College of Engineering. The College comprises six departmental subdivisions providing undergraduate and graduate instruction. 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. The M.S. and Ph.D. degrees are awarded by the Graduate College, and candidates for these degrees register in that College.

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 new engineering curriculum at Iowa. First implemented in 1969, this curriculum consists of four years extending through all four years of undergraduate study. The four years are socio-humanistic studies, mathematics, basic and applied science, and analysis and design. It is the latter sequence which distinguishes engineering education from all others; it begins in the Iowa curriculum, with Introduction to Engineering, in the first semester of the freshmen year and continues with departmental specialization or an interdisciplinary combination in the senior year.

The University of Iowa College of Engineering is accredited by the Engineers Council for Professional Development. Its undergraduate enrollment including pre-engineering registrants, numbers well over 500 students, divided fairly evenly among the five departments offering baccalaureate programs. The enrollment in postgraduate studies is approximately half as large as the undergraduate enrollment. Among schools of engineering nationally, the College is about 8 per cent below median size in undergraduate enrollment, and about 8 per cent above median size in post-graduate enrollment. At Iowa the emphasis is on quality, rather than size, and the numbers are such that close personal contact can be maintained between student and instructor.

DEGREE REQUIREMENTS

Baccalaureate degrees. The Bachelor of Science degree in engineering or in a designated departmental program is granted upon completion of a minimum of 128 semester hours of credit. The degree 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.

The socio-humanistic electives are to be elected by the student with his advisor's approval so as to form a social science sequence and a historical-cultural sequence of at least 6 semester hours each, within the total required.

The social science sequence shall consist of courses from the following Departments: Anthropology, Economics, Geography, Political Science, Psychology, and Sociology. Students are encouraged to elect a sequence of related courses from one of the above departments rather than beginning courses from a number of different departments.

The historical-cultural sequence shall consist of core courses in the historical-cultural area and/or from any of the following Departments: American Civilization, Art, Classics, English, European Literature and Thought, History, Music, Philosophy, and Religion. Advanced courses in any foreign language department will also satisfy the historical-cultural requirements. Studio courses in art and music, however, are not acceptable.

Other course and hour requirements are designated in the curriculum outlines of each department of the College, in the following pages.
The combined program. The vast technological development of recent years has resulted in an increasing demand for engineers with strong backgrounds in the humanities, social sciences, and languages. In response to this demand, Iowa developed the 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. Students taking the combined course register in the College of Liberal Arts and transfer to the College of Engineering after completing 96 semester hours of credit. Students may enter the program by transfer from another institution, but at least the last 60 semester hours of the combined program must be taken in residence at The University of Iowa. By proper scheduling of coursework in consultation with advisers from the College of Liberal Arts and Engineering, the student in the combined program can meet the baccalaureate degree requirements of both Colleges in five academic years.

Professional registration. Admission to practice professional engineering is governed by the laws of each state, and requires registration. The minimum standards include graduation from a recognized engineering curriculum of at least four years, followed by at least four years of practical experience. The Iowa Board of Engineering Examiners has adopted the plan of admitting College of Engineering graduates to the rating "Engineer in Training" by an examination on engineering fundamentals given at the University near the time of graduation. Completion of registration as a "Professional Engineer" requires an advanced examination following professional experience. For registration information and forms, write to the Iowa State Board of Engineering Examiners, State House, Des Moines, Iowa 50319.

Advanced degrees. Students interested in pursuing advanced degrees in engineering must be admitted to the Graduate College and become candidates for the degrees Master of Science and/or Doctor of Philosophy. For additional information, see the Graduate College section of the Catalog, as well as the departmental listings that follow below.

FACULTY

Because the College recognizes the value of interchange between faculty and students, all of its faculty members teach both undergraduate and graduate courses; the use of teaching assistants is minimized; and core courses are manned largely by senior faculty.

Recognizing that a university faculty has a dual responsibility for the production as well as the dissemination of knowledge, the College seeks to achieve a balance between teaching and research, not only on the whole but as far as possible with individual faculty members. The College has neither full-time research professors who have no student contacts, nor full-time teachers who are not contributing new knowledge. At least a third of the faculty are internationally recognized for their contributions to teaching and research.

FACILITIES

The Engineering Building. The Engineering Building includes administrative offices, the Library, and the Departments of Civil Engineering, Electrical Engineering, Industrial and Management Engineering, Mechanical Engineering, and Mechanics and Hydraulics.

The new Engineering Library is the center of College activity. Its collection includes 35,000 books and 750 periodicals. The Library is equipped with microfiche and microfilm readers. A full-time librarian is in charge. This area is also used for informal receptions.

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, distillation, drying, fluid flow, and heat transfer. A section of the laboratory devoted to nuclear technology contains a subcritical nuclear reactor, a pulsed neutron generator, and a reactor simulator. Laboratories have recently been added for biometal research. Smaller laboratories are provided for investigations of plastics and other engineering materials. Laboratories for individual research are available to graduate students; these are equipped with chromatographs, analog computers, and other instruments.

Electrical Engineering Laboratories. The instructional laboratories of the electrical engineering department include dynamic systems, digital systems, and control systems laboratories, and a general-purpose laboratory for special projects. Research laboratories are equipped for investigations in plasma physics, signal analysis, electronic circuits and devices, and digital systems. A computer laboratory is provided for undergraduate and graduate student use for study and research in analog, digital, and hybrid computation and simulation.

Environmental Engineering Laboratories. Facilities for environmental engineering teaching and research are located in the Phillips F. Morgan Sanitary Engineering Laboratory, the University Water Treatment Plant, and the Department 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 lab-
investigation of ice phenomena, a dispersion flume, and a wave tank.

The Iowa Institute of Hydraulic Research has earned international recognition for its work in a broad-based program of research in hydraulics, fluid mechanics, ship hydrodynamics, bioengineering, environmental control, and ice dynamics. In addition, a program of fundamental research is conducted by staff members and graduate stu-

Computer services. Services of the University Computer Center are used extensively by stu-
dents and faculty of the College, under the auspices of the College Computer Committee. The College itself maintains remote terminals for conversational access to the University computer and key-punch equipment for computer cards.

PLACEMENT SERVICES

Students and alumni can avail themselves of the placement services provided by the College of Engineering. Interview rooms and a place-
ment library of informational material are located in the Engineering Building. Assistance is avail-
able for arranging interviews and obtaining in-
formation on job opportunities. Additional in-
formation can be obtained from the Dean of the College of Engineering.

STUDENT ORGANIZATIONS

AND ACTIVITIES

The entire undergraduate student body in the College of Engineering is organized as The Associated Stu-
dents of Engineering.

Engineering students publish a monthly peri-
odical, the Iowa Transt.

Student branches of the American Institute of Chemical Engineers, the American Institute of Industrial Engineers, the American Society of Civil Engineers, the American Society of Mechanical Engineers, and the Institute of Electrical and Electronics Engineers are active at Iowa.

The U of I chapter of Tau Beta Pi, an honorary engineering society, gives special recognition to superior students in their junior and senior years. Senior and graduate engineering students who have special ability in research are eligible for election to Sigma Xi. Pi Lambda Upsilon, honorary chemistry and chemical engineering fraternity; Chi Epsilon, honorary civil engineering fraternity; Eta Kappa Nu, honorary electrical engineering fraternity; and Pi Tau Sigma, honors-

COLLEGE OF ENGINEERING

oratory is especially equipped for pilot-plant proj-
ects and contains a full-scale activated sludge aeration tank, as well as an activated sludge pilot

Industrial Engineering Laboratories. The de-
partment has laboratories equipped for research in the principal areas of materials and processing, including materials science, powder science, metal casting, cutting, and fabricating. Human factors laboratories are equipped to investigate basic motor capabilities and the effects of selected tank and environmental variables. Unique equipment for the measurement of human factors includes:

electronic timing, force sensing, recording, and

computation equipment.

Mechanical Engineering Laboratories. The me-
chanical engineering laboratories contain in-
struments and equipment for experimental inv-

placements in a variety of fields. These fields include thermodynamics, thermal systems, heat

transfer, gas dynamics, behavior of materials, control systems, and machine dynamics. The

laboratories provide educational experience in all important scientific areas on which mechanical engineering is based, and valuable experience in modern methods of measurement and analysis including use of modern computers.

Structures and Materials Testing Laboratories;

These laboratories are equipped for the determi-

nation of physical properties of materials of

engineering construction, such as soils, aggregates, concretes, fibers, timbers, and plastics. Included are

a compression testing machine, a universal

testing machine, and an axial testing machine,

along with mechanical and electronic instrumen-
tation and photelastic equipment for the accurate measurement of deformations under load. The

structural laboratory also contains a prestressing

bed and frame which permits construction of prestressed concrete structural members. A

humidity control room and curing rooms are also

available. A soils laboratory contains consolidata-
tion and triaxial testing equipment of the latest
design. Special equipment is available for nega-
tive pore water pressure studies and model foot-
ing tests.

Hydraulics Laboratory. Located on the west

bank of the Iowa River at the end of the Uni-

versity dam, this laboratory houses the latest

facilities for undergraduate and graduate labora-
tory instruction, and for basic and applied re-

search by staff and students in the area of

hydraulics and fluid mechanics. The equipment
includes an EDP 600 data acquisition and con-


control system for online analysis of experimental

data, a 330-foot towing tank, several flumes and

wind tunnels, a low-temperature fsw facility for
The marking system and grade points assigned each passing mark are as follows: A—superior (4 grade points), B—above average (3 grade points), C—average (2 grade points), D—below average (1 grade point), F—fail, I—incomplete, and W—withdrawn. All students are expected to maintain a satisfactory level of scholarship at all times. The regulations of the College require that the record of each student whose grade-point average is less than a specified value during any one semester be reviewed by the office of the Dean. The student is then notified of any action taken with regard to his scholastic standing. Details of current requirements may be obtained from the office of the Dean.

PRIZES AND HONORS
Graduation honors include: With Highest Distinction, With High Distinction, and With Distinction, and are based on the student’s entire scholastic record. See also Scholarships and Loans and Awards-Prizes-Honors in the Catalog.

INSTITUTE OF HYDRAULIC RESEARCH STAFF
Director: John F. Kennedy
Consulting Engineer: William W. How.

DEPARTMENTS AND COURSES
Each course is designated by a code or department number, a course number, and a title. The number following the colon is the course number. Codes numbers assigned to courses described in this section of the Catalog have the following significances:

31 Industrial and Management Engineering
32 Chemical Engineering
33 Civil Engineering
50 Mechanical Engineering
51 Electrical Engineering
53 Mechanical and Hydraulics

ENGINEERING COURSES
(See departmental listings for other courses.)

51:1 Introduction to Engineering I 2 or 4 s.h.
Introduction of creative ability through the solution of problems for which many answers of various degrees of acceptability may exist; the application of oral, written, and graphical communication in the presentation of problem solutions. The 2-hour-hour-unit option is for those with adequate preparation in graphics.

51:2 Introduction to Engineering II 2 or 4 s.h.
Continuation of 51:1 with students undertaking projects of magnitude in teams, with studies in modeling, simulation, economics, specification, patents, planning, and

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COLLEGE OF ENGINEERING

school provide a certificate of high school credits, including a complete statement of the applicant’s high school record, rank in class, scores on standardized tests, and certification of high school graduation. The applicant must also submit any other evidence the University may require, such as a certificate of health.

To qualify for admission to the College of Engineering, an applicant must have:

1. Completed the American College Tests with a composite standard score of 24 or above and a standard score of 24 or above in the mathematics battery;
2. Successfully completed at least one and one-half units of algebra and one unit of plane geometry; and
3. Ranked in the upper one-half of his high school graduating class.

High school physics and chemistry are recommended for all applicants.

After reviewing the records of an applicant who does not meet minimum admission requirements, the Director of Admissions may admit the applicant unconditionally, admit him on probation, require him to enroll for a summer session on a trial basis, or deny admission.

Undergraduate Transfers. The applicant must submit a formal application and official transcript of all college work. Each applicant should have:

1. Completed at least analytic geometry or its equivalent;
2. Maintained a cumulative grade-point average of at least 2.25 (C+), based on a 4-point marking system; and
3. Attained satisfactory scores on the American College Tests.

A maximum of 66 semester hours credit (or the equivalent) from a junior college will be accepted for a baccalaureate degree.

The Director of Admissions will review individual records of applicants who do not meet recommended requirements, and may offer probationary admission.

Graduate Students. Applicants for admission to postgraduate study in any college of the University must meet the general requirements for admission to the Graduate College. For those requirements and related information, see the Graduate College section of the Catalog.

For the Iowa Board of Regents’ formal statement of requirements for admission, see the Appendix of the Catalog.

All inquiries concerning admission to any college of the University should be directed to the Director of Admissions, 1 Jessup Hall, The University of Iowa, Iowa City 52240.
CLASSIFIED DOCUMENT

51:14 Engineering Drawing 3 s.h.
Frechhand lettering, orthographic and auxiliary projection, dimensioning, working drawings, basic descriptive geometry. One lecture and one laboratory period per week.

51:6 Thermodynamics I 4 s.h.
The basic elements of thermodynamics; maxima and minima principles; thermodynamic potential function; Maxwell's relations; thermodynamic cycles; phase transitions, and application. Prerequisites: Mathematics 22M:30, co-requisite, Mathematics 22M:36.

51:12 Dynamic Systems Analysis I 3 s.h.
The concepts of dynamic systems are introduced and the techniques used for analysis of system behavior are presented from a generalized viewpoint. The generation and use of mathematical models to represent physical systems is developed with emphasis on comparison of the model and actual system behavior. Laboratory experience is used to complement classroom work as well as to familiarize the student with experimental techniques. Corequisite, Mathematics 22M:37.

51:18 Mechanics of Fluids and Transfer Processes 4 s.h.
Introduction to fluid-flow phenomena, fluid kinematics, flow of fluids in a gravitational field, laminar flow, turbulent flow. Compressible-Rigid Fluid, viscometry, energy transfer, drag and lift. Prerequisites, Mathematics 22M:37, 51:6, 51:37, or consent of instructor.

51:21 Principles of Design I 3 s.h.
The first of a two-course sequence which emphasizes two- to three-week projects involving optimization problems, computer-aided design, and probabilistic and statistical analysis in design. Prerequisite, 22M:13 or consent of instructor.

51:22 Principles of Design II 3 s.h.
Continuation of 51:21, which is prerequisite.

51:25 Electromagnetic Theory 4 s.h.
Electro and magnetic forces, Maxwell's equations, wave propagation. Applications include radiation, guided waves, and electromagnetic, circuit theory, and machinery. Applications laboratory. Prerequisites, Mathematics 22M:30, 51:12.

51:101 Communication in Industry 3 or 4 s.h.
An introduction to the communication methods within groups of people, from work-groups to large organizations, and to the principles involved in effectively exchanging information in industry through the various channels of communication by written and spoken language, radio and television. Work with knowledge obtained by reading from books listed in a bibliography, with practice derived from interesting within the group, and with applications and feedback from the industrial personnel.

51:108 Communication in Industry 3 or 4 s.h.
Practice in application of knowledge of group interaction and of principles of human communication through advising groups about communicating in various engineering courses. Further learning and useful feedback will be derived from seminar meetings held for the exchange of ideas resulting from the advising practice and from required reading selected by each student. The fourth hour will be secured by writing a well-prepared 10-20-page report or paper on a study connected with the advisory work. Prerequisites, 51:101 and consent of instructor.

51:105 Technology and Society 3 s.h.
The students will investigate four case studies of highly specified and tangible instances of the social and cultural configurations in which imperceptible forces. Same as Civil Engineering 22M:150 and American Civilization 42:159.

CHEMICAL ENGINEERING
Head of Department, Karl Kamerbeek
Office, 125A Chemistry-Botany Building

STAFF
Professors: Karl Kamerbeek, James O. Osburn.

*Assistant Professor: Richard W. Toor.

Professor: Patrick L. Markovich.


Undergraduate Curriculum

Semester Hours Total
Freshman Year

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<tr>
<th>Course</th>
<th>Prereqs</th>
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Senior Year

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<td>42:209, 210</td>
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Graduate Programs

The chemical engineering department offers graduate courses leading to the degrees of M.S. and Ph.D. The area of specialization can vary from fundamental chemical engineering science to biochemical applications of chemical engineering technology.

Admission requirements. Full admission to undertake graduate study in chemical engineering is granted if the student has a B.S. degree in chemical engineering from a recognized college or university with satisfactory grades. For the M.S. program, the required grade-point average is at least 2.8 based on a maximum of 4, for the Ph.D. program the minimum grade-point average is 3.0 based on completed graduate work. Conditional admission is granted if the entrance requirements are not fulfilled and approved is obtained from the head of chemical engineering at The University of Iowa. Also, it is required for every applicant to take the Graduate Record Examination. Appendix V in the Graduate Record Examination (see Graduate Record Examination, 2700, 11th Street, University of Iowa, Iowa City, Iowa) must be completed. Candidates must take the Graduate Record Examination for entrance and for admission to graduate programs. Candidates must take the Graduate Record Examination for entrance and for admission to graduate programs.

Programs. A Doctor of Philosophy degree is granted primarily on the basis of achievement rather than the number of semester hours of credit. However, the candidate is normally expected to have completed four years of residence, or two years if he already holds a recognized master's degree. The candidate must pass either foreign languages or two foreign languages from a foreign country or a foreign language from a foreign country. The candidate must pass the comprehensive written examination, which is a defense of his thesis. Financial aid. A limited number of fellowships, scholarships, and assistantships is available to graduate students who qualify. Some are awarded on the basis of competition; others are the results of appointment.

COURSE DESCRIPTIONS

Primary for Undergraduates

52:150 Design for Energy and Momentum Transfer 1 2 or 4 s.h.
52:160 Survey of Chemical Reactor Theory 2 2 s.h.
52:160 Survey of Chemical Reactor Theory 2 2 s.h.
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COLLEGE OF ENGINEERING

Graduate Program

The Department of Civil Engineering offers graduate study leading to the degrees of Master of Science and Doctor of Philosophy in Civil Engineering.

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 related physical science, with a cumulative grade-point average of 2.5 (based on a 4.00 scale). Candidates who do not have an engineering degree, or whose grade-point averages are slightly lower are invited to correspond regarding admission possibility. Undergraduate degrees in chemistry or the biological sciences are especially suitable for advanced studies in the environmental engineering program. For admission to candidacy for the doctorate, the minimum grade-point average is 3.5, based upon previous graduate work.

Each graduate student must furnish a record of scores obtained in the Graduate Record Examination Aptitude Test. Applicants whose native language is not English must obtain satisfactory grades on the Test of English as a Foreign Language (TOEFL).

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, with or without thesis as determined by the candidate and his graduate committee. Work is offered at the master's level in the general areas of environmental engineering and environmental science, structural engineering and foundations, traffic engineering and transportation planning, public works engineering, and water resources engineering. The environmental engineering and science program is an approved interdisciplinary graduate program carried out cooperatively with the Department of Plant, Soil, and Environmental Health in the College of Medicine. Doctor of Philosophy. The doctoral degree is granted primarily on the basis of achievement, and has no prescribed curriculum. The candidate will normally have at least three years, full-time work beyond the baccalaureate degree. He must pass written and oral examinations, and must prepare and defend an original research dissertation based on his work.

FINANCIAL AID. A number of fellowships, traineeships, teaching assistantships, and other forms of aid are available. Selection of recipients is usually based on scholastic achievement and research interest.

COURSE DESCRIPTIONS

For Undergraduates

53:1 Introduction to Engineering I 4 s.h.
Same as Engineering 53:1

53:2 Introduction to Engineering II 4 s.h.
Same as Engineering 53:2

53:22 Surveying 3 s.h.
Theory of measurements; methods and computations; surveying; geodetic surveying; photogrammetry and construction.

53:35 Structural Analysis I 3 or 4 s.h.
Statical and graphical methods of plane frames; influence lines; three-dimensional frameworks; deflections

53:41 Civil Engineering Design I 3 s.h.
Basic clarifier and clarifier behavior of structural elements; design of reinforced concrete beams, slabs, columns; design of steel section members, compression members, and connections. Applications to the design of structures. Prerequisites: 53:15-28.

53:51 Elementary Bio-Engineering 3 s.h.
The elements of basic biology with emphasis on its application to problems in engineering.

53:01 Flow Systems in Environmental Engineering 3 s.h.
Application of hydraulic and hydrologic principles to the designer of systems of water, wastewater, and stormwater flow systems. Consideration of air and solid transport systems.

53:72 Route and Earthwork Engineering 3 s.h.
The elements of route engineering as applied to highways, railroads, pipelines, and similar works; design of routes and computations for routes and earthwork structures such as dams and levees.

53:81, 83, 84 Professional Seminar no cr.
Reports on selected topics from current journals. Required of juniors and seniors in civil engineering. Prerequisite: Junior standing.

For Undergraduates and Graduates

53:100 Civil Engineering Design II 3 s.h.
The principles of civil engineering design and their application to either environmental (Sec. 1), structural (Sec. 2), or transportation (Sec. 3) engineering.

53:105 Technology and Society 3 s.h.
Same as Engineering 53:105 and American Civilization 45:105.

53:110 Special Studies 1 to 3 s.h.
Design or Investigation. Problems selected by student with instructor's approval.

53:125 Man and His Environment 3 s.h.
The application of scientific and engineering principles to the control of air-water-land environments for the health and well-being of mankind. Subject matter includes air and water resources, solid waste management, environmental health, legal and economic aspects.

53:131 Structural Analysis II 3 s.h.
Maxwell's law of membrane deflection, Muller-St�rner principle, conjugate beam, moment distribution and slope deflection method, including nonuniform members; column analogs; methods of analysis of structures; introduction to structural analysis by computers. Prerequisite: 53:35.

53:132 Structural Analysis III 3 s.h.

53:135 Dynamic Systems 3 s.h.

53:137 Structural Engineering Materials Science 3 s.h.
Properties of engineering materials with emphasis on steel and concrete. Relation of physical and mechanical properties to structural design. Prerequisites: consent of instructor.
53:142 Structural Design 3 s.h.
Steel and concrete bridge design, composite design, rigi-
driver building design, limit analysis and plastic design, yield-
line theory of shafts, fundamentals and design of simple and indeterminate prestressed concrete structures, concrete shell roof design. Prerequisite: consent of in-
structor.

53:144 Advanced Metal Structures 3 s.h.
Analysis and design of rigid frames by elastic and by plastic methods; light gage structural members.

53:147 Prestressed Concrete 3 s.h.
Analysis and design of statically determinate and indeter-
minate structures and structural units; inclusion review of current literature and specifications. Prerequisite, consent of in-
structor.

53:151 Environmental Engineering Microbiology 3 s.h.
Elements of microbiology for environmental engineers. Applications in water quality control. Lectures and lab-
oratory. Prerequisite or corequisite: 53:136; a course in biology, or consent of instructor.

53:153 Environmental Biology 3 s.h.
For engineers and other persons who, in addition to a knowledge of the basic principles of biology, require an understanding of the practical applications of biology and ecology in engineering and allied fields. Prerequisite, course in biology or consent of instructor.

53:155 Environmental Health 3 s.h.
Lectures covering the major problems in environmental health apparent in the modern era. Governmental regula-
tion of food and drink, air pollution, waste disposal, water, safety, occupational health, non communicable diseases, etc., is stressed. Same as Preventive Medicine and Environmental Health 53:154.

53:156 Environmental Engineering Chemistry I 3 s.h.
Lectures covering the application of general, qualitative, analytical, organic, physical, colloid, bio, and radio chemistry to environmental problems. Same as Preventive Medicine and Environmental Health 63:180.

53:157 Environmental Engineering Chemistry II 3 s.h.
Laboratory study of the standard methods for the exam-
inination of water and wastewater and of their application in the control of water and wastewater treatment operations. Same as Preventive Medicine and Environmental Health 63:182. Prerequisites, 53:156 or equivalent.

53:161 Principles of Environmental Engineering 3 s.h.
Physical, chemical, and biological principles applied to water quality control, air pollution control, and solid waste systems. Same as Preventive Medicine and Environmental Health 63:158.

53:162 Environmental Engineering I: Physical, Chemical, and Biological Systems 3 s.h.
The theory of physical, chemical, and biological systems applied to water quality control. Consider-
tation of applicable standards and control and solid waste sys-
tems. Prerequisite, 53:161; corequisite, 53:156 or consent of in-
structor.

53:164 Environmental Engineering II: Design 3 s.h.
The application of physical, chemical, and biological prin-
ciples to the design of water quality control systems. Con-
sideration of applicable standards and control and solid waste sys-
tems. Prerequisite, 53:161.

53:165 Environmental Engineering III: Air Pollution and Solid Wastes 3 s.h.
Analysis and design of air pollution and solid wastes con-
trol systems. Sources and characteristics of air pollutants and solid wastes. Need for control to protect the total en-
virnment.

53:167 Solid Waste Technology 3 s.h.
Principles of design and operation of solid wastes collec-
tion and disposal systems. Determination of solid wastes characteri-
istics. Studies of solid wastes disposal processes, including biodegradation, composting, and incineration. Salvag-
ing and utilization of converted solid wastes.

53:168 Limnology 3 s.h.
Chemical, physical, and biological characteristics of nat-
ural waters with emphasis on relationships between biota and phytochemical aspects of the aquatic environment.

53:171 Traffic Systems Analysis 3 s.h.
The formulation of analytic traffic models. The applica-
tion of statistical theories to traffic. Trend, projection, and programming of traffic systems. Prerequisite or corequisite: 53:105 or Industrial and Management Engineering 53:140 or consent of instructor.

53:173 Transportation Engineering I 3 s.h.
The location and design of routes of transportation; measures and geometrics; traffic flow fundamentals. Characteristics of various forms of transportation; earthwork and drainage; property rights and acquisition.

53:174 Transportation Engineering II 3 s.h.
Modes and systems of transportation; transportation in the United States; economics, regulation and control; financ-
ing, taxation, subsidy and public policy; traffic control, design and construction of pavements, teets and other ways, their appearances and foundations.

53:175 Transportation Safety 2 or 3 s.h.
The safety function of various modes of transportation with emphasis on motor vehicle safety.

53:176 Accident Analysis 3 s.h.
Analysis of accidents; physical forces operate in the acci-
 dent event; resultant fatalities in persons; strains and de-
formations in materials and structures. Prerequisite, con-
sent of instructor.

53:177 Traffic Engineering I 3 s.h.
The operation of urban and rural roads, streets and ex-
 pressways, including the control of traffic for safety and efficiency. Elective for civil engineering seniors and gradu-
 ate students.

53:178 Safety Aspects of Transportation Vehicles 3 s.h.
Analysis and design of transportation vehicles with safety as the primary criterion. Emphasis is on the highway vehicle, but the airplane, train, and other transportation vehicles also are considered. The compatibility of the vehicle to the highway system to human and vehi-
tile control are included in design considerations. Prerequisite, consent of the instructor.

53:184 Soil Mechanics 3 s.h.
Incorporation of soils; subaerial exploration; natural soil deposits; subaqueous exploration. Prerequisites, Math 33:79 and Systems 33:40.

53:185 Advanced Soil Mechanics 3 s.h.
Ruddy state and transient flow through soils; stress-
strain behavior of soils; the stress-strength Ms of soils. Prerequisite, 53:184 or consent of instructor.

53:186 Foundations of Structures 3 s.h.
The application of soil mechanics to foundations of build-
ings; bearing capacity and settlement analyses; stability of earth slopes; earth pressures and retaining walls; earth cuts. Prerequisite, consent of instructor.

53:189 Measurement of Soil Properties 1 s.h.
Advanced laboratory experiments including permeability, consolidation, and triaxial shear, with pore pressure and volume change measurements.

285
53:100 Procedures in Public Works
Engineering 2 h.
Project organization, feasibility considerations, financing methods, reports, specifications, contract documents. Prerequisite, senior standing or consent of instructor.

Primarily for Graduates
53:210 Advanced Special Studies cr.arr.
Special topics or investigation on selected problems by advanced students subject to approval of the department.
53:320 Seminar: Civil Engineering 0 or 1 h.
Reports on research and recent advances in the field of civil engineering by advanced students, faculty, and visiting engineers.

53:231 Advanced Theory of Structures 3 h.
Matrix analysis of structures; two- and three-dimensional members and frames; analysis by division of structure; structural analysis by finite element. Prerequisite, 51:312.
53:234 Advanced Structural Analysis by Numerical Methods 3 h.
Finite difference methods applied to beams, plates, skew slabs, elasticity problems; partial differential equation problems; relaxation and iteration techniques; methods of interpolation and extrapolation; numerical procedures applied to elastic and inelastic deflections, elastic and inelastic stability, vibration problems, elastic support problems, beam-columns, and combinations of these for uniform and nonuniform members, influence lines for redundant structures; buckling and vibration of structural systems; nonlinear analysis; use of digital computers. Prerequisite, consent of instructor.
53:240 Research: Civil Engineering cr.arr.
Experimental and analytical investigation of an approved problem in civil engineering.
53:243 Model Analysis and Experimental Methods 3 h.
Simulation requirements for direct, indirect, and distorted models; elastic and inelastic modeling for reinforced concrete structures; general research techniques for experimental design, measurement of forces, and deformation: analysis and interpretation of data. Prerequisite, consent of instructor.

53:343 Structural Design for Dynamic Loads 3 h.
53:345 Advanced Structural Design 3 h.
Advanced topics in the design of steel, aluminum, and concrete structures; concrete shell roofs. Prerequisite, consent of instructor.

53:347 Stability of Structural Systems 3 h.
53:350 Seminar: Environmental Engineering 0 or 1 h.
Reports and discussion of research and recent advances in environmental engineering by students, faculty, and guest engineers.

53:351 Biology of Water Quality Control 2 h.
Characteristics and ecology of organisms of importance in water quality control. Prerequisite, 51:151.
53:357 Environmental Engineering Chemistry III 2 h.
Lectures and laboratory dealing with advanced instrumental methods of analyzing water and wastewaters. Same as Preventive Medicine and Environmental Health 63:250. Prerequisite, 51:151.

53:263 Environmental Engineering IV: Systems Laboratory 2 h.
Laboratory study and analysis of the physical, chemical, and biological systems utilized in environmental engineering with emphasis on the interpretation of theoretical chemical data in real systems. Prerequisite, 51:127, 51:130; co-requirement, 51:184.
53:267 Industrial Water Quality Control 3 h.
Industrial water and wastewater treatment systems. Water quality needs for various industrial usages and the unit operations to achieve these requirements. The sources and characteristics of industrial wastes and the unit operations as related to treatment of industrial wastes. Prerequisites, 51:131, 51:184, 51:185.
53:268 Applied Limnology cr.arr.
The practical application of limnological techniques to stream analysis and water quality investigations. Prerequisite, 51:186.
53:269 Environmental Engineering Systems: Special Topics 2 h.
Detailed study of selected topics in water quality control, air pollution control, and solid waste disposal. Evaluation of current research papers and advances in environmental engineering practice. May be repeated for credit. Prerequisite, consent of instructor.

53:272 Urban Transportation Planning 3 h.
Services and systems based upon the analysis of traffic, land use, economic and other survey data, and the preparation of mathematical models. Reference for qualified graduate students in civil engineering and in urban and regional planning.
53:273 Transportation Systems I 3 h.
The design, construction, and operation of unique and integrated transportation systems and their terminal and exchange facilities. Prerequisite, consent of instructor.

53:296 Earth Pressures and Retaining Structures 3 h.
Earth pressures and slope stability theories; experimental studies of earth pressures and unloading in soils; theoretical and empirical bases for the design of retaining walls; founded soils; anchored earthworks, cut-offs, ties, and culverts. Prerequisites, 51:160 or consent of instructor.
53:295 Seminar: Water Resources Development 3 h.
An interdepartmental seminar on the sociological, economic, and engineering aspects of water resources. Same as Mechanics and Hydraulics 53:295. Prerequisite, approval of Department.

ELECTRICAL ENGINEERING
Chairman of Department, E. D. Eynman
Office, 4460 Engineering Building

STAFF
Professors: Donald L. Epkey, Karl D. Eynman, Lawrence A. White.

Undergraduate Curriculum
Semester Hours Total
Freshman Year
Fall 4 4 8
Winter 4 4 8
Principles of Chemistry I 4 4 4

Lecture 2 2 2

Laboratory 2 2 2

Total 36 36 36

Principles of Chemistry I 4 4 4

Lecture 2 2 2

Laboratory 2 2 2

Total 36 36 36
Graduate Program

The electrical engineering department offers graduate courses leading to the degrees of M.S. and Ph.D. The primary research areas are digital systems, control systems, power systems, electromagnetic wave theory, and circuit theory.

Admissions regulations. The normal admission requirements of the department are:
1. A grade-point average of 3.2 on all courses in electrical engineering, mathematics, and physics for M.S. students; for Ph.D. students, a 3.5 average is required.
2. An M.S. student with a grade-point average less than 3.2 but greater than 2.5 on courses in electrical engineering, mathematics, and physics may be admitted on a probationary status.

Each application for admission shall be reviewed on an individual basis. Extenuating circumstances may permit deviations from the normal standards in individual cases.

Master of Science in electrical engineering. Both thesis and nonthesis programs are available. The degree requirements are:
1. At least 30 semester hours of credit in an approved, coherent program acceptable to the adviser and the graduate committee. The following items are required in the program:
   a. At least 12 semester hours of coursework in electrical engineering, including courses required for electrical engineering undergraduate courses.
   b. At least 3 semester hours of coursework outside of electrical engineering, ordinarily from mathematics and physics.
   c. With thesis, up to 8 semester hours of the 30 semester hours may be research credit. Without thesis, at least 3 semester hours of 30 should be independent study, in addition to the 12 semester hours of course credit. The above is required. The thesis (in thesis, to be a special project completed under the supervision of the student's adviser.)
2. Qualification of the M.S. or the Ph.D. level in the electrical engineering graduate qualifying examination.
COLLEGE OF ENGINEERING

55:42 Electromechanical Machines and Systems 3 a.h.
Principles of operation of electromechanical machines
used for energy conversion and control; analysis of elec-
tromechanical control systems. Prerequisite: 55:20 or 55:24.
55:50, 60, 70, 80 Professional Seminar no cr.
Four seminars required. For junior and senior electrical
55:51 Electrical Engineering Laboratory I 2 a.h.
55:52 Introduction to Electrical Engineering
Analysis 4 a.h.
Mathematical methods used in the analysis of electrical
systems, including matrix theory, vector calculus, func-
tions of a complex variable, theory of residues, and
special functions. Prerequisites: 55:12 and Mathematics
22M:37.
55:51 Electrical Engineering Laboratory II 2 a.h.
Prerequisite: 55:31; corequisite: 55:52.
55:52 System Theory 4 a.h.
Application of Laplace transforms and other methods in
the analysis of feedback control systems and distributed
parameter systems. Prerequisite: 55:52.
55:71 Electrical Engineering Laboratory III 2 a.h.
Prerequisite: 55:52.
55:74 Elements of Electrical Engineering 3 a.h.
Principles of electronics, circuits, and fields for engine-
ers other than electrical.
55:51 Electrical Engineering Laboratory IV 2 a.h.
Special individual laboratory projects for advanced sen-
ior. Prerequisite: 55:71.
55:82 Topics in Electrical Engineering 1 to 3 a.h.
Special topics in electrical engineering for undergraduates
only. Prerequisite, consent of instructor. Corequisite: 55:84.
55:84 Elements of Electrical Engineering 3 a.h.
Continuation of 55:74, which is prerequisite.
55:91 Honors Senior Laboratory 2 a.h.
Individual laboratory projects for Honors senior students.
Prerequisite: 55:92.
55:92 Electrical Engineering Design I 3 a.h.
Design principles and their application for some area of
electrical engineering with a different section for each
area of specialization. Prerequisites: 55:52.
55:92 Electrical Engineering Design II 3 a.h.
55:92 with emphasis on the project. Prerequisite: 55:92.
For Undergraduates and Graduates
55:100 Elements of Applied Electronics 2 or 3 a.h.
A survey course of topics in electrical engineering, includ-
ing direct-current circuits, alternating-current circuits,
network analysis, circuits, devices, vacuum tubes, and
transistors. The emphasis is on practical applications.
Prerequisite: 55:92 or consent of instructor. Corequisite:
Mathematics 22M:45 or consent of instructor.
55:101 Elementary Electronic Instrumentation 2 or 3 a.h.
A continuation of 55:100. Topics include amplifiers,
measurement circuits, feedback, amplifiers, and pri-
and digital circuits. Prerequisite: 55:100.
55:133 Principles of Communication Engineering I 3 a.h.
A unified approach to principles underlying digital com-
munication systems. Sampling, waveform, optimum re-
ceiver principles, and efficient signaling for message
sequences. Prerequisite: 55:125 or consent of instructor.
55:150 Topics in Electrical Engineering 1 to 3 a.h.
Special topics in electrical engineering offered by ar-
range ment with individual faculty members. Prerequisite,
consent of instructor.
55:153 Advanced Electronics 3 a.h.
Principles of advanced electronic circuits; waveform
shaping and timing circuits, oscillators, modulators,
detectors, etc. Prerequisite: 55:87.7
55:160 Control Systems Analysis 3 a.h.
Analysis and synthesis of feedback control systems and
applications. An integrated treatment using both
frequency and time domain techniques is emphasized.
The relative advantages of Laplace Transforms and State
Variables formulations are illustrated by the treatment
of real physical problems. Same as Mechanical Engi-
neering 55:330. Prerequisite, senior status or consent of
instructor.
55:161 Control Systems Synthesis 3 a.h.
A continuation of 55:336 with emphasis on synthesis.
Same as Mechanical Engineering 55:331. Prerequisite,
55:162 Control Systems Laboratory 2 or 3 a.h.
Correlation between theory and practice is obtained
through investigation of components and overall system
behavior. Specifications and design of control systems
is carried out with emphasis on computer-imposed by
the digital system. Same as Mechanical Engineering
55:170 Theory of Linear Networks I 3 a.h.
Systematic formulation of active network equilibrium
equations, N-port descriptions, interconnections, and
equivalence. Synthesis of active N-ports. Open to
honors seniors and graduate students only. Prerequisite,
55:42.
55:171 Electromagnetic Theory 3 a.h.
Continuation of 55:25, which is prerequisite.
55:172 Electromagnetic Theory 3 a.h.
Static and time-varying fields, Maxwell's equations, theory
and applications. Prerequisite, graduate standing or
consent of instructor.
55:173 Switching Theory I 3 a.h.
Analysis and synthesis of combinational and sequential
circuits; hardware and software design of combinational
circuits. Prerequisite, senior standing.
Logic and design concepts of computer systems and micro-
processors. Logic design of typical circuits and arithmetic
units. Prerequisite, 55:172 or consent of instructor.
55:175 Digital Circuits and Systems I 3 a.h.
Introduction to digital circuit principles including logic
and arithmetic units. Basic combinational switching cir-
cuit design and computer organization. Prerequisite,
senior standing in electrical engineering.
55:176 Digital Circuits and Systems II 3 a.h.
Continuation of 55:175. Integrated digital circuit prin-
ciples. Basic sequential circuit design. Logic and system
design of computer components. Prerequisite, 55:175.
55:177 Digital Systems Laboratory 2 a.h.
Experiments on combinational logic circuits and digital
systems. Prerequisite, 55:172 or consent of instructor.
55:180 Theory of Linear Networks II 3 a.h.
Properties of active N-ports and their synthesis. The
from the state equations. Prerequisite, 55:170.
55:181 Introduction to Microwave Theory
and Technique 3 a.h.
Theoretical and experimental studies of guided waves,
microwave sources and devices and applications of high

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The document contains a list of course titles, descriptions, and prerequisites for various courses in electrical engineering and related fields, along with course codes, credits, and any additional notes such as prerequisites or corequisites. The courses cover a wide range of topics from fundamentals to advanced levels, including electrical theory, electronics, control systems, and digital circuits. Some courses are offered as electives with specific prerequisites, while others are mandatory for different levels of study. The document is structured in a clear, organized manner, making it easy for students and instructors to navigate and understand the course offerings.
55:185 Introduction to Statistical
Communication Theory 3 a.h.
Representation of deterministic and random signals; analysis
of modulation systems, multi-pulse systems and opti-
mum systems; introduction to information theory. Prereq-
quisite, Statistics 255/259 or equivalent.
55:186 Electronic Computers 3 a.h.
Introduction to the design and engineering application of
digital, analog, and hybrid computers. Logical structure
of computers; methods of problem preparation and code
of problems; study of computer components, input and
output devices; treat system simulation and simulation;
state variable techniques; application of computers to
engineering problems. Students operate the department's
digital, analog, and hybrid computers. Linear and non-
linear circuits are treated throughout the course. Prereq-
quisite, 55:185 or consent of instructor.
55:187 Hybrid Computer and Applications 3 a.h.
Analog and digital computer capabilities, hybrid computer
system components, B-spline systems, and applications.
Problem formulation for hybrid systems. Prerequisite, 55:186 or
consent of instructor.
Introduction to laboratory plasma physics. Discussion of
plasma creation and diagnostics, wave-plasma interaction,
and nonlinear plasma effects. Experiments to accompany
lectures. Same as Physics and Astronomy 29:134. Prereq-
quisite, Physics and Astronomy 29:134.

Primarily for Graduates
55:210 Advanced Circuit Theory 2 or 3 a.h.
Linear graphs and electrical networks; incidence, circuit,
and current matrices; topological formulas; application in
switching circuits. Prerequisite, consent of instructor.
55:212 Modern Topics in Electrical
Engineering 1 to 3 a.h.
Study of recent developments in the general field, pri-
marily by groups, through special arrangements with in-
dividual faculty members.
55:213 Recent Advances in Electrical
Engineering 1 to 3 a.h.
Concentrated study, normally on an independent individ-
ual basis, of specialized topics, supervised by individual
faculty members through special arrangements.
55:216 Advanced Electromagnetic
Theory I 3 a.h.
Mathematical methods of electromagnetic theory; Green's
functions, variational and perturbational techniques, nor-
malmode expansions, reflection principles, special prop-
agation of special topics as time permits. Prerequisite, consent of instructor.
55:217 Switching Theory II 3 a.h.
Continuation of 55:217, covering advanced topics. Prereq-
quisite, 55:217.
55:226 Advanced Electromagnetic
Theory II 1 a.h.
Continuation of 55:216.
55:231 Information Theory 3 a.h.
Quantitative measures of information; discrete and con-
tinuous sources; source encoding and decoding; discrete
and continuous channels; channel encoding and decoding. Prerequisite, 55:185 or consent of instructor.
55:232 Coding for Communication and
Computation 3 a.h.
Use of coding techniques to improve the reliability of
communication and computation systems, error correcting
codes, threshold and sequential decoding, reliable computa-
tion in the presence of noise. Prerequisite, 55:185 or
55:231.
55:233 Principles of Communication
Engineering II 3 a.h.
Continuation of 55:233. Implementation of coded systems,
channel models, and waveform communications. Prereq-
quisite, 55:135.
55:241 Research: Electrical Engineering
(M.S. Thesis) 1 to 6 a.h.
55:242 Research: Electrical Engineering
(P.H.D. Thesis) cr.arr.
Credit arranged from 1 to 10 semester hours.
55:252 Seminar: Communications
Systems 1 to 3 a.h.
Selected topics in communication systems theory. Prereq-
quisite, consent of instructor.
55:253 Seminar: Digital Computer
Systems 1 to 3 a.h.
Discussion of recent advances in digital computer orga-
nization and design. Prerequisite, consent of instructor.
55:254 Seminar: Switching Theory 2 or 3 a.h.
Individual or group study of outstanding problems in
switching theory. Prerequisite, consent of instructor.
55:255 Seminar: Coding 2 or 3 a.h.
Selected topics in coding theory and techniques. Prereq-
quisite, consent of instructor.
55:260 Sampled Data Control Systems 3 a.h.
A unified treatment of digital and sampled data control
system examples with topics of design and synthesis. Same as Mechanical Engineering 29:301. Prerequisite, 55:180. Of-
fered in alternate years beginning in 1969-70.
55:261 Nonlinear Control Systems
Same as Mechanical Engineering 29:381. Offered in
alternate years beginning in 1970-71.
55:263 Optimal Control Systems 3 a.h.
Variational methods, the calculus of variations, dynamic
programming, and the maximum principle. Same as Mechanical Engineering 29:383. Prerequisite, 55:180. Of-
fered in alternate years beginning in 1969-70.
55:265 Stochastic Control Systems 3 a.h.
Probability theory and random variables, including prob-
ability axioms, jointly distributed random variables, and
conditional probabilities and expectations; stochastic pro-
cesses, including random differential equations, nor-
mal, Markov, and other processes; optimal estimation
theory including smoothing, filtering and prediction; and
stochastic optimal control theory. Same as Mechanical
Engineering 29:385. Prerequisite, consent of instructor.
55:266 Seminar: Control Systems
2 or 3 a.h.
Formal discussion of recent advances in control system
analysis and synthesis. Same as Mechanical Engineering
29:384. Prerequisite, consent of instructor.
# College of Engineering

## Industrial and Management Engineering

### Chairman of Department, J. Wayne Deegan
Office, 1262A Engineering Building

### Staff
- Professor: J. Wayne Deegan, Fred C. Leone, John M. Lillincsberge, Richard Shilbe, Howard E. Boddie, Edward M. Mitchell
- Assistant Professor: Manohe D. Fanta, John S. Rumberger
- Lecturer: Richard P. LeMay

### Undergraduate Curriculum

#### Freshman Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Principles of Chemistry I</td>
<td>4</td>
<td>1st Semester</td>
</tr>
<tr>
<td>4.5, .6</td>
<td>Literature and Composition I, II</td>
<td>4</td>
<td>1st Semester</td>
</tr>
<tr>
<td>5029/5030, .36</td>
<td>Mathematics I, II</td>
<td>5</td>
<td>2nd Semester</td>
</tr>
<tr>
<td>511.2</td>
<td>Introduction to Engineering I, II</td>
<td>4</td>
<td>1st Semester</td>
</tr>
<tr>
<td>511.6</td>
<td>Thermodynamics I</td>
<td>4</td>
<td>2nd Semester</td>
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#### Sophomore Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Semester Hours</th>
</tr>
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<tbody>
<tr>
<td>2206.07, .26</td>
<td>Mathematics III, IV</td>
<td>3</td>
<td>1st Semester</td>
</tr>
<tr>
<td>511.11, .12</td>
<td>Dynamic Systems Analysis I, II</td>
<td>3</td>
<td>2nd Semester</td>
</tr>
<tr>
<td>511.25</td>
<td>Materials Science</td>
<td>3</td>
<td>1st Semester</td>
</tr>
<tr>
<td>511.17</td>
<td>Mechanics of Solids</td>
<td>4</td>
<td>1st Semester</td>
</tr>
<tr>
<td>511.18</td>
<td>Mechanics of Fluids and Transfer Processes</td>
<td>4</td>
<td>2nd Semester</td>
</tr>
<tr>
<td>5034</td>
<td>Materials Processing I</td>
<td>3</td>
<td>1st Semester</td>
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</table>

#### Junior Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>511.21, .22</td>
<td>Principles of Design I, II</td>
<td>3</td>
<td>1st Semester</td>
</tr>
<tr>
<td>511.27</td>
<td>Electromechanical Theory</td>
<td>3</td>
<td>2nd Semester</td>
</tr>
<tr>
<td>501.01</td>
<td>Professional Seminar</td>
<td>1</td>
<td>1st Semester</td>
</tr>
<tr>
<td>501.15</td>
<td>Systems Analysis and Management Engineering</td>
<td>4</td>
<td>2nd Semester</td>
</tr>
<tr>
<td>501.19, .20</td>
<td>Materials Science II, III</td>
<td>4</td>
<td>1st Semester</td>
</tr>
<tr>
<td>501.11, .12</td>
<td>Introduction to Engineering I, II</td>
<td>4</td>
<td>2nd Semester</td>
</tr>
<tr>
<td>501.22</td>
<td>Engineering Statistics</td>
<td>3</td>
<td>1st Semester</td>
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#### Senior Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>501.23</td>
<td>Thermodynamics II</td>
<td>3</td>
<td>1st Semester</td>
</tr>
<tr>
<td>501.17</td>
<td>Mechanics of Fluids and Transfer Processes</td>
<td>4</td>
<td>2nd Semester</td>
</tr>
</tbody>
</table>

#### Total

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>501.21</td>
<td>Materials Science II</td>
<td>4</td>
<td>1st Semester</td>
</tr>
<tr>
<td>501.22</td>
<td>Engineering Statistics</td>
<td>3</td>
<td>2nd Semester</td>
</tr>
</tbody>
</table>

### 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 his background and career objectives. Course selections, applicable for emphasis in engineering, management, human factors, business research, applied statistics, materials and processing, or quality assurance are available.

**Master of Science degree:** 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 of 4.0 or an acceptable score on the Graduate Record Examination Aptitude Test (minimum 650 Verbal, 650 Quantitative). Students must also be recommended for admission by the student's graduate advisor.

**Doctor of Philosophy degree:** 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 3.5 of 4.0 or an acceptable score on the Graduate Record Examination Aptitude Test (minimum 650 Verbal, 650 Quantitative). Students must also be recommended by the student's graduate advisor. In addition, each student must be recommended for admission by the student's graduate advisor. In addition, each student must be recommended for admission by the student's graduate advisor.

### Course Descriptions

**Primary for Undergraduates**

**501.15 Materials Science I**

**3 or 4 or 5**

**Science as Engineering 2135**
Primarily for Graduates

56.203 Advanced Topics in Industrial and Management Engineering 2 to 6 s.h.

Solving optimization and operating problems utilizing emerging engineering and management science techniques such as information systems, computer and statistical applications, accounting and scheduling methods. Prerequisite: consent of instructor.

56.212 Engineering Administration II 3 s.h.

Techniques of budgeting, controlling, and optimizing research and development efforts. Prerequisites: consent of instructor.

56.224 Human Factors in Production Systems 2 to 4 s.h.

A critical consideration of current problems and the art for designing man into productive systems. Prerequisite: consent of instructor.

56.231 Analysis and Design of Experiments 3 or 4 s.h.

Models in analysis of variance, single-factor multiple comparisons, ranking and selection, multiple factors, crossed and nested experiments, incomplete block designs, Latin squares and hypercubes, mixed models, balanced and unbalanced experiments, confounding, fractional experiments, analysis of covariance. Same as Statistics 215:129. Prerequisite: Math 115 or equivalent.

56.232 Regression Analysis 3 s.h.

Empirical construction and testing of models using linear and nonlinear regression techniques. Emphasis on selecting testable hypotheses for precision equation-building. Same as Statistics 215:32. Prerequisite: Math 115 or equivalent.

56.233 Statistical Decision Theory 3 s.h.

The general problem of statistical decision theory and its applications. The comparison of decision-criteria including Bayes and minimax rules; the decision-theoretic viewpoint of classical statistical inference; multiple decision procedures. Applications to problems in inventory, capital investment, quality control, and product pricing. Same as Statistics 215:130. Prerequisites: Statistics 215:129 or consent of instructor.

56.240 Advanced Topics in Operations Research and Engineering 3 s.h.

Current topics chosen from areas such as information systems, engineering economics, scheduling, and flow networks. Prerequisite: consent of instructor.

56.241 Operations Research 3 s.h.

A one-semester survey for M.S. level engineering or social science students. Optimization topics from both linear and non-linear programming and from the fields of queuing, inventory theory, and decision theory. Prerequisite: graduate standing in engineering, mathematics, or computer science.

56.242 Mathematical Programming I 3 s.h.

An in-depth treatment of optimization topics and mathematical programming applied to decision problems. Coverage includes graphs and linear and quadratic methods, linear and nonlinear programming. Prerequisite: graduate standing and knowledge of matrix methods.

56.243 Mathematical Programming II 3 s.h.

Continuation of 56.242. Coverage includes primal-dual methods, decomposition methods, interior-point linear programming, separable and dynamic programming and other current topics in the field. Prerequisite: 56.242.

56.244 Dynamic Programming and Related Topics 3 s.h.

Topics will include theory and computational aspects of dynamic programming. Emphasis on application to scientific decision making, inventory theory, allocation problems, search theory, and deterministic and stochastic multidimensional decision models. Prerequisites: 56.242, 56.243.

56.245 Stochastic Systematic Services I 2 to 4 s.h.

Stochastic-based problems in the fields of queueing, renewal, and other service systems. Prerequisite: Math 115 or equivalent.

56.246 Stochastic Systematic Services II 2 to 4 s.h.

Continuation of the study of stochastic problems from the fields of queueing, renewal, and reliability theory. Emphasis on data analysis and parameter estimation. Prerequisite: 56.245.

56.247 Theory of Scheduling 3 s.h.

Scheduling problems in machine shops, computer systems, and other complex systems; operational scheduling rules for deterministic models; optimal scheduling for stochastic models. Prerequisites: Math 115 and 56.245.

56.248 Branch and Bound Methods 3 s.h.

The use of branch and bound, heuristic and integral algorithms or problems of optimization research and management science. Prerequisites: Math 115.

56.249 Simulation for System Analysis and Design 3 s.h.

Continuation of 56.243 including Monte Carlo methods. Prerequisites: 56.243.

56.251 Materials Science IV 2 to 4 s.h.

The theory and structure of crystalline and noncrystalline materials and the application of X-ray and electron techniques to research in materials science. Prerequisites: consent of instructor.

56.252 Materials Processing III 2 to 4 s.h.

Advanced topics in materials processing. Prerequisite: consent of instructor.

56.253 Powder Science 2 to 4 s.h.

Latest developments in the science of particulate materials. Prerequisites: consent of instructor.

56.254 Design for Production 2 to 4 s.h.

Tool, product, and process design from a standpoint of cost of manufacture and operation. Prerequisite: consent of instructor.

56.259 Research: Industrial and Management Engineering 2 to 6 s.h.

Prerequisite: consent of instructor.

MECHANICAL ENGINEERING

Chairman of Department: Thomas F. Anderson

Office: 2204 Engineering Building

STAFF

Professor: Thomas F. Anderson, Donald H. Madson, J. Merle Trumpeldor

Adjunct Professor: Elmer C. Lundquist

Associate Professor: George M. Lence, Donald L. Spencer, Ralph J. Stephens

Assistant Professor: Chung-Jen Chen, David C. Chen, Paul D. Scholz

Undergraduate Curriculum

Semester Hours
Freshman Year 45
4 4
3 4
6 3
9 3
10 3
10 3
5 1
3 1
8 1
17 1
24 1

272
COLLEGE OF ENGINEERING

Senior Year
225:39 Probability and Statistics for Engineering and Physical Sciences 3 3
331:33 Dynamics, Analysis I, II 3 3
331:35 Materials Science 3 3
331:37 Heat Transfer by Conduction and Convection 3 3
331:38 Mechanics of Fluids and Terrestrial Atmosphere 3 3
49:43 Mechanics of Deformable Bodies 3 3
Seminars in Electives 3 3
Total 16 16 32

Junior Year
220:39 Physics I 3 3
331:32 Principles of Design I, II 3 3
331:39 Electromagnetic Theory 3 3
58:32 Experimental Engineering 3 3
331:38 Thermodynamics II 3 3
Seminars in Electives 3 3
Technical Electives 3 3
Total 16 15 31

Senior Year
39:05 Physics II 3 3
38:75, 76 Mechanical Engineering Design I, II 4 3 7
Seminars in Electives 3 3 6
Technical Electives 8 9 15
Total 16 15 31

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 specified by the Graduate College are applicable elsewhere. The student is expected to keep in close touch with the faculty adviser, to seek the transfer to the department individually within the framework of the college requirements. It is felt that both the appropriateness of the student's progress and his depth of achievement in it is adequately assessed by his advisor and through a review by his 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 graduate program and usually will serve also as his research adviser.

Admission requirements. The minimum requirements for admission to a graduate program in mechanical engineering are the same as those for the Graduate College, to which the student will ordinarily have a bachelor's degree in mechanical engineering or a closely related field, students who are interested in interdisciplinary programs may be admitted, if a careful review of their qualifications and objectives finds them suitable.

Master of Science in mechanical engineering. The Master of Science degree with thesis requires a minimum of 30 semester hours of academic credit including not more than 6 semester hours of credit for thesis work. Compli-

5:8.6 Thermodynamics I 4 s.h.
5:8.11 Dynamic Systems Analysis I 3 s.h.
5:8.12 Dynamic Systems Analysis II 3 s.h.
5:8.15 Mechanical Engineering Design I 3 s.h.
5:8.16 Mechanical Engineering Design II 3 s.h.
5:8.18 Laboratory Investigations 2 to 5 s.h.
5:8.19 Heat and Mass Transfer 3 s.h.
5:8.20 Heat and Mass Transfer 3 s.h.
5:8.21 Experimental Engineering 3 s.h.
5:8.22 Thermodynamics II 3 s.h.
5:8.23 Thermodynamics II 3 s.h.
the solution of engineering problems. Prerequisite, 82:622 or consent of instructor.

52:121 Intermediate Mechanics of Fluids 3-2 h.

52:155 Intermediate Heat Transfer 3 h.
Steady and unsteady heat conduction, material and forced convection, radiation, kinetic theory of gases, boiling and condensation, graphical and numerical solutions and applications. Prerequisite, 92:123, Mathematics 102:32.

52:130 Control Systems Analysis 3-2 h.
Fundamentals of linear system analysis and synthesis with applications. An introduction to their dynamic analysis. Introduction to synthesis of linkage function generators. Use of computer techniques in both analysis and synthesis.

52:133 Mechanical Vibrations 3 h.
Fundamental aspects of mechanical vibrations: free and forced vibrations with and without damping; single, two, and n degrees of freedom; systems with identical, influence coefficients, and eigenvalues; normal and principal vibration modes; Lagrange's equation; conservative excitations. Prerequisite, Engineering 92:127 and Mathematics 102:31.

52:134 Nuclear Reactor Heat Extraction 3 h.
Principles related to the extraction of heat from nuclear fusion reactor systems. Determination of temperature distributions, thermal stress, heat transfer, and fluid flow rates for typical systems. Consideration of biological shielding and safety with respect to the design problem.

Prerequisite, 92:123.

52:144 Intermediate Thermodynamics 3 h.
Advanced treatment of classical thermodynamics: introduction to the application of thermodynamics to solid and liquid thermonuclear reactors and selected topics. Prerequisites, 82:622 or equivalent and Physics 92:111.

52:145 Physical Measurement 3 h.
Methods for determination of thermo-physical properties of materials and systems. Response of instrumental systems to steady and transient conditions. Prerequisite, 92:123.

52:148 Compressible Fluid Laboratory 2 h.
Experimental study in fluid flow, Sonobuoy and supersonic flow, instrumentation and measurement. Fundamental aerodynamics. Wind tunnel and shock tube experiments.

52:150 Boundary Layer I 2-3 h.
Fundamental laws of motion of viscous fluids. Equations of motion for a compressible viscous fluid. General properties of Navier-Stokes equations and some exact solutions. Introduction to laminar boundary layer. Prerequisite, 92:111.

52:152 Compressible Flow I 3 h.

52:154 Statistical Thermodynamics 2-3 h.
Introduction to statistical mechanics. Interactions of classical and quantum mechanical systems using Boltzmann's Bose-Einstein, and Fermi-Dirac distributions; equilibrium properties of interacting systems; and an introduction to non-equilibrium statistical mechanics. Prerequisite, 82:144 or equivalent.

52:158 Engineering Analysis 3 h.
Analytical approach to engineering problems. Emphasis on a rigorous and logical attack on a wide variety of problems. Prerequisite, senior standing.

52:161 Control Systems Synthesis 2 h.
A continuation of 52:130 with emphasis on synthesis. Same as Electrical Engineering 62:161. Prerequisite, 82:130.

52:162 Control Systems Laboratory 0 to 2 h.
Correlation between theory and practice is obtained through experiments. Specification and design of complex systems is carried out within the framework imposed by the physical system. Same as Electrical Engineering 62:162. Prerequisites, 82:130 and consent of instructor.

52:172 Fatigue 2 or 3 h.
Fundamental concepts of initiation and propagation of fatigue fractures; experimental evidence concerning fatigue fractures; influence of complex state of stress, damage without failure, surface, size, and temperature effects; design interpretations and applications. Prerequisite, consent of instructor.

52:173 Theory of Failure in Design 2 or 3 h.
Consideration of the mechanical behavior of solids in a variety of applications; definition and criteria of failure; plastic deformations, linear elastic fracture mechanics-stress intensity K., J., creep, corrosion, and wear. Prerequisite, consent of instructor.

52:180 Propulsion 3 h.
Classification of basic propulsion devices, theoretical analysis of the important characteristics of each class, design considerations. Prerequisite, 92:111.

52:199 Seminar: Mechanical Engineering 1 or 2 h.
Formal reports and discussions on recent scientific contributions to the field of mechanical engineering. Prerequisite, senior standing.

Primary for Graduates

52:200 Kinetic Theory of Gases 2 to 3 h.
Fundamental treatment of the kinetic theory of gases. Topics include: binary collisions; the Boltzmann equation; the H-Theorem; the equations of fluid mechanics; special solutions of the Navier-Stokes equations, and the conservation of entropy.

52:284 Advanced Topics in Thermodynamics 2 to 3 h.
Advanced topics in thermodynamics. Prerequisite, 82:144 or equivalent.

52:302 Mechanical Design 2 h.
Prerequisite, 82:126 or equivalent.

52:303 Advanced Heat Transfer 2 to 6 h.
Selected topics in heat transfer. Prerequisites, 82:126 or equivalent.

52:305 Advanced Aerodynamics 2 to 6 h.
An advanced course for graduate students with a background in thermodynamics and fluid mechanics. Selected topics in theoretical aerodynamics will be presented.

52:206 Advanced Mechanical Vibrations 2 to 4 h.
Wave form analysis. Solutions for many degrees of freedom in rectangular, triangular, and flexural systems. Random vibrations. Prerequisite, 92:141.

52:216 Boundary Layer II 3 h.
Combined study of boundary layer theory. Turbulent boundary layer, turbulent flow in pipes and around submerged bodies. Jets and wakes. Prerequisites, 92:150.
58:215 Stability Theory in Fluid Mechanics 3 a.h.
Basic and disturbance equations; stability of parallel flow, boundary-layer flow, rotational flow, heated below flow, and wave-shear flow; higher instabilities.

58:216 Magneto-hydrodynamic Flow Phenomena 1 s.h.
Basic magneto-hydrodynamic systems and associated governing equations; plasma properties and similarity criteria; Hartmann flow; boundary layers and Hall currents; magneto-hydrodynamic shock waves; application to power generation and magnetohydrodynamics.

58:220 Conduction Heat Transfer 3 a.h.
Solution to the general conduction equation by separation of variables, and by integral-transformed techniques, approximate methods nonlinear boundary-value problems and numerical solutions.

58:221 Convective Heat Transfer 3 a.h.
Boundary layer differential and integral equations, momentum and heat transfer for laminar and turbulent flow inside cylindrical tubes and over external surfaces. Temperature-dependent fluid properties. Convection at high velocities, mass transfer formulations and solutions.

58:222 Radiative Heat Transfer 3 a.h.
Thermal radiation properties; radiant interchange among surfaces separated by radiatively nonparticipating media; radiant energy transfer through absorbing, emitting, and scattering media.

58:235 Dynamics of Nonequilibrium Flow 3 a.h.
The effect of internal relaxation, dissociation and recombination, ionization, and phase transformation on fluid flow. Small-amplitude waves, shock waves, nozzle flow, slender body theory. Singular perturbation techniques. Application of boundary theory and combination asymptotics. Prerequisite, consent of instructor.

58:253 Compressible Flow II 3 a.h.

58:254 Seminar: Thermal Sciences 0 to 3 a.h.
Informal discussions on recent advances in thermal science and applications.

58:256 Advanced Engineering Analysis 2 to 6 a.h.
Advanced analytical topics with applications in nuclear, aerodynamics, vibrations, fluid mechanics, and heat transfer.

58:260 Sampled Data Control Systems 3 a.h.
A unified treatment of digital and sampled-data control systems with examples of design and synthesis. Same as Electrical Engineering 58:260. Prerequisite, 58:120.

58:261 Nonlinear Control Systems 3 a.h.
Techniques and principles most useful in the area of nonlinear systems. Same as Electrical Engineering 58:261. Prerequisite, 58:120.

58:262 Optimal Control Systems 3 a.h.
Same as Electrical Engineering 58:262.

58:263 Stochastic Control Systems 3 a.h.
Probability theory and random variables, including probability spaces, jointly distributed random variables, and conditional probabilities and expectations; stochastic processes, including random differential equations; normal Markov and other processes; optimal estimation theory; optimal searching, filtering, and prediction; stochastic optimal control theory. Same as Electrical Engineering 58:263. Prerequisite, consent of instructor.

58:264 Seminar: Control Systems 0 to 3 a.h.
Informal discussions on recent advances in control systems analysis and synthesis. Prerequisite, consent of instructor.

COLLEGE OF ENGINEERING

58:299 Research: Mechanical Engineering or arr.
Research for fulfillment of advanced electives. Prerequisite, consent of department chairman and faculty advisor.

MECHANICS AND HYDRAULICS
Chairman of Department, Joseph W. Howe
Office, 1314 Engineering Building

STAFF


Associate Professors: Joseph W. Howe.

Assistant Professor: Eustace R. Skelton.

Graduate Assistant: John B. Glover, Darrell D. France.

Graduate Assistant: James Antognoni, Caesar Parelli, Edward J. Haug, T. Y. Lee, Frederick Lockhe.

Graduate Programs

There are several areas of specialization possible in the department. The programs accommodate those who are primarily interested in solid mechanics, fluid mechanics, and hydraulic engineering, or a combination of them. A recently inaugurated program in water resources development is a continuation of work in hydraulic engineering and sanitary engineering and is based upon courses in the mechanics and hydraulic technology of surface waters and river systems and sedimentation processes which may be controlled by four basic curricula. Master's degrees, with or without thesis, and Ph.D. degrees with dissertations are given in the first three programs.

The department is associated with the Army Institute of Hydraulic Research with its world-renowned laboratory. The major staff members of the Institute are professors in the department and devote about half-time to teaching. The Institute has unusually sophisticated instrumentation with strong emphasis on electronic observation and processing of data. The mechanics of solids program has good laboratory facilities including equipment for frequency and magnitude of load application, equipment for electronic observation, and photographic equipment, in addition to the usual testing machines.

Admission requirements. Graduate students are expected to have an undergraduate major in mechanical or civil engineering. Those with majors in mathematics or physics or those in closely related fields must have completed the following courses: Parallel and series circuits, ordinary and partial differential equations, integral calculus, and physics. In addition, candidates for the M.S. degree must have earned at least a grade-point average of 2.50, usually 2.00 is expected. Ph.D. candidates should have had a grade-point average of at least 3.50 in their master's degree work. Foreign students must pass the TOEFL examination and be re-approved by the Graduate College to take the Graduate Record Examination Aptitude Test.

Master of Science. The master's degree can be secured by earning 24 semester hours of credit in an approved course of study. Approximately half of these are required and the other half selected by the student with the approval of his adviser. The M.S. thesis is optional but when chosen, usually requires about 6 semester hours credit. Students coming up for the degree are expected to have a substantial interest in writing a master's thesis and should take written and oral examinations. The master of Mechanical Engineering candidates are admitted on the basis of a grade-point average of 2.5 in their master's program and are expected to hold that level throughout the remaining two years. Approximately 24 semester hours beyond the master's work are to be earned. About 25
COLLEGE OF ENGINEERING

semester hours are devoted to the dissertation, and 18 or more semester hours to mathematics or other closely related areas, leaving approximately 30 semester hours of major course to be taken in the department. Choice of major subjects is based on the particular line of interest which the student wishes to follow. Normally, the course work is in the same area as the dissertation. All Ph.D. candidates are required to have one year of foreign language for its cultural value. Ability to pass the examinations for the first year of a language is accepted in lieu of actual registration. Furthermore, students from non-English-speaking countries are allowed to use English as their foreign language and to take a year or at least 3 hours of English at the appropriate level. Candidates is decided upon the basis of grade-point average. A teaching assistantship is appointed for each graduate student with considerable attention to the student's desires in the matter, although some adjustment may have to be made in case of overloading of a particular student member. The comprehensive examination, following the Graduate College rules, must be taken by the next to the last semester period and the final examination, entirely on the dissertation, culminates the Ph.D. program.

FINANCIAL AID. There is a considerable amount of support available for graduate students. In addition to federal traineeships, HRDA or NSF graduate research assistantships are available from the Graduate College upon recommendation from the department, and, a considerable amount of contract work relies on a number of graduate students as research assistants. Current research opportunities include fluid mechanics in the neighborhood of $50,000 and in the solide phase about half of that. Twenty-five or more students are supported by such work. Some of the older students are also used as instructors on a quarter- or half-time basis.

COURSES DESCRIPTIONS

For Undergraduates

59:11 Hydrology 3 to 5 s.h.*

59:12 Hydropower Development 3 to 5 s.h.*

59:14 Hydraulic Machinery 3 s.h.

59:16 Analog and Digital Techniques for Data Reduction 3 s.h.

59:18 Irrigation and Drainage 2 s.h.

59:19 Flows in Open Channels 3 s.h. or 6 s.h.*

59:20 Compressible Fluids 1 3 s.h.

59:23 Mechanical Engineering 2 s.h.

59:25 Intermediate Mechanics of Deformable Bodies 3 s.h.

59:26 Equations of motion for elastic structures. Impact, dynamic behavior of beams, plates, rigid frames, moving mass, and blast loading. Prerequisite, 59:15 or equivalent.

59:27 Energy Methods in Structural Analysis 3 s.h.

59:28 Fourier's inequality, principles of virtual work, stationary potential energy methods of the calculus of variations, theory of buckling. Prerequisite, 59:15, 59:16, or consent of instructor.

59:29 Mathematical Methods in Continuum Mechanics I 3 s.h.

59:30 Analytical, approximate, and numerical methods for developing solutions to problems of equilibrium mechanics. Primarily for first-year graduate students in engineering or science.

59:31 Mathematical Methods in Continuum Mechanics II 3 s.h.

59:32 Theory of Elasticity 3 s.h.


59:34 Porous Media Hydromechanics 2 s.h.


59:37 Linear and Nonlinear Systems 3 s.h.

59:40 Porous Media Hydromechanics 2 s.h.

59:42 Flow in porous media. Flow and prediction of transport properties; analysis of wells, seepage, drainage, recharge, and multiple-phase flow.
59:188 Design and Construction of Masonry Dams 2 to 4 a.h.*
Field and office engineering studies; planning for dams, gravity dams, arch dams, barrage dams, geology.
59:189 Earth Dams and Apparatus 2 to 4 a.h.*
Rolledfill dams, chute spillways, outlet works, diversions, dams on previous foundations, movable dams.
59:190 Intermediate Dynamics 3 a.h.
59:191 Advanced Dynamics 3 a.h.
Lagrangian and Hamiltonian formulations for the dynamical analysis of discrete and continuous systems, with engineering applications. Prerequisite, 59:190 or consent of instructor.
59:192 Nonlinear Mechanics I 3 a.h.
Analysis of problems in mechanics with geometric, material, and dynamic nonlinearities. Stability analysis. Prerequisite, consent of instructor.
59:193 Nonlinear Mechanics II 3 a.h.
Continuation of 59:192. Emphasis on problems of continuum mechanics. Prerequisite, 59:192 or consent of instructor.
59:195 Experimental Stress Analysis 2 a.h.
*The regular course carries the minimum credit indicated. Advanced students may earn additional credit in this subject up to the indicated maximum.

Primarily for Graduates
59:202 Readings in Mechanics 2 to 3 a.h.
For graduate students with nonexistent major who desire reduced credit in 59:17, 59:18, and 59:42. May be repeated.
59:204 Hydraulic Analysis of Unsteady Flow 2 to 4 a.h.
59:213 Theory of Elasticity 2 a.h.
Separation of the mathematical theory of elasticity. Prerequisite, 59:173.
59:217 Advanced Mechanics of Fluids 3 a.h.
59:218 Advanced Mechanics of Fluids 2 a.h.
Continuation of 59:217. Laminar flow, turbulence, boundary layers, free-turbulence shear flow.
59:219 Advanced Laboratory Investigations 2 to 5 a.h.*
Instruction and practice in advanced experimental work. Emphasis on present-day problems of fluid motion. Prerequisite, 59:103.
59:230 History of Mechanics, 1 to 3 a.h.*
Preparation of one or more original monographs on either the lives and scientific contributions of specific men or the historical development of knowledge on a specific topic.
59:231 Hydraulic Design 2 to 5 a.h.*
Application of hydraulic principles to design of structures.
59:232 Research: Mechanics, Hydraulics cr.arb. Exposition and/or analytical investigation of an approved problem in mechanics, hydraulics, or engineering applications.
59:236 Seminar: Mechanics, Hydraulics 1 to 2 a.h.
Reports of research and special subjects by advanced students.
59:238 Hydrodynamics 3 to 6 a.h.
Selected topics in mathematical theory of fluid motion. Prerequisite, 59:237.
59:231 Continuum Mechanics 3 a.h.
Foundations of the general (linear) theories of continuum mechanics. Introduction to tensors, theory of deformation and motion of continua, stress principles of Cauchy, basic principles of classical mechanics, general treatment of constitutive relations. Prerequisite, 59:131.
59:239 Flood Control 3 a.h.
Flood runoff characteristics, dam break characteristics, flood alleviation or protection, economic considerations. Prerequisite, 59:111.
59:245 Optimization of Structural Systems I 3 a.h.
Finite dimensional optimization theory applied to optimal structural design and other optimal design problems in the mechanics of solids. Dynamic, strength, and displacement constraints on structures treated; Organized design methods developed. Prerequisite, Mathematics 22M:165.
59:246 Optimization of Structural Systems II 3 a.h.
Continuation of 59:245 to infinite dimensional problems. Determination of optimum continuous distribution of material in structural systems. Minimum weight structures.
59:247 Stability of Structural Systems 3 a.h.
59:249 Mechanics of Sediment Transport 2 to 5 a.h.*
Laws governing fluid velocity, applications to particle-size analysis, sediment motion, bed forms, bed load, and suspended load, natural river processes. Theory and practices of movable-bed model experiments.
59:250 Environmental Dispersion Processes 2 a.h.
Review of classical diffusion theories; dispersion of dissolved and particulate matter in open channel flow; selected topic including mechanics of resorption and thermal pollution. Prerequisite, 59:103 or equivalent.
59:251 Wave Mechanics 3 a.h.
Analysis of wave propagation phenomena in continuous media, with engineering applications. Prerequisite, 59:199 or consent of instructor.
59:253 Surface Waves in Liquids 3 a.h.
59:255 Coastal Hydrodynamics 3 a.h.
Water, waves, tides, and harbor oscillations; coastal structures; salinity intrusion and sediment transport in estuaries; beach processes and evolution.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>59:260</td>
<td>Theory of Plates</td>
<td>3 s.h.</td>
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<td></td>
<td>Small deflection of thin plates. Application of</td>
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<td>the energy method and the method of complex</td>
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<td>variables. Introduction to the analysis of thin</td>
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<td>plates. Prerequisite: 59:135.</td>
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<td>59:261</td>
<td>Theory of Shells</td>
<td>3 s.h.</td>
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<td>General theory of thin shells. Membrane analysis.</td>
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<td>General analysis of cylindrical shells and shells</td>
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<td>of revolution. Prerequisite: 59:155.</td>
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<td>59:272</td>
<td>Plasticity</td>
<td>3 s.h.</td>
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<td>Constitutive equations of plasticity, Boundary</td>
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<td>value problems, tension, and general theory of</td>
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<td>plane strain. Limit analysis and extremum</td>
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<td>principles. Prerequisite: 59:137.</td>
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<td>59:275</td>
<td>Theory of Viscoelasticity</td>
<td>3 s.h.</td>
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<td>Linear theory of viscoelasticity; Boltzmann</td>
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<td>superposition principle, linear functionals.</td>
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<td>Boundary value problems and correspondence</td>
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<td>principle. Viscoelastic waves. Prerequisite:</td>
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<td>59:175 or equivalent.</td>
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<td>59:295</td>
<td>Seminar: Water Resources Development</td>
<td>2 s.h.</td>
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<td>An interdepartmental seminar on the ecological,</td>
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<td>economic, and engineering aspects of water</td>
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<td>resources development. Prerequisite, approval</td>
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<td>of department. Same as Civil Engineering 52:285.</td>
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</tbody>
</table>
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 non-professional. The Graduate College provides the framework through which graduate degree programs are supervised and coordinated.

The announcement of courses is found in the respective college and departmental sections throughout this Catalog.

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 the strengthening of the departments. It offers extensive assistance to individual faculty members in finding the resources necessary for their research projects. The Graduate College works with the departments and other colleges of the University in the formulation of policies concerning selection, and in the supervision and support of graduate students.

**FACULTY**

The graduate faculty comprises University faculty and administrative personnel in the ranks of assistant, associate, and full professor. A non-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 degrees, 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.
- Art—M.A., M.F.A., Ph.D.
- Astronomy—M.S.
- Biology—M.S.
- Botany—M.S., Ph.D.
- Biochemistry—M.S., Ph.D.
- Business Administration—M.A., M.B.A., Ph.D.
- Business Education—M.S., Ph.D.
- Chemical Engineering—M.S., Ph.D.
- Chemical Physics—M.S., Ph.D.
- Chemistry—M.S., Ph.D.
- Child Development and Family Relations—M.A., Ph.D.
- Chinese Language and Civilization—M.A.
- Civil Engineering—M.S., Ph.D.
- Classics—M.A., Ph.D.
- Comparative Law—M.C.L.
- Comparative Literature—M.A., Ph.D.
- Computer Science—M.S., Ph.D.
- Crown and Bridge Presidents—M.S.
- Cultural Anthropology and Linguistics—Ph.D.
- Dental Hygiene—M.S.
- Denture Prosthetics—M.S.
- Dramatic Art—M.A., M.F.A., Ph.D.
- Education—M.A., M.S., Ph.D.
- Education—M.A., M.S., M.Ed., Ph.D.
- Electrical Engineering—M.S., Ph.D.
- English—M.A., Ph.D.
- Environmental Engineering—M.S., Ph.D.
- French—M.A., Ph.D.
- Geography—M.S., Ph.D.
- Geology—M.S., Ph.D.
- Geosciences—M.S., Ph.D.
- German—M.A., Ph.D.
- History—M.A., Ph.D.
- Home Economics—M.A., Ph.D.
- Hospital and Health Administration—M.S., 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.
- Mass Communications—Ph.D.
- Mathematics—M.S., Ph.D.
- Mechanical Engineering—M.S., Ph.D.
- Mechanical and Aeronautical Engineering—M.S., Ph.D.
- Meteorology—M.S., Ph.D.
- Microbiology—M.S., Ph.D.
- Music—M.S., M.F.A., Ph.D.
- Nuclear Science and Technology—M.S., Ph.D.
- Nursing—M.A., M.S.
- Nutrition—M.S., Ph.D.
- Obstetrics and Gynecology—M.S., Ph.D.
- Office Management—M.A., M.S.
- Operating Dentistry and Endodontia—M.S.
- Ophthalmology—M.S., Ph.D.
- Oral Diagnosis—M.S.
- Oral Pathology—M.S., Ph.D.
- Oral Surgery—M.S.
- Orthodontia—M.S.
- Orthopedic Surgery—M.S.
- Otorhinolaryngology—M.S.
- Pediatrics—M.S., Ph.D.
- Periodontology—M.A., Ph.D.
- Pharmacology—M.S., Ph.D.
- Pharmacy—M.S., Ph.D.
- Philosophy—M.A., Ph.D.
- Physical Education for Men—M.A., Ph.D.
- Physical Education for Women—M.A., Ph.D.
- Physical Therapy—M.A., Ph.D.
- Physics—M.S., Ph.D.
- Physiology and Cell Biology—M.S., Ph.D.
- Political Science—M.A., Ph.D.
- Preventive Medicine and Hygiene—M.S., Ph.D.
- Psychology—M.A., Ph.D.
- Psychology—M.S., Ph.D.
- Psychological Laboratory—M.S.
- Prosthetics—M.A.
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RESEARCH RESOURCES

The many and diverse research activities of the University are centrally administered by the Office of the Vice-President for Research, which has an interlocking relationship with the Graduate College. For further information see the Institutional Research section of this Catalog.

The University Computer Center. Located in East Hall, the Center has a system capable of an extremely wide variety of scientific data-processing applications. At present the major computer system is the IBM 360/65 with three-quarters of a million positions of high-speed core memory and one million positions of slow-speed core memory, two large disks, and eight tape units. It is now used in remote batch processing in connection with a regional computer activity partially funded by NSF, involving ten colleges in Iowa and one in 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 a healthy interchange of students and ideas between the two staffs.

The number and variety of computer-related courses offered at the University have been constantly expanding as the concepts and techniques of computer applications continue to grow. The Computer Center is available to all students, faculty, and staff members of the University. The Center provides educational and consultative services compatible with its resources, to assist users in preparing projects for computer analysis.

The University Libraries. The University's library system comprises the main library and fourteen departmental libraries. Its holdings total more than 1.5 million volumes, and include nearly two dozen special collections. (See the Library section of the Catalog.)

The Traveling Scholar Program. Developed by the Committee on Institutional Cooperation (CIC), which represents the Big Ten universities and the University of Chicago, the Traveling Scholar Program gives graduate students at CIC institutions access to courses, research facilities, and source materials which other CIC institutions offer and their own do not. (See Section III, Traveling Scholar Program in Rules and Regulations of the Graduate College of the Catalog.

FINANCIAL ASSISTANCE

Approximately one-half of the University's graduate students receive some form of University-administered financial assistance.

For eligibility requirements and application procedures, see Section VII, Graduate Appointment in Rules and Regulations of the Graduate College of the Catalog. Contact the department of your major interest to apply for the awards listed below.

The following are the primary sources of assistance:

Teaching and research assistanship. Available in most departments; stipends range between $2,500 and $3,600 for half-time assistants; assistants are also eligible for tuition scholarships; non-resident assistants' (one-quarter time or more) tuition and fees are reduced to resident rates.

University teaching-research fellowships. For doctoral students and first-year graduate students entering doctoral programs; stipends of $3,600 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. $3,600 for the academic year.

NDEA Title IV fellowships. For prospective college teachers; up to three years' support, with a first-year stipend of $2,400, second year $3,600, and third year $2,800, plus $500 a year for each dependent, and full tuition.

NSP traineeships. For students interested in social, biological, or physical sciences; initial 12-month stipend $2,400, renewable for a maximum of three additional years, providing $2,800 each intermediate year and $3,100 the terminal year, plus $500 annually for each dependent, and full tuition.

EPDA Part E fellowships, college teacher program, designed to prepare college or community college instructors, provides a 12-month stipend of $2,400 for the first year and $2,600 for the second year, plus full tuition, and $500 annually for each qualified dependent. (The provisions described above are subject to change.)

University and National Defense Education Act loans are available through the University's Office of Student Financial Aid.

Many departments offer additional support through traineeships, part-time employment in research, or part-time teaching appointments. The Office of the Vice-President for 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
GRADUATE COLLEGE

RULES AND REGULATIONS OF THE
GRADUATE COLLEGE

The Academic Program

Section I. Admission to the Graduate College

A. Application Procedure. All students seeking to register for the first time in the Graduate College of The University of Iowa must secure a formal admission statement from the Director of Admissions. Applicants may obtain the proper forms from the Director of Admissions, The University of Iowa, Iowa City, Iowa 52240.

In addition to these forms, the official 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. Application materials must arrive no later than August 15 for first-semester enrollment, January 2 for second-semester enrollment, or May 15 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 the Graduate Record Examination (ATGSE). Applicants for whom admission data are complete, with the exception of scores on the GRE or the ATGSE, may be admitted if they meet all other requirements. The GRE or the ATGSE must be taken within one semester after registration. The test is given several times a year at test centers established under the direction of Educational Testing Service, Princeton, New Jersey. The judgment of acceptable levels of performance on this test and its weight in the decision on admission of a student is left to the departments. Some departments in fields where GRE Advanced Tests are available require these in addition to the Aptitude Test. Inquiries about the Aptitude Test may be directed to University Evaluation and Examination Service; and inquiries about the requirement of the Advanced Test should be addressed to the executive of the department in which the applicant is interested.

C. English for foreign students. Prior to consideration for admission, foreign student applicants whose native language is other than English must take and pass TOEFL (Test of English as a Foreign Language) unless they have received a degree from an accredited college or university in the United States, the United Kingdom, Canada (except Quebec), Australia, or New Zealand. The examination is given at various times of the year and in many centers throughout the world. Inquiries should be addressed to The Director, TOEFL, Educational Testing Service, Princeton, New Jersey 08541.

Foreign students transferring from unfinished degree programs of other universities in the United States who have not taken the examination, or who have received a grade lower than the minimum established by the Graduate Dean, must take the TOEFL examination and receive a passing grade prior to consideration for admission. The Graduate College will advise the departments of those students barely passing the TOEFL test. Individual departments may require such students to take and pass a course in English usage at The University of Iowa 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 granted conditional admission.

E. Candidate. Admission to the Graduate College is not equivalent to 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 his application form the department or degree program or certificate program of his major interest and the degree, certificate, or professional objective he intends to pursue. The only exceptions to this regulation are the limited number of applicants registered as “special students.” (See definition of “special student” in next paragraph.) Changes in the major or degree status may be made in the course of a student’s graduate study with the approval of the department to which the transfer is proposed. To initiate such action the student must file a change of major or degree status in the Office of Admissions.

G. Status upon admission. All students upon admission fall into one of the following categories:

1. Regular. Students who have met the minimum requirements for admission and who have been accepted by a department, or interdepartmental degree program, for work leading to a graduate degree, or certificate, or stated professional goal.

2. Conditional. Students who are interested in working toward a graduate degree or certificate but who are required by a department to demonstrate their ability to do satisfactory graduate work before being admitted to regular
status. To be admitted on conditional status, the student must be recommended by a department, which will assume responsibility for advising him. (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 attaining a grade-point average of at least 2.50 and acceptance by his major department, or be dismissed.

3. Special. Students in receipt of a valid bachelor's degree who wish to register for no more than two courses at a time and who are not planning to become candidates for a graduate degree or certificate. These students, relatively few in number, must obtain special permission to register from the Director of Admissions. Special graduate students are not eligible for a graduate degree or for a certificate in a certificate program.

4. Summer Session. Students with a valid bachelor's degree and at least a 2.3 grade-point average may register only for one summer session without being accepted by a department or college. (See Section II below.) The deadline for application for admission to the summer session will be determined by the Director of the summer session and the Director of Admissions. Before admission to any subsequent session, including another summer session, the student must file an application and be admitted to regular or conditional status.

II. Minimum requirements for admission. Graduates of any college or university accredited by regional accrediting associations may be admitted to the Graduate College if their academic records meet the required standards. At the master's level a minimum grade-point average of 2.3 is required for admission to conditional status. A minimum of 2.5 is required for admission to regular status. The grade-point average is computed only on graduate work if the student has completed at least 12 graduate hours. If the student has not completed 12 graduate hours, the grade-point average is computed 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 papers shall be forwarded to the department concerned for examination and decision.

Students applying for admission to a doctor's program must meet a minimum GPA of 2.3 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 colleges, may charge interdepartmental program fees. To the extent that program fees may be charged, such fees may be assessed against a graduate student in the Graduate College. Information concerning departmental or program requirements may be obtained directly from the director of the department concerned.

For State Board of Regents minimum admission requirements, see Appendix of the Catalog.

Section II. Registration

A. Standard schedule. Students registered in the Graduate College may register for no more than 15 semester hours of credit in graduate courses. In a schedule of mixed graduate and undergraduate courses, 2 hours of undergraduate credit may be substituted for 1 hour of graduate credit, with registration limited to a credit total of 18 semester hours. The maximum for the eight-week summer session is 8 semester hours, or 9 semester hours if 2 or more semester hours of undergraduate work are included. Nine semester hours in the regular session constitutes full-time registration. (Fellows are required to carry at least 9 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 12 semester hours per semester and 8 semester hours during the eight-week summer session.

B. Courses not included in total registration. In addition to a full schedule, a graduate student may register for courses printed in the Schedule of Courses as carrying no semester hour credit.

C. Changes in announced credit. Graduate students may not register for more credit in any course than is shown 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 8 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 8 semester hours during the eight-week summer session.

3. Two-thirds and three-quarter-time appointees may register for not more than 9 semester hours during a semester or 6 semester hours during the eight-week summer session.

4. Seven-eighths-time appointees may register for not more than 7 semester hours during a semester or 4 semester hours during the eight-week summer session.

5. Full-time appointees, including full-time instructors, may register for not more than 6
semester hours during a semester or 3 semester hours during the eight-week summer session.

E. Restriction on credit to faculty. Persons who hold faculty rank of assistant professor (including assistant 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 1 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 8 semester hours permitted for a summer session. Registration after the last day of the third week of a semester or the third day of the second week of a summer session is permitted only in courses involving special projects, readings, individual study, thesis, or research, with the signed approval of the instructor concerned and the Graduate Dean.

H. Extramural registration. Registration for work done off campus is accepted for residence credit under the following circumstances:

1. Traveling Scholar Program of the Committee on Institutional Cooperation. (See Section III.)

2. Research at approved locations under the direction of members of the graduate faculty at The University of Iowa.

3. Field work as part of a regularly scheduled course, if approved by the instructor.

4. Courses taught off campus by members of the graduate faculty. (See Section X, D, and Section XII, C, for minimum semester hours required on campus for the master's and doctor's degrees.)

5. Residence graduate credit from another Iowa Regents' University (see Section V, B). Extramural registration does not count toward residence credit in the following circumstances:

1. Coursework transferred from another institution.

2. Correspondence courses.

3. Extramural fees and privileges. Students registered for extramural courses for graduate residence credit must apply for admission to regular status (see Section I, G) and pay established fees. (See Section XII, J, for special fees applicable to post-comprehensive registration, which should not be confused with extramural registration for residence credit.)

4. Correspondence courses. Correspondence study credits do not count as residence credits. Graduate correspondence study credit earned prior to a student's acceptance as a degree candidate at The University of Iowa may be counted toward an advanced degree upon the approval of the appropriate college or department. Not more than 9 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 major department and of the Graduate Dean.

K. System of course numbers. Courses primarily for graduate students are numbered 200 or above in each department. Courses open to and carrying credit for both graduate and undergraduate students are numbered from 100 to 199. Courses below 100 are not accepted for graduate credit.

L. Auditing of courses. In special cases, and upon the recommendation of the instructor and the adviser, the Dean of the Graduate College may grant permission to graduate students to audit courses for no credit. Auditing is permitted only to a student who is currently registered.

M. Dropping of courses. All graduate students who drop courses after the deadline date established by the Dean of the Graduate College for each session and published by the Registrar shall receive the grade of F unless the entire registration is canceled. This regulation may be waived only by the Graduate Dean on the recommendation of the Student Health Director or the Student Counseling Service. If a student cancels his registration after the deadline date, he must obtain permission from the Dean of the Graduate College before he is permitted to reregister.

Section III. Traveling Scholar Program

A. Purpose. The program under the auspices of the Committee on Institutional Cooperation representing eleven universities in the Midwest will enable a graduate student to take advantage of special resources available on another campus but not available on his 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 own graduate adviser, who will approach an appropriate faculty member at the possible host institution in regard to a visiting arrangement.

2. After agreement by the student's adviser and the faculty member at the host institution, graduate dean at both institutions will be fully informed by the adviser and have the power to approve or disapprove.

3. A CIC Traveling Scholar will be registered at his home university and his 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 Coordinator.

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 8 semester hours of graduate work, his cumulative grade-point average on graduate work done at The University of Iowa falls below 2.50. If, after completing 8 more semester hours of graduate work at this University, his grade-point average remains below 2.50, he shall be denied permission to register; otherwise, he shall be restored to good standing.

B. Doctoral students. For a doctoral student the minimum required grade-point average on graduate work at The University of Iowa is 3.70. A doctoral student whose performance falls below this level will be placed on probation. If, after completing 8 more semester hours of graduate work at this University, his cumulative grade-point average remains below the required level, he shall be dropped from the program and denied permission to register unless he applies and is accepted for another degree or certificate program. If the condition of his probation is met, the student is returned to good standing.

C. Departmental regulations. In addition to the above University-wide requirements, departments 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 Registrar of actions affecting a student's standing.

D. Dismissals. A student on probation shall not be permitted to take comprehensive or final examinations leading to any degree and may not receive any graduate degree or certificate.

Section V. Credits

A. Transfer of graduate credit. Graduate work at other institutions will be entered on the student's Permanent Record by the Registrar and a report of this action will be sent to the student, his 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 Regent's University may be counted as residence credit in this institution, provided such work is acceptable by the student's major department on the basis of the department's determination of its applicability toward the degree. (See Sections X, D, and XII, C, for minimum semester hours required on campus for the master's and doctor's degrees.)

C. Reduction in credit. For courses or seminars in independent study, thesis, and research an instructor may report less credit than the number of semester hours for which a student is registered.

D. Graduate credit for veterinarians. 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 1/3 credit.
3. Students who leave within the period of ten to twelve weeks receive 1/2 credit.

4. Grade reports for the 1/3 and 1/2 credit periods: (a) instructors report grades only as Pass or Fail; (b) credit is to be assigned on the basis of total registration minus thesis and seminar; (c) courses are to be counted toward specific degree requirements only after the student returns and then only with the department's approval.
5. Students who complete the twelfth week receive full credit.
6. Grade reports for the full credit period: (a) grades are to be reported only at the end of the semester; (b) credit is to be reported in specific courses on transcripts.

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 by individual instructors on the above basis except that less than 1/2 credit may be assigned.

Section VI. Marking System

A. Marks carrying advanced degree credit. These are A, B, C, and S-satisfactory.
2. Preference will be given to candidates for the doctoral degree.

3. Members of the University staff in the rank of assistant professor or above or those receiving a salary at the rate of $4,000 or over for the academic year are not eligible.

4. 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 wherreby, not a student but 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 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 dissertation or creative project and take his 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 twenty hours of service per week are required of a half-time assistant. Other part-time service is scaled in proportion, and a limited academic schedule is permitted (see Section II, D). Appointments are ordinarily made for the nineteen-month academic year, but appointments may be made for other periods of time by special arrangement. Stipends vary with the qualifications of the appointees and the nature of the service required. Faculty research assistantships 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 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, scholastically superior graduate students who show exceptional promise as teachers are
GRADUATE COLLEGE

selected for graduate assistantships. All appoint-
ments are made by the dean of the appropriate
college on recommendation of the department.

X. Eligibility for scholarships, fellowships, and
research assistantships. Scholars, Fellows, and
faculty research assistants in the Graduate Col-
lege budget must be registered as regular students
in good standing in order to hold such appoint-
ments. Appointments will be terminated when
registration and/or student status is terminated.
In no instance may a student be promised or
terminated an appointment until after approval for
enrollment to the Graduate College by the Director
of Admissions.

F. Research associations and postdoctoral
fellowships provide for independent research. Ap-
pointment is made by the Graduate Dean upon
recommendation of the department.

G. Credit. No academic credit is allowed for
the teaching or research service for which the
student receives payment as a graduate or a
faculty research assistant.

H. Loans for graduate students requiring
financial assistance are available at the Office of
Student Financial Aids. See Scholarships and
Loans section of the Catalog.

I. Other forms of support are available in
many of the departments in the form of trainee-
ships, part-time employment on research pro-
grams, or part-time teaching. Inquiries should be
addressed directly to the major department.

Section VIII. Advanced Programs Offered in the
Graduate College

The subject areas in which the Graduate Col-
lege 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 ten 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 ap-
lication signed by his adviser. Failure to file the
application by that date will result in postpone-
ment of graduation to a subsequent convocation.

B. Enrollment in fall semester. The student
must be enrolled during the semester in which
the degree is to be conferred. Students who are
away from the University campus during the
final semester may meet this requirement by reg-
istering for independent study, or research, or
thesis according to the practice in the various
departments. For doctoral candidates who have
completed all work except the final examination,
the postcomprehensive registration described in
Section XII, J, will suffice. For master's candi-
dates 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. Masters' Degrees

A. Kinda of degree. Masters' programs re-
quiring a minimum of 30 semester hours lead to
the Master of Arts degree, the Master of Science
degree, Master of Business Administration degree,
Master of Arts in Teaching degree, and such other
masters' degrees as are approved by the graduate
department.

B. Plan of study. The applicant for a master's
degree must file a Plan of Study approved by the
adviser and the departmental executive with the
Graduate College within the session in which the
degree is to be granted and by a date to be estab-
lished by the Graduate Dean. The Plan shall
meet the requirements for the degree approved by
the graduate faculty and set forth in the Univer-
sity Catalog for each department.

C. Major and related fields. The Plan of Study
should provide for reasonable concentration in the
major field of interest and, subject to the approval
of the major department, may include related
subjects from other departments.

D. Residence requirements. 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 8 semester
hours on campus are required. (See Section II,
III, Extromural Registration.)

E. Reduction of old credits. Credits for a
master's degree dating back more than ten 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 Medi-
cine or Dentistry while he is enrolled as a can-
didate for a professional degree may be counted on
a graduate program of study leading to a master's
degree, provided such courses were taken after
the student had satisfied the requirements for the
bachelor's degree, or work equivalent to the
bachelor's degree at The University of Iowa. The
work accepted from the professional college must
be directly related to the student's major field of
study in the Graduate College and be approved
as a part of the Plan of Study by the student's
adviser and the major department. Work com-
pleted while registered for a professional degree
in the medicine or dentistry will not be counted
as part of the residence requirement for non-
doctoral degrees in the Graduate College.

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G. Two masters' degrees. The granting by this University of two masters' degrees simul-
taneously or in succession requires the satisfac-
tion of all requirements for each degree sepa-
rately, 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 
8 semester hours of credit for thesis prepara-
tion shall be counted in satisfying the 20-hour mini-
mum requirement. The thesis may be a scholarly 
study or an artistic production.

One copy of the thesis, typed manuscript or 
print, must be presented to the Graduate Col-
lege for a check of formal characteristics not later 
than four weeks before the convocation at which 
the degree is to be conferred. (See Graduate 
College publication: "Requirements for Graduate 
Theses." After approval by the Graduate Col-
lege and by the thesis committee a final copy of 
the thesis must be deposited with the Graduate 
College not later than ten days before the con-
voction.

The thesis committee shall consist of at least 
three members of the graduate faculty and may 
or may not be identical with the final examina-
tion committee. (See K, Examining Committee.)

I. Master's degree without thesis. A master's 
degree without thesis, consisting of at least 30 se-
mester hours of graduate study, may be awarded 
upon the completion of a curriculum prescribed 
by a department and approved by the Graduate 
College.

J. Final examination. The requirements for 
all masters' degrees include a final examination, 
which, at the discretion of the major department, 
may be written or oral or both. Such an ex-
amination will not duplicate course examinations.
It will be evaluated by the examining committee 
as satisfactory or unsatisfactory with two un-
satisfactory votes making the committee report 
unsatisfactory. The report of the final examina-
tion is due in the Graduate College not later than 
forty-eight hours after the date of the examina-
tion or, in the case of those departments giving a 
general examination rather than a thesis examine-
tion, 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 for reexamination, but not sooner than 
the next regularly scheduled examination period 
in the following term (semester or summer ses-
sion).

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, ap-
pointed by the Dean upon recommendation of the 
major department or program, at least two of 
whom are from the major department. If the 
examination covers work in another department, 
one member of the committee must be from that 
department. Upon recommendation of the major 
department the Dean may appoint additional 
qualified persons (not necessarily members of 
the graduate faculty) to serve as voting members 
of the examining committee, and at his discretion 
the Graduate Dean may add a member to the 
committee.

Section XI. Two-Year Degrees

A. Master of Fine Arts degree. This degree is 
awarded for creative work in the visual arts, 
dramatic art, music, and literature. It is de-
signed for students preparing themselves profes-
sionally in such fields as painting, design, mural 
decoration, sculpture, playwriting, acting, produc-
ing, stage design, musical performance, composi-
tion, instrumentation, poetry, fiction, and transla-
tion. Central to the program, the thesis may 
consist of a novel, a painting, a play, a musical 
composition, or any other approved artistic ac-
complishment.

The program for the Master of Fine Arts re-
quires at least two years of residence credit in a 
graduate college. This requires a minimum of 
48 semester hours of graduate credit, at least 24 of 
which must qualify for residence credit at this 
University. A Master of Arts degree may be 
earned while the student is working toward the 
Master of Fine Arts degree, but the student must 
meet all requirements for each degree separately, 
with a minimum combined total of 60 semester 
hours of graduate credit.

For other requirements see Section X, para-
graphs 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 de-
gree is granted upon 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.

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 stu-
dent is on campus within one twelve-month period 
or during two summer sessions.

Twenty-eight of the 60 semester hours are pre-
scribed in the area of specialization; the others are 
in cognate fields, supervised experience, and
electives. Four semester hours of research culminate in a written report.

Courses successfully completed ten or more years prior to the final examination will be evaluated by the major department in order to determine the amount of credit that shall be allowed for such work. Evaluation of such old credits will be reported to the Graduate College by the departmental executive at the time of submission of the Plan of Study.

Other requirements and regulations applicable to the educational specialist degree are the same as prescribed for the one-year master's degree in Section X, paragraphs B, Plan of Study; C, Major and Related Fields; F, Limit on Law, Medical, or Dental Courses; J, Final Examination; and K, Examining Committees.

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 32 semester hours in graduate social work, including a research project.

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, coursework is combined with field practice in social agencies or social work departments. Since coursework and field practice are arranged sequentially, students can enter the School of Social Work only in September.

For other requirements see Section X, paragraphs B, Plan of Study; E, Reduction of Old Credits; F, Limit on Law, Medical, or Dental Courses; and K, Examining Committee.

Section XII. Doctoral 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. Prerequisites. The candidate must present evidence of having completed a satisfactory amount of undergraduate work in the subject proposed for investigation or, in the case of deficiency, must register for prerequisite courses.

C. Residence requirement. The doctorate is granted primarily on the basis of achievement rather than on the accumulation of semester hours of credit; however, the candidate is expected to have completed at least three years of residence in a graduate college. As a minimum, two semesters by at least 9 semester hours each must be spent in full-time residence on campus at this University beyond the first 24 semester hours of graduate work. (For purposes of recording or 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 adviser. 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 attained.

E. Reduction of old credits. Courses taken ten or more years prior to the comprehensive examination will be evaluated by the major department in order to determine the amount of credit that shall be allowed for such work. Evaluation of such 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 College of Medicine or Dentistry, while he is enrolled for a professional degree, may be credited to a graduate program leading to a doctoral degree if it is taken after the student has satisfied the requirements for a bachelor's degree at this University. The work accepted from the professional colleges must be directly related to the student's major field of study in the Graduate College, and the Plan of Study must be approved by the student's adviser 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.
reservations, or unsatisfactory to the Graduate College Office within fourteen days after the completion of the examination. Two "unsatisfactory" votes will make the committee report unsatisfactory. The report of a satisfactory dissertation should contain the name of the supervising professor for the candidate's dissertation.

In the event that the committee does not elect to vote "satisfactory with reservations," the exact stipulations of the committee should be recorded in the report. If the candidate desires further examination in a particular area of study, the statement should be specific in defining the area, in requiring additional courses or other procedures, and in specifying the time and method of satisfying the stipulation. The candidate will not be admitted to the final oral examination until such stipulations have been satisfied. The executive of the major department should promptly send a written report to the Graduate College giving date of removal of "reservations."

In case of a report of unsatisfactory in a comprehensive examination the committee may grant the candidate permission to present himself 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 must register for the courses, research, and dissertation necessary to complete his Plan of Study. If, after having completed all such registrations, the student is not ready to submit his dissertation and take the final examination, he 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 satisfy his committee, he may be readmitted to candidacy until he has submitted an application and been approved by his adviser, the departmental executive, and the Graduate Dean.

K. Dissertation for the doctoral degree. Two copies of the dissertation must be presented at the Office of the Graduate College not later than four weeks before the convocation at which the degree is to be conferred and deposited there in final form ten 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 500 words of text, is to be deposited with the dissertation. The abstract must be ap-
proved and signed by the dissertation adviser. The abstract is published in the Journal of Dissertation Abstracts. On copy of the dissertation typescript is bound and indexed at the University Library.

If the dissertation is in some nonprint form (e.g., painting, status, performance in music) the repository in charge of those will help the student and faculty adviser work out an appropriate method of preparing the accompanying manuscript, if such help is needed. Once the manuscript is accepted, it is 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 investigation—not a mere recapitulation of the procedures followed; 2) intensive questioning on areas of knowledge constituting the immediate context of the investigation.

The final examination may not be held until the next session after passing the comprehensive examination or until the first check of the dissertation by the Graduate College; however, a student must take his final examination no later than five years after passing his comprehensive examination. Failure to meet this requirement will result in a reexamination of the student to determine his qualifications for taking the final examination. The procedures to be followed are the same as those for the comprehensive examination. (See XII, I, Comprehensive Examination.)

Final examinations for the doctorate are open to the public. Members of the faculty of the Graduate College are especially invited to attend and, subject to the approval of the chairman, to participate in the examination.

The report of this final examination is due in the Graduate Office not later than forty-eight hours after the date of the examination. The final examination will be evaluated as satisfactory or unsatisfactory. Two unsatisfactory votes will make the committee report unsatisfactory. In case of a report of unsatisfactory in the final examination, the candidate may not present himself for reexamination until the next semester. The examination may be repeated only once, at the option of the major department.

N. Examinating committees. The comprehensive and final examinations are conducted by committees of no fewer than five members of the graduate faculty appointed by the 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 Dean may appoint additional qualified persons (not necessarily members of the graduate faculty) to serve as voting members of the examining committees, and at his discretion the Graduate Dean may add a member to the committee.

STAFF

Dean: Dunn C. Spiekerlach.

Duncan: Robert H. Seiff.

Associate Dean: James F. Johnson, Charles M. Mason.

Graduate Examiners: Eula B. Van Ness.

Members of the Graduate Council: William C. Ames (Mechanics and Hydraulics); Eric H. Beegster (Law); Thomas W. Converse (Sociology); Lloyd J. Filer (Philosophy); Nicholas M. Nolte (American); Albert W. Hovey (Education); James C. Spalding (Religion); John C. Whipple (Political Science); Drury W. Wall (Mathematics).

Graduate Faculty: All members of the college faculty of the University in the ranks of assistant, associate, or full professor, and administrative officers who hold professorial rank.

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The University of Iowa College of Law is one of twenty-seven charter members of the Association of American Law Schools, and has long been recognized and approved by the American Bar Association's Council of the Section of Legal Education and Admission to the Bar.

The College of Law recognizes that law, to be understood meaningfully, must be studied in the social, economic, and political context in which it functions. Technical legal competence is essential. With it, the law graduate is equipped to contribute effectively to developing the means of achieving society's goals. The program of the College of Law is aimed at helping the student to develop a broad understanding of society and the role that law and the legal process play in ordering that society.

As a graduate school as well as a professional school, the College of Law encourages the student to understand rather than learn by rote, to rely on his own initiative, to develop and execute his own independent research projects, and to work jointly with the faculty in making the school's educational program a success.

The degree of Juris Doctor (J.D.) is the normal degree conferred by the College of Law.

FACILITIES

The Law Building contains a library and air-conditioned classrooms. With its collection of approximately 175,500 bound volumes, the law library is an outstanding research facility. A broad open-stack policy makes the facility readily available to the students.

Agricultural Law Center. Created by the State Board of Education, the Center is nationally and internationally reputed. The Center conducts legal-economic research with Iowa State University, Ames, and the United States Department of Agriculture.

THE CURRICULUM

The 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, writing of several research papers, and a closer approach to graduate-level instruction.

Each first-year course has a specified substantive assignment in helping students develop analytical abilities and place the legal process in its social context. All first-year students are introduced to legal research through written assignments as well as instruction in legal method and in legal bibliography.

During the second year, all students are required to take torts and a course in appellate advocacy. Before they graduate, all must also take a second course in constitutional law, and a course in criminal procedure. All other second- and third-year courses are elective.

Students are encouraged to sign up for independent research with faculty members. Additionally, the College has instituted a second-year empirical research project.

Courses in other colleges. Students are encouraged to take courses in other colleges of the University. To receive credit for such courses, the student must obtain prior permission of the Dean of Law, and earn a grade of C or above.

Graduate Program

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, within limitations, perform "double duty" and be counted toward the semester-hour requirements of both degrees. The effect of this is to reduce the time required to obtain both degrees. In addition, it is hoped the student will be able to contribute to one discipline the insights which he has gained in the other.

Applicants must meet admission requirements of the Graduate College, in addition to those of the College of Law. (See the Graduate College section of the Catalog.)

Master of Comparative Law (M.C.L.). The degree of Master of Comparative Law may be granted to selected foreign law school graduates who complete a program of satisfactory study for two consecutive semesters and one summer session and who submit an acceptable thesis. Applicants must meet admission requirements of the Graduate College. In addition, the Admissions
Committee may require them to complete the Law School Admissions 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 as many credits of coursework as they wish. To be eligible to attend, an applicant from another school must submit a statement from the dean of that school, indicating an applicant is in good standing and eligible to continue there.

The Independent Study Unit is organized to permit 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 a project under independent study.

The Iowa Law Review. Published five times yearly and circulated to over 5,000 subscribers, the Review is managed and edited by College of Law students who write much of its material. Students with high grade averages are invited to write for it. 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 news, editorials, expressions of student opinion, and profiles of College faculty members and guests.

Community legal assistance. The College has arranged with several eastern Iowa agencies for clinical programs in which students have opportunities to relate their legal knowledge to actual problems by interviewing clients, drawing pleadings and other documents, conducting legal and other research, and in some instances, appearing in court. Students may earn academic credit for some of these activities. Cooperating agencies include the Hawkeye Legal Services Society of Iowa City, the Cedar Rapids Legal Aid Society, hawes corpus and civil projects at the Men's Reformatory in Anamosa, a hawes corpus project at Fort Madison State Penitentiary, an Iowa Civil Liberties Union referral project,8 programs in several county prosecutors' 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, national honorary whose membership is drawn from the top 10 per cent of the senior class, the Iowa Society of International and Comparative Law,Phi Delta Phi and Phi Alpha Delta, the law fraternities, Kappa Delta Phi, national law sorority, and the Black American Law Students Association. All students are members of the Iowa Student Bar Association which functions include placing students as voting members on faculty committees.

FEES AND EXPENSES

In addition to regular tuition and fees, books and supplies will average about $120 per year. Housing costs and personal expenses will vary with individual circumstances. (See Admission—Reimbursement-Fees section of the Catalog.)

Financial aid. The College requires all students to enroll for a full schedule, and discourages their taking outside employment. It has developed a comprehensive financial aid program which enables most students to meet expenses without outside employment. In addition to the awards listed in Scholarships and Loans, the College offers research assistantships with substantial 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 scholarships.

Placement. A wide variety of placement opportunities is available upon graduation from the College of Law. These include opportunities to work in government, as clerks to judges, with corporations, and in the private practice of law, 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 fine opportunities to practice law in Iowa, and in recent years approximately half of the graduating class have availed themselves of these opportunities. Each year, numerous law firms, corporations, and government agencies visit the University in order to recruit students from the College of Law.

ADMISSION

Premature 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 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 file his application for admission by May 1 preceding the fall semester in which he wishes to enter. Applicants are responsible for seeing to it that, prior to the final date for submitting ap-

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applications, each college or university attended has sent an official transcript to the University, or if he has registered with it, to the Law School Data Assembly Service, Princeton, New Jersey.

An application fee of $10 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 3.3 on all college work undertaken. The grade-point average is based on The University of Iowa’s 4-point marking system.

Each applicant for admission must complete the Law School Admission Test administered by the Educational Testing Service, Princeton, New Jersey, and have his score forwarded to the College of Law. Except upon a showing acceptable to it, the Admissions Committee will not consider applications from students who fail to take the test prior to the June 1 preceding the fall semester in which they wish to enter. Since the test is given in October, December, February, April, and July, an applicant who fails to take the test by April of the year he intends to enroll normally cannot have his application considered.

Fulfillment of the specific requirements for admission listed above does not insure admission to the College of Law. From the applicants meeting the minimum requirements, the Admissions Committee of the College of Law will select those who appear to be best qualified for the study and practice of law. The Admissions Committee may require personal interviews of applicants.

The College of Law participates in the University’s Educational Opportunities Program and considers applicants from disadvantaged backgrounds on an individual basis.

Advanced standing. A transfer student may be eligible for admission if he has attended a school which is a member of the Association of American Law Schools, is in good standing at the time of his withdrawal (evidenced by a letter from the dean of the school from which he is transferring), meets the admission requirements for entering students at this school, and has done substantially above-average work in the law school he attended. No more than 20 semester hours may be transferred from another school. Where an applicant has completed more than one year of law, advanced standing will be permitted only in exceptional cases, and no more than one year’s credit may be transferred.

Accepted applicants are required to make an advance nonrefundable deposit of $50 by April 1. Those applicants who are accepted subsequent to April 1 must make the deposit within two weeks after being notified of favorable action on their applications. For those who enroll, the deposit is credited toward the student’s first University bill. An applicant who fails to make the deposit within the specified period for his place in the entering class. The $50 fee will be refunded if an applicant cannot enroll because of changes in the residence requirements of the student. A student who is admitted but is forced to give up his place in the class because of a service obligation will automatically be admitted upon timely application at the conclusion of his service.

Applicants who are accepted and who are new to The University of Iowa must submit a satisfactory physical examination report to the University Student Health Service.

GRADUATION REQUIREMENTS

To be eligible for a degree, a student must have satisfied the residence requirements listed below, received course credit for 90 semester hours, taken and completed all required courses, achieved a weighted cumulative average of 65, and received a passing grade in at least one 3-semester-hour research and writing project.

Residence requirements. To satisfy the residence requirements, a student must enroll for a minimum of 28 semester hours of course credit for each of three academic years, the academic year being defined to exclude summer sessions. Satisfaction of the residence requirements during any single semester of the academic year requires that a student enroll for at least 12 semester hours of course credit. A student wishing to register for more than 16 semester hours of credit during any one semester must have special permission from the Dean.

Scholastic requirements. A numerical grade shall be assigned to each student in each course. This numerical grade shall be recorded in the permanent records of the University as the grade received in the course, and shall be shown, together with an average of all grades received in the semester (weighted in accordance with the number of semester hours in each course) on the grade sheet given to the student.

The numerical grade may be translated into letter grades for purposes of comparison as follows:

100-89=A 79-75=B 69-55=C 59-50=F
84-80=B+ 74-80=B 64-60=B-

A first-year student who fails to maintain a cumulative average weighted average of 65 after registering for 24 or more semester hours of work, shall be ineligible to continue in the College of Law. All other students must maintain a cumulative average weighted average of 65 to be eligible to continue in the College.

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Students whose cumulative weighted average is below 65 for the first two semesters, but whose weighted average is 65 or better during the second semester, will be readmitted on probation for the third semester. They must achieve a cumulative weighted average of 65 by the end of the third semester or they will be ineligible to continue further.

Any upperclass student whose weighted average is below 94 for the full academic year shall be dropped from the College of Law.

Graduation Honors

In recognition of superior scholarship, 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.

STAFF

Dean: David H. Vernon.
Dean Emeritus: Mason Ladd.
Associate Dean: Charles W. Davidson, Paul M. Neuschafer.
Associate Professors: David C. Baldwin, William G. Baer, Dennis D. Ellis, Jr., Gary R. Goodspeed, Benjamin T.Republican, Joseph E. Meade, Stephen L. Sens.
Librarians: Richard G. Holtzhen, Assistant Librarian: James H. Griffin.
Foreign Law Librarian: Stephen L. Sens.

Courses and Curriculum, First Year:
All Required

Note: One course each semester will be in seminar form. An additional semester hour of credit is given for each seminar.

91:124 Criminal Law I 3 s.h.

Problems of deviant behavior deemed so detrimental or dangerous to society as to be characterized as criminal. Actions which are criminal and why, steps that can be taken to deal most effectively with those whose behavior is deemed criminal, and the role of the law in deterring such behavior. Substantive law of homicide and of theft. Integration of the social sciences and law to maintain a socially valid legal system.

91:120 Contracts and Sales Transactions 6 s.h.

Purpose, development, and scope of the judicial protection accorded promises to contractual agreements, and how such protection has been modified by legislation. Creation of contracts, their performance, construction, and interpretation, and remedies available upon breach, as well as the Sales Article of the Uniform Commercial Code as that Article relates to unexecuted sales transactions. Demonstrates the interrelation between judicial and legislative decisional processes.

91:104 Civil Procedure I 3 s.h.

Jurisdiction of persons, jurisdiction of subject matter, and jurisdiction of both federal and state courts; pleading, complaint, answer, and reply; motion for judgment on pleadings; jurisdiction to review, and supplemental judgments in an original action; pleading and amendments of pleadings in original action; jurisdiction in appeal; preservation of the free process of the courts. Society's attempts to order the civil litigation process, the factors that ensure rights are protected and the process itself can proceed efficiently to do the job assigned to it by society.

91:186 International Law 3 s.h.

Past, present, and future role of law in promulgating world public order among a broad spectrum of participants (nation-states, international governmental organizations, private associations, and individual human beings) who are engaged in a wide variety of pursuits across national and other territorial boundaries. Problems of authority and politics of jurisdiction in a legal system which usually operates in the absence of a "police force" as commonly understood.

91:188 Resource Planning 3 s.h.

Resource planning and development and their association with the allocation and regulation of land, air, and water resources. Zoning and enforcement of use controls, rural land management programs, environmental quality controls, restrictions on the use of depletable mineral and other resources, and methods of allocating use rights to resources such as air and water resources. Relations of administrative agencies to the courts and to other administrative agencies. Relationship between law and other disciplines; administration of the law. Legal means to achieve affirmative social goals.

91:189 Conflict Resolution 3 s.h.

Process of resolving disputes through consideration of conflicts resulting from the interplay of personal and social interests. The tools through which the disputants can communicate and negotiate their differences in a given situation. The means by which decisions are made and the ability of the participants to reach a conclusion that can result from the use of the options available.

91:188 Civil Procedure II 3 s.h.

Deals directly with the modern rule practice, including motion for more definite statement; motion to strike; use of pleadings as a device for discovery; pretrial conferences; inspection of documents, things, and effects; physical and mental examinations; partial conferences. Scope of the controversy under modern practice, including peremptory joinder of parties and summary peremptory compulsory counterclaims, cross-claims, third-party claims, interrogatories, interpleader, and class actions. Concept of the real party in interest and res judicata. Continuation of 91:184.

Second- and Third-Year Courses and Seminars*

"All prerequisite courses, or their equivalents, must be taken before enrolling in a course or seminar requiring prerequisites."
91.304 Administration Law 3 s.h.
Formal and informal procedures, processes, and functions of state and federal administrative agencies including legislative, executive, and judicial control of administrative action.

91.308 Antitrust Law 4 s.h.
Legal and economic aspects of governmental regulation of business conduct and the creation and enforcement of private rights under the antitrust laws; Sherman, Clayton, Robinson-Patman, Federal Trade Commission Act, and related legislation. Mulfurfm collaboration; monopolies; mergers; resale price maintenance; price discrimination; and patents. Enforcement techniques, both governmental and private.

91.313 Business Planning: Corporate Finance 3 s.h.
Basic work in corporations involving common business transactions in the context of business planning and counseling. Problems of closely-held corporations. Formation of corporations; allocation of stock and control; issuance of securities and capital structure; valuation; securities and property; dividends; redemption of capital; and looking out of stockholders. One-third of the course is devoted to related tax matters. Prerequisites, R 216 and 327.

91.316 Business Planning: Corporate Real-Property 2 s.h.
Acquisitions via merger or purchase of stock or of assets, redemption of stock and liquidations, and other problems of closely-held and publicly-held corporations. One-third of the course is devoted to related tax matters. Prerequisite, R 216.

91.222 Commercial Transactions 4 s.h.
Legal structure given both business and consumer transactions in goods; negotiable instruments and the process of buying, selling, using, transporting, and financing goods under the Uniform Commercial Code. The degree to which the Uniform Commercial Code can meet the needs of both business and consumer.

91.225 Common Market 2 s.h.
International and legal structure of the common market; emphasis on the power of community organs to make law which is binding in the national states; means for resolving conflicts between community law and national law; and the development of the law concerning the recognition and development of common market antitrust law.

91.224 Comparative Law 3 s.h.
Comparative study of the origins, development, and other characteristic features of the world's major legal systems: Common law, Civil law, Socialist law, Islamic law, and Africans law, with emphasis on Civil law. International judicial procedure, Sources, ideologies, and techniques of foreign legal systems; international judicial assistance, application of foreign law in American courts, and application of American law in foreign courts.

91.225 Conflict of Laws 3 s.h.
Problems created when a transaction or relationship has aspect of more than one state; selection of governing law, factors which pertain to the selection of the appropriate laws, and the nature of the consequences which attach to the jurisdiction of the various courts. Limitation imposed on American state courts by the federal constitution.

91.231 Constitutional Law I 3 s.h.
Limits on governmental power imposed by the national constitution for the protection of individual; due process of law and the protection of life, liberty, and property; freedom of religion; separation of church and state; and the guarantee against establishment of religion; equal protection of the laws. Required for graduation.

91.240 Corporations A 5 s.h.
For the student who wishes to conduct an intensive investigation of the subject, this course offers a more thorough treatment of the materials offered in R 324. This course may be taken by students who take R 326.

91.342 Corporations B 3 s.h.
Structure and characteristics of the modern business corporation; the formation of new corporations; the corporate law; and the closely-held corporation. Description of powers and management, management of the corporation; the fiduciary duties which limit these powers, and the enforcement of such duties by stockholders suits.

91.344 Creditors' Rights 3 s.h.
Relationship between debtor and creditor and the rights of priority among creditors; the mechanics of judgments, execution, levy, sale, redemption, attachment, garnishment, and replevin; transferability of creditors; creditor agreements; bankruptcy.

91.346 Criminal Law and Procedure 3 s.h.
Practical aspects of criminal law relating to the arrest, trial, and penalty, and post-conviction stages of the criminal law process; problems inherent in the prosecution and the defense of the accused; balancing these interests; the barriers to secure to the rights of accused persons. Required for graduation.

91.338 Decedents' Estates I 3 s.h.
Substantive law governing the transmission of deceased's estates; intestate succession; right of surviving spouse and children; making and revoking of wills; testamentary wills; the validity and construction of testamentary documents; testamentary capacity; undue influence and fraud.

91.356 Decedents' Estates II 3 s.h.
Fiduciary Administration 3 s.h.
Substantive and procedural law relating to administration of decedents' estates, trusts, and guardianships. Planning to avoid administration problems; rights and duties of a fiduciary; jurisdiction; notice; collection and management; the rights of creditors and the distribution. Offered in alternate years.

91.360 Estate Planning 2 s.h.
In creating estate planning documents for the accumulation, conservation, and disposition of private estates, with special attention given to the relationship between the estate owner's objectives, property laws, and the estate planner. Emphasis on the estate planning examining instruments, both testamentary and inter vivos.

91.394 Evidence A 4 s.h.
Rules of evidence developed in common law courts and administrative agencies. Application of relevant rules of evidence to problems presented by testimonial evidence, privilege and corroboration; illegally obtained evidence; parol and extrinsic evidence; partial evidence; burden of proof and presumptions; judge and jury.

91.395 Evidence B 4 s.h.
Survey of the law regulating the evidence which will be admitted in a civil proceeding. Analysis of continuing validity of and justification for legal and technological evidence; hearsay evidence; burdens of proof; access to government and industry secretly obtained evidence; hearsay evidence; opinion testimony; the hearsay rule and its exceptions; and evidence based upon the social policy rather than lack of probity.

91.398 Family Law 3 s.h.
Creation and dissolution of marriage; validity of marriage; common law marriages; annulment; divorce; alimony; child custody and problems of support.

91.373 Federal Income Taxation I 4 s.h.
Federal income tax as embodied in the Internal Revenue Code and the administrative and judicial interpretation of that code. Individual taxpayer (tax in a business as well as a personal context) and analysis of the tax and policy positions relating to income, deductions, income splitting, disposition of property, and capital gains.

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91:612 Civil Rights and Liberties

Seminar 2 a.h.
Selected problems in civil rights and liberties: race relations; church and state; freedom of expression and the announcement, right to vote and otherwise participate in the political process; freedom from physical abuse; women's rights; and students' rights. Prerequisite: 81:322.

91:614 Collective Bargaining

3 a.h.
Legally required collective bargaining process of negotiating collective bargaining agreements; arbitration and other means of labor dispute settlement in both private and public sectors of the economy.

91:620 Common Market Seminar

Seminar 2 a.h.
Institutional and legal structure of the Common Market, with emphasis on the power of community courts to make law which is binding in the national state and means for resolving conflicts between community law and national law. A major section will be devoted to the rapidly developing Common Market antitrust law.

91:624 Comparative Regulatory Techniques

Seminar 2 a.h.
Comparative study of the techniques used by a modern industrial nation to direct and stimulate the economy in a desired direction with focus on four foreign countries, France, Italy, France, and France. Lecture, discussion, and term papers. The seminar is open to graduate students in economics and business administration and to senior students in law.

91:626 Corporate Control Seminar

Seminar 2 a.h.
Advanced work in corporations through examination of the newly emergent concept, corporate control. Fiduciary obligation of those persons at the absolute top of the policy-making hierarchy in the modern business corporation. Prerequisite: 81:600 or 81:527.

91:627 Criminal Appeals--Habeas Corpus

Seminar 3 a.h.
Significant problems of criminal law and procedure in the context of the presentation of such issues to appellate courts. Practice decisions in perhaps the most challenging and appealing adversary: substantive discussion of several major questions about the nature of criminal law, e.g., confessions, the insanity defense, suppression of evidence, and trial publicity. Presentation of criminal cases to the state supreme courts and habeas corpus with particular emphasis on federal pretrial and pretrial suppression. Examination of habeas corpus appeals before the United States Court of Appeals, and contingent procedure in the Supreme Court of the United States.

91:628 Democratic Control of Institutions

Seminar 2 a.h.
Legal issues involved in developing effective democratic control of large organizations and institutions through enforcement of individual rights, legislation, organization, and representation.

91:632 Economic Regulation of Business

Seminar 2 a.h.
Builds on the foundation laid in 81:288. The specific problems faced by a business concern in examining each year to year and will be announced prior to registration.

91:638 Family Law Seminar

Seminar 1 to 4 a.h.
Particular areas in family law needing reform, and delayed proposals leading to such reform. Empirical research methods. Prerequisite: 81:286.

91:640 Federal Tax Policy Seminar

Seminar 5 a.h.
Consideration, primarily through group discussion and in cooperation with other courses in the department, of traditional and contemporary policy questions bearing upon the structure and implementation of the federal tax system. Prerequisite: 81:372.

91:644 International Law and Policy

Seminar 2 a.h.
Current problems of international law and policy. Conduct of external relations between governments and group studies of contemporary topics of international relations, with emphasis upon research and writing. Prerequisite: 81:604.

91:645 International Secretariat of Control

3 a.h.
Monetary assets, their quantity and ownership, and their effects upon the international economic order. Current international questions about public monetary policy. Role of law and the specific character of the International Monetary Fund. Questions of the adequacy of mechanism and the implement of mutual obligations.

91:646 Judicial Behavior Seminar

3 a.h.
Interactions between judges and lawyers, the universals in which they operate. Students will use research techniques developed in the social sciences to examine the role of courts in the political system, their decision-making techniques, and the impact of their decisions on the political system.

91:652 Land Use Planning Seminar

4 a.h.
Specific case studies in planning the use of land in an urban area. Traffic, utilities, zoning and variances, parks, and aesthetic values. Intergovernmental conflicts.

91:654 Law and Morality

3 a.h.
Relationship between morality and the law, with particular emphasis on the determination and enforcement of norms.

91:656 Law in a Changing Society

Seminar cr.sarr.
Law as an instrument of social order and as an influence on social change. How law responds to social change. Interaction between legal and social change.

91:658 Law, Science, and Policy

2 or 5 a.h.
Analyzes and applies the so-called "New Haven Approach" to law, i.e., the "Constructive" and "Policy-Oriented" jurisprudence of Yale law Professors Harold D. Leavol and Myres S. McDougal and their associates.

91:660 Legal History Seminar

3 a.h.
Major episodes which have had a significant influence in the development of the law. Elective topic may vary from year to year. The course is concerned with the origins of the Common Law, the royal courts, the common law, the creation of a national common law, the development of equity, and the 17th-century conflict for supremacy based on the role of the King and the clergy. The course will guide the student through a study of major episodes in the development of the law, such as the Magna Carta, the Glorious Revolution, and the development of American law. The course is designed to provide a critical analysis of the role of law in American history.

91:662 Legislation

4 a.h.
Legislative procedures, statutory construction, and legislative history: the identification of a problem to its solution by legislation. The technique of drafting of proposed legislation and legislative reports will be used.

91:664 Legal Problems of Public Education

Seminar cr.sarr.
Selected legal problems which have a significant impact upon educational institutions: contract liability of schools districts and school districts; "collective bargaining" between school districts and the teachers; constitutional claims of students, parents, and teachers relating to race, religion, speech, association, or other private activities; roles of local, state, and federal government in administering schools and determining educational policy. Influence of the law on the administration of schools, on the concept of education, and upon the influence of educational considerations in the development of federal education policy.

91:665 Personal Injury Trials and Appeals

4 a.h.
Significant aspects of personal injury lawsuits, including jury selection, effective opening statements and closing arguments, and techniques in cross-examining medical witnesses from medical testimony. Evidentiary guidelines
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 (including health education, environmental health science, health laboratory science, public health, parasitology, industrial hygiene, comparative medicine and environmental toxicology), and in radiation biology. In addition, graduate degree programs leading to the Master of Science are offered in ophthalmology, orthopaedic surgery, otolaryngology, psychiatry, and in 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. One-third are listed in Who's Who, half in American Men in Medicine.

FACILITIES
The College of Medicine is housed in the U of I Health Center, which also includes the Colleges of Dentistry, Nursing, and Pharmacy. A $70 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. General Hospital provides facilities for teaching all major medical specialties, and for full programs of internship training and residency in all major specialties. It admits more than 30,000 in-patients and has more than 110,000 out-patients annually. An addition scheduled for 1974 completion will increase its capacity from 810 to 1,250 beds, and will also house several clinics, an operating suite, and a diagnostic radiology laboratory.

Children's Hospital. Children's Hospital houses orthopaedic surgery, physical medicine and dermatology, a rehabilitation center; and the University's physical therapy training unit. It has a 187-bed capacity.

Psychiatric Hospital. With clinical and research laboratories in neurophysiology, biochem-
including the permissible limits of advocacy and limitations on the use of demonstrative proof and visual aids. The appellate phase will deal with effective record-making as well as techniques of brief preparation.

91:665 Poverty and the Law cr.arr. Urban environmental control, the concept of democracy in the planning process, various treating programs designed to meet the needs of the ghetto.

91:668 Problems of Doing Business Abroad Seminar 4 s.h.
Impact of government rules and regulations on the conduct of international commercial activities. Antitrust, shipping conferences, patent and trademark systems, the Reciprocal Trade Agreement, and GATT.

91:670 State Constitutional Revision 3 s.h.
Current efforts to revise state constitutions; selected state constitutions will be studied to develop suggested constitutional provisions. Methods of constitutional revision will also be reviewed.

91:672 Student Rights 4 s.h.
Selected legal problems involving the contemporary university with particular emphasis on student rights, such as due process and free speech.

91:673 Taxation: Corporate Reorganization 3 s.h.
Thorough analysis and study of the income tax consequences which flow from various kinds of corporate dispositions including statutory mergers, asset acquisitions, and stock acquisitions.

91:674 Trade Regulation Seminar 2 s.h.

Special Courses

91:650 Law in a Technological Society 2 s.h.
Provides perspective and understanding of the place of law in contemporary society. For students in professional schools other than law including dentistry, pharmacy, and engineering. The role of law, court system, procedures, evidence, property, torts, crimes, contracts, and constitutional and administrative law with emphasis on the role of the various professions. Not open to law students. Offered second semester.
COLLEGE OF MEDICINE

Five departments of the College of Medicine. Other teaching facilities are located in the Medical Research Center, which also houses the College's administrative offices, and in the Medical Laboratories Building, which also houses the State Bacteriological Laboratory and a radiation research laboratory.

ADMISSION

Applications will be received beginning July 1 of the year preceding the beginning of the class for which application is being made. Students are urged to apply as early as possible since this will give the Admissions Committee more time to devote to each application. The closing date for receiving applications is January 1.

A fee of $15 must accompany the applications of all applicants who have not completed work in residence at The University of Iowa. This is not refundable except to residents of Iowa who are denied admission.

Applications from those who are more than thirty years of age will be considered for acceptance only in exceptional cases.

Pursuance of the specific requirements for admission listed below does not assure admission to the College of Medicine. From the applicants meeting the specific requirements, the Admissions Committee of the College of Medicine will select the applicants who appear to be best qualified for the study and practice of medicine.

Prior to entrance each applicant must:
1. Have received the baccalaureate degree or
2. Have completed three years of a combined baccalaureate-medicine curriculum which qualifies him to receive the baccalaureate degree on completion of the first year in medicine; or
3. Have completed three years of a baccalaureate program which includes the general graduation requirements of the College of Liberal Arts of The University of Iowa for the combined baccalaureate degree.

Each applicant must place on file in the Office of the Director of Admissions the completed application form and a official transcript from each college attended.

The college work outlined below will suffice to meet minimum academic requirements for admission to the College of Medicine.

Applicants who have completed the baccalaureate degree and required courses five or more years before seeking admission to this College of Medicine will be considered by the Admissions Committee only under exceptional conditions.

The college curriculum must last at least three years (98 semester hours) including the following specific courses or subject areas with appropriate laboratory:
1. Physics: a complete introductory course.
2. Mathematics: college algebra and trigonometry or advanced college mathematics where college algebra and trigonometry were completed in high school.

3. Chemistry: at a minimum, a complete introductory course in organic chemistry, which would ordinarily follow a complete introductory course in modern general chemical principles.

4. Biological science: a complete introductory course in the principles of animal biology, or zoology and botany (but not botany alone), and one advanced to cell biology.

General college work is required in addition to prerequisite sciences because a well-rounded education is of special importance to those entering the medical profession. Students are urged to take courses in as much depth as possible in history, psychology, economics, philosophy, sanitarians, sociology, the fine arts, and foreign languages.

To be considered for admission, an applicant must have attained a grade-point average of at least 2.5 (C+) for all college work undertaken. As the quality of work in premedical science is basic to success in medicine, special attention will be given by the Admissions Committee to grades in science. The grade-point average is based upon The University of Iowa's 4-point marking system. Where the college offers an option to take courses on a graded or pass-fail basis, it is expected that applicants will take the required science courses on a graded basis.

Preference will be given to applicants with high scholastic standing who are residents of Iowa, but consideration will also be given to outstanding nonresidents. Applicants for admission are required to take the Medical College Admission Test which is administered by the 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 for this examination through the University's Evaluation and Examination Services.

Personal interviews may be required. Applicants will be contacted for the appointment for required interviews.

Accepted applicants must make a 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 following 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. If their work preparatory to entering a college of medicine would have met entrance requirements of this college, students from other approved medical colleges may be admitted to advanced standing according to the following conditions:

Only applicants of high scholastic standing will be considered. They must present certificates showing that they have satisfactorily completed courses equivalent to those already pursued by the class they wish to enter.

The Admissions Committee will decide in each case whether examinations in the various subjects will be required.

The application will be considered only upon receipt of a statement from the dean or registrar of the college from which the applicant comes, showing the actual amount of time the student has spent in the study of medicine, the courses taken, and the grades received, together with a statement of the work preparatory to entering the course in medicine.

No advanced standing will be granted to students from other than approved medical schools. Students will be granted subject credit upon recommendation of the head of the department concerned for work taken in other than medical schools.

Unclassified students. Applicants for admission to the College of Medicine who are not degree candidates but want to register for special subjects will be admitted to any lecture or laboratory course only upon complying with all the regular requirements for admission to such a course, or by action of the faculty upon recommendation of the professor in charge of the course.

For Iowa State Board of Registration, approved admission requirements, see Appendix in Catalog.

SCHOLARSHIP REQUIREMENTS

Promotions committee appointed by the Dean and consisting of designated members of the faculty under whom the courses have been taken will, at the close of the academic year, review the accomplishments of the students and determine their eligibility for advancement. In making their decisions the committee will consider the attainment of the student as evidenced by the grade received in each subject (which should reflect the consensus of the departmental staff), his seriousness of purpose, his 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 the last year of
which must be taken at The University of Iowa. The time of study in each of the four years must be no less than thirty-six weeks. 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 firmly committed to the Educational Opportunity Program, both academically and in terms of financial aid.

ADMINISTRATIVE STAFF

Dean: John W. Bokeloh.
Assistant Dean: Warren W. Morris, Paul M. Stoverchok.
Associate Dean, Community Programs: John C. MacQueen.
Assistant Dean, Student Affairs: George L. Baker.
Assistant Dean, Veterans’ Hospital Affairs: Richard D. Edlund.

DEPARTMENTS AND COURSES

Each course is designated by a code or department number and a course number. Code or department numbers assigned to courses described in this section of the Catalog:

60: Nondepartmental
61: Medical History
62: Oral Surgery
63: Biochemistry
64: Physical Therapy

00: Nondepartmental Courses

00:7 Genetics for Medical Students 1 h.
Introduction to medical genetics and case descriptions for first-year medical students. Represents material taken from that which has been offered in biochemistry and microbiology. The student will be expected to construct a pedigree as a kind of laboratory exercise. The course will meet for two lectures per week during the last eight weeks of the second semester of the freshman year.

00:8 Endocrinology for Medical Students 1 h.
A core course for medical students in their second semester. Given in the first half of the spring semester.

00:9 Scientific Methods and Biostatistics 3 h.
This combined course for second-year medical students presents introductory material in biostatistics and provides opportunities for dealing with the formulation of hypotheses, the subsequent testing of hypotheses, and the resulting acceptance or modification of the hypotheses within the framework of both the basic medical sciences and clinical sciences. The course will comprise two one-hour lectures per week for the first eight weeks of the first semester of the second year. The remainder of the course will provide a variety of flexible opportunities for the student to become acquainted with the scientific method.

00:11 Introduction to Clinical Medicine 16 h.
A full semester course devoted to correlating and integrating the basic science core of information with the clinical experiences of the junior and senior years. Included will be pertinent information and development of skills in history taking, physical diagnosis, laboratory diagnosis, and related material which will prepare the student for his junior clerkships.

00:10 Neurology and Behavior 5 h.
Interdisciplinary study of the elements, organization, and functions of the central nervous system. Lectures, discussions, laboratories, and demonstrations.

ANATOMY

Head of Department, William O. Rieke
Office, 357 Medical Laboratories Building

STAFF

Assistant Professor: Ulf L. Karlsson, James R. Scovone.
Instructor: Terri K. Nishio.
Assistant in Instruction: Nescia F. Metzcal.

Work leading to an advanced degree in anatomy to the Graduate College may be taken by properly qualified students. For admission procedures, see Graduate College.

COURSE DESCRIPTIONS

60:1 Elementary Human Anatomy 4 h.
Primarily for students of nursing and dental hygiene.

60:2 Elementary Human Histology 3 or 4 h.
Primarily for students of dental hygiene.
60:101 Human Gross Anatomy for Dental Students 6 s.h.
Regional dissection of entire body with major emphasis on head and neck. Includes neuroanatomy. Open to graduate students with consent of instructor.

60:102 Microscopic Anatomy for Dental Students 6 s.h.
Cell, primary tissues, and organs. Emphasis on tooth and related structures. Includes embryology. Graduate students must have consent of instructor.

60:103 Gross Human Anatomy for Neuroanatomy 2 or 4 s.h.
The cell and fundamental tissues and microscopic study of the organ systems. For medical students, first and second semesters. Prerequisites for graduate students, consent of instructor. First semester.

60:107 Neurobiology and Behavior 5 s.h.
Intersubdisciplinary study of the elements, organization, and functions of the central nervous system. Lectures, conferences, laboratories, and demonstrations. Required of graduate students in anatomy. Consent of instructor required for other graduate students taking the course.

60:108 Special Microscopic Anatomy cr.arr.
Studies of microscopic structure of organs. Prerequisite, biology including histology or equivalent and consent of department head.

60:109 Human Anatomy 4 or 5 s.h.
Conferences and laboratory study of human anatomy with emphasis on areas important to physical therapists. Registration limited.

60:110 Human Anatomy and Neuroanatomy 2 or 4 s.h.
Continuation of 60:109, which is prerequisite.

60:115 Human Development cr.arr.
Lectures and conferences including the experimental bases for understanding morphogenetic processes. Offered upon sufficient demand. Prerequisite, consent of instructor.

60:201 Advanced Human Medical Students 7 s.h.
Specialized aspects of gross or microscopic anatomy. Prerequisites, consent of department head.

60:203 Research cr.arr.
Open to graduate students with suitable background. Prerequisite, consent of department head.

60:205 The Endocrine Glands 2 s.h.
Discussion of selected topics. Open to graduate, postprofessional, and medical students. Prerequisites, 60:206, Physiology 7221, biochemistry major course or equivalent; consent of instructor. Will not be offered in 1976-77.

60:206 Problems cr.arr.
Prerequisite, consent of department head.

60:207 The Visceral Nervous System cr.arr.
Autonomic system as to components, structural relationships, and functions, including central mechanisms. Prerequisite for medical graduates. Offered upon sufficient demand.

60:208 Review of Anatomical Neurology cr.arr.
Important elements of the central nervous systems with emphasis on functional relationships. Offered only upon sufficient demand.

60:210 Anatomical Research Techniques cr.arr.
Techniques commonly used in investigative work, histology, histochemistry, tissue culture, histochemistry, phase contrast, indirect immunofluorescence, electron microscopy. Offered annually. Second semester.

60:217 Cellular Immunology 3 s.h.
The biology and chemistry of cells of the immune system. Offered spring semester of alternate years; taught in 1971. Prerequisite, consent of instructor.

60:218 Electron Microscopy—Theory and Technique cr.arr.
Lecture and laboratory course offered each fall semester for no more than 10 students. Prerequisite, consent of instructor.

60:219 Human and Experimental Teratology 2 s.h.
Readings, demonstrations, and group discussions of general principles and underlying mechanisms of developmental anomalies in experimental animals and man. Offered alternate years; offered spring 1971. Consent of instructor required.

60:220 History of Anatomy 1 s.h.
Readings and seminar discussions of noteworthy medical-anatomical events with emphasis on the contributions of the medical-anatomical heritage. Offered alternate years; offered spring 1971. Consent of instructor required.

60:221 Microscopic Anatomy for Graduate Students 5 s.h.
Light microscopy and fine structure of the cell, tissues, and organs. Taught the same semester as 60:105. Consent of instructor required.

ANESTHESIA
Head of Department, Jack Meyers
Office, C612 General Hospital

STAFF
Professor: Jack Meyers
Associate Professor: Leo J. DeBelasco, Amy R. Beutner,
Martin D. Bekol.
Assistant Professor: R. D. Beasman, Samir D. Georgi,
M. C. Glidden, John L. Boyd, R. S. Urgem.

BIOCHEMISTRY
Head of Department, Carl S. Vestling
Office, 270 Medical Research Center

Graduate Study

Both the M.S. and Ph.D. degrees are offered, and 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 3.0, with a 3.0 average in science courses, and a score of 2200 on the combined verbal and quantitative part 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. During the first year of graduate study, all biochemistry graduate students take 95:356 and 95:361. In their first semester and 95:356, 95:361, and 95:362 in the second semester. After consultation with the staff, a new student is assigned to a research laboratory for 95:361. Ordinarily, no more than two students are assigned to the same lab.
creasit. An advisory committee consisting of the 99-261
instructor and two other faculty members assists the new
student in planning his course of study and evaluates his
progress periodically during the first two years.
Current fields of study include: biochemistry, physical
biochemistry, effects of confugurational confor-
mations of macromolecules on the stability and
reactivity of the carbohydrates, hormonal control mechanisms, structure and function of carbohydrates, biochemical properties of glyco-
proteins and carbohydrate-protein complexes, mechanisms and control of protein synthesis, Biochemistry of proteins,
characterization of liver enzymes, clinical bioche-
mistry, cancer biochemistry, lipid metabolism during
nutrition, collateral and allosteric investigation of gly-
ecytic enzymes, and analysis of enzyme systems utilizing coenzymes and co-factors.
In addition to fulfilling the general degree requirements outlined in the Graduate College section of this Catalog, a candidate will assist in the teaching of biochemistry during two or three semesters as part of his graduate
training.

STAFF
Assistant Professors: Arthur A. Specter, Lewis D. Siegulk

COURSE DESCRIPTIONS
The Professional Course
All students in the dental, pharmacy (99-141), and med-
ical (99-413) professions participate in a two-part bio-
chemistry course. The first part is offered to the com-
mon dental, dental, and pharmacy classes as a lecture course on the basic biochemical cores of information needed by any professional student. The second part is present to small subgroups of each professional class as an introduction to the problems of the respective professional fields.

99-161 Biochemistry 5.0 h.
Primarily for dentistry and pharmacy students; others by permission.
Metabolism and control mechanisms in whole organisms and subcellular systems. The basic principles of biochemistry are presented in a student-oriented manner. Emphasis is complemented by discussions in small course groups and laboratory demonstrations pertinent to the disciplines of dentistry and pharmacy.
First semester: Prerequisites, Chemistry 4.0 or 4.1 or 4.112 or equivalent.
99-163 Biochemistry 5.0 h.
Primarily for medical students; others by consent of staff.
Metabolism and control mechanisms in whole organisms, orgamic, cellular, and subcellular systems. The basic principles of biochemistry are presented in a student-oriented manner. Emphasis is complemented by discussions in small course groups and laboratory demonstrations pertinent to the disciplines of dentistry and pharmacy.
First semester: Prerequisites, Chemistry 4.0 or 4.1 or 4.112 or equivalent.
99-165 General Biochemistry 4.0 h.
For graduate students and advanced undergraduates in other sciences. Chemistry and reactions of constituents of living matter. Metabolism and control mechanisms in whole organisms, orgamic, cellular, and subcellular systems. Four lectures, conference, and assigned readings. Pre-
quisites: Chemistry 4.1 or 4.112 or consent of instruc-
tor; course in physical chemistry and biology recom-
mended.
99-167 Experimental Biochemistry 3.0 h.
For graduate students and advanced undergraduates in other sciences. Quantitative experiments on identification, separation, and properties of constituents of biochemical systems; two laboratory periods, confrences, and assig-
ned readings. Second semester. Prerequisites, credit or registration in 99-165 or consent of instructor.
99-261 Research Techniques 6.0 h.
For graduate students in biochemistry only. Tutorial in the application of the principles of research to biochemical investigations in the laboratory of a staff member. First and second semesters.
99-262 Physical Biochemistry 3.0 h.
Applications and interpretation of physical measurements which relate to biochemical systems. Topics included are ultra-
acentrifugation, physical and chemical properties of proteins, the separation of proteins and enzymes, protein solubility, spectrophotometry, polarimetry, fluorescence, and enzyme kinetics. Three lectures, one conference, and calculations. Prerequisite: none; however, physical chemistry and calculus are recommended.
99-253 Clinical Biochemistry 3.0 h.
Applications of basic biochemical knowledge to problems in the biochemistry of disease. A comparison of normal function and processes with abnormal is strongly recommended. First semester.
99-255 Biochemistry 4.0 h.
For graduate students in biochemistry only. Provides, together with 99-262, an integrated and integrated picture of present knowledge concerning chemical structure, and functional activity of proteins and metabolic control mechanisms. Four lectures, discussions, and assigned readings. First semester.
99-266 Biochemistry 4.0 h.
For graduate students in biochemistry only. Continuation of 99-265, which is prerequisite. Four lectures, discussions, and assigned readings. Second semester.
99-267 Special Topics 1 to 3.0 h.
Lectures or discussions in special areas of current im-
portance. Typical topics are structure and function of proteins, selective adsorption methods in immunome-
chanics, metabolic regulation, conformational analysis, and structure of cellular components. 1970-71, biochemical mechanisms. Prerequisite: 99-165 or consent of instructor.
99-268 Nuclear Biochemistry 3.0 h.
99-269 Seminar: Biochemistry 1.0 h.
Weekly discussions by visiting and local speakers. For credit, students participate in small student-faculty groups to be arranged.
99-272 Research: Biochemistry 0.0 h.

Dermatology and Sphyiology

Head of Department, Robert G. Carney
Office, SI160 Children's Hospital

STAFF
Assistant Professor: William C. Fritzsch.

COURSE DESCRIPTIONS
62.1 Dermatology 1.0 h.
An introductory course. Sophomore year. Lectures, lan-
ter-studie, case presentations.
62.5 Dermatology Clerkships 1.0 h.
Each senior student spends two weeks full time in derma-
tology clerkship.
COLLEGE OF MEDICINE

62:7 Dermatology Elective cr.arr.
Senior students may spend two to five weeks in advanced clinical experience, dermatologic surgery, and special assignments.

FAMILY PRACTICE

The College of Medicine is developing a new Department of Family Practice, which establishment was authorized in January, 1970. It will concentrate on the preparation of physicians for a comprehensive health care role with an emphasis on preventive medicine, and unregulated by age of patient or type of disease. The new department is in response to the expanding family practice as a medical specialty in its own right. Plans for the department include establishment of a model clinic to provide student and faculty care for entire families, in the same manner as that provided by practicing general practitioners.

For further details, consult the Dean of the College of Medicine.

INTERNAL MEDICINE

Head of Department, James A. Clifton
Office, C300 General Hospital

STAFF


Instructors: Manuel Calvo, Donald Zevalos. Clinical Professor: Harry W. Vanholtz

Clinical Associate: Howard D. Harvey, Herman J. Smith

Clinical Assistant Professors: Edward Fommer, Jr., Lawrence F. Staples

Research Associate: Dennis Ballard, Adelaide Basar, Ray Davenport, Donald Laughlin, Howard Mayer, Daniel Miller, Charles Searson, Forrest Stael, Michael Wondling

The instruction in internal medicine begins with the first term of the sophomore year and continues throughout the junior and senior years.

OJURO DESCRIPTIONS

78:7 Laboratory Diagnosis 2 s.h.
Significance and techniques in laboratory procedures for clinical diagnosis. Sophomore year.

78:9 Physical Diagnosis 3 s.h.
Significance and application of physical diagnosis and the general medical examination and history taking. Second and third trimesters; procedures of examination by Departments of Internal Medicine, Surgery, Neurology, Orthopedics, Obstetrics and Gynecology, and Ophthalmology. Instruction to class in sections.

78:10 Clinical Medicine for Junior Medical Students 8 s.h.
Each fifth of the junior class serves on the medical service in the junior clerkship for one period. Emphasis on ward, bedside study, patient-physician relationship, hospital and home management, routines of physical examinations, history taking, laboratory procedures, and clinical diagnosis. Clinic diagnosis held to consider difficult problems in treatment.

78:15 Clinical Medicine for Senior Medical Students 6 s.h.
A continuation of 78:10, including teaching rounds of two hours each, five times a week. Two-thirds of the period is at the bedside and one-third in the Medical Out-Clinic.

78:19 Tuberculosis Elective for Senior Students 1 or 2 s.h.
An intensive survey of tuberculosis for 2 or 4 weeks. Students participate in the diagnosis and management of in-patients and out-patients with tuberculosis, and learn diagnostic and therapeutic procedures related to tuberculosis.

78:40 Electrocardiography cr.arr.
A lecture course of 8 hours conducted yearly. Available as an elective for junior and senior students and house staff.

78:44 Cardiology Seminar cr.arr.
One hour a week.

78:11 Pulmonary Disease Rounds cr.arr.
One hour per week. Presentation of patients with pulmonary disease. Discussion of the diagnosis, differential diagnosis, therapy, and pathophysiologic changes of lung disease.

78:112 Research Seminar cr.arr.

78:113 Residents' Meeting cr.arr.
Formal meeting with resident staff once a week in which the discharge and deaths are reviewed and discussed, particularly with a view toward teaching.

78:114 Postgraduate Training cr.arr.
Practicing physicians are invited to attend any teaching conferences, lectures, or rounds of the Department of Internal Medicine, such as the Cerebral Conference, combined hospital staff conference, the College of Medicine Clinical Pathological Conference, Thyroid Clinic, and Pulmonary Disease Rounds.

78:115 Hematology Conference (UH and VAH) cr.arr.
One hour per week.

78:116 Hematology Consultative Rounds (UH) cr.arr.

78:118 Thyroid Clinic cr.arr.
Two hours a week during the entire year.

78:119 Gastroenterology Clinic cr.arr.
One hour a week.

78:121 Endocrinology Rounds cr.arr.
Two daily rounds of patients with diabetes and other endocrine diseases. Residents are responsible for their care and instructed and supervised in the handling of complicated problems.

78:122 Kidney Disease and Hypertension Clinics cr.arr.
Clinical presentation of patients with various forms of hyperpertension. Instruction in management of patients and research in the field of therapy.

78:123 Allergy and Immunology Clinic cr.arr.
Instruction of junior, senior, and students in the diagnosis and treatment of allergic disorders. Meets daily.

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Weekly presentation of patients from medical service by the resident staff for open discussion with senior staff, residents, interns, and senior students.

7:135 Cardiovascular Research Seminar cr.arr.
7:121 Allergy, Infectious Disease, Pulmonary Disease Seminar cr.arr.
7:122 Research Symposium cr.arr.
7:123 Cardiovascular Disease Rounds cr.arr.
7:124 Research Problems in Medicine cr.arr.
7:125 Gastroenterology Pathology Conference cr.arr.
7:126 Gastroenterology Rounds cr.arr.
7:127 Gastroenterology Research Seminar cr.arr.
7:128 Cardiac Pathology Conference cr.arr.
7:129 Infectious Disease Rounds cr.arr.
7:130 Hematology-Oncology Clinic (UH) cr.arr.
7:131 Basic Mechanisms in Internal Medicine Lecture Series cr.arr.
7:132 Infectious Disease Seminar cr.arr.
7:133 Lymphoma Conference cr.arr.
7:134 Hematology-Oncology Clinic (VAH) cr.arr.
7:135 Hematology In-Patient Service (VAH) cr.arr.
7:136 Hematology Research cr.arr.
7:137 Hematology General Out-Patient Clinic cr.arr.
7:138 Pulmonary Disease Elective cr.arr.

A two-week elective for senior students in electrocardiographic interpretation.

7:139 Cardiovascular Clinic (UH and VAH) cr.arr.
7:140 Coronary Care Training cr.arr.

Registration is by advance arrangement.

MEDICAL HISTORY

COURSE DESCRIPTIONS

80:150 History of Medicine 2 s.h.

MEDICAL HISTORY

COURSES

80:150 History of Medicine 3 s.h.

MICROBIOLOGY

Head of Department, J. R. Porter.

staAFF

Professor: J. R. Porter.

Visiting Professor: Edward S. Mead.

Associate Professor: John Codd, Jr., Linda G. Hoff- man, Allen J. Marko, Robert C. Richardson, W. B. Sexton, and J. B. Steppier.

Assistant Professor: George E. Becker, William Johnson, Ross R. Lynch, Donald P. Stubbs, Donald R. Walker.
Undergraduate Majors in Microbiology

Requirements for a B.S. degree with a major in microbiology: Basic skills as required.

Core courses: Biology, social science, historical-cultural studies, 24 semester hours.

German or Romance languages: 9 or 12 semester hours.

Required Courses:

**Botany**

- 21 Introduction to Botany

- 23 Zoology

- 24 Principles of Animal Biology

- 25 Chemistry

- 26 Principles of Chemistry I and II

- 27 Principles of Chemistry plus

- 28 Elementary Chemistry Laboratory

- 29 Quantitative Analysis

- 30 Organic Chemistry I

- 31 Organic Chemistry II

- 32 Intermediate Chemistry Laboratory

- 33 Biochemistry

- 34 General Biochemistry

- 35 Experimental Biochemistry

**Physics**

- 38 College Physics

- 39 College Physics

- 40 Microbiology

- 41 Microbiology

**Other courses in microbiology to total 15-18 semester hours**

**Mathematics**

- 3M3 Mathematical Techniques II

Electives sufficient to meet the degree requirements from the following:

**Mathematics**

- 3M5 Analytic Geometry

- 3M7 Calculus

**Botany**

- 50 Mycology

**Chemistry**

- 41M1 Physical Chemistry I

- 41M2 Physical Chemistry II

- 41M3 Intermediate Chemistry Laboratory

- 41M4 Fundamental Genetics

- 41M5 Genetics Seminar

**Honors in Microbiology**

An Honors program is available to superior students majoring in microbiology for the Bachelor's degree. Prerequisites for admission to the Honors program are similar standing and a grade point of 3.5 (overall), and 3.5 in microbiology.

The Honors program consists of:

1. Introduction to the art and science of the practice of original research in microbiology. Each participant in the program carries out directed readings, attends the departmental seminar, and undertakes the laboratory execution of a special problem chosen in consultation with a member of the staff.

2. An examination is given on the subject of microbiology most relevant to the activities of the student.

3. Each participant submits to the department a report covering his project.

4. The work is covered in 3 semester hours during the senior year.

**Advanced Degrees**

Two advanced degrees are offered in microbiology, the Master of Science and the Doctor of Philosophy. In general, the graduate student will be expected to fulfill the requirements given above for undergraduate majors in microbiology. This includes the elective or their equivalents as determined by the department. Usually there is no language requirement for an advanced degree. Substitution may be made in the case of students who have completed their work for a professional (M.D., D.D.S.) degree and wish to continue in the study of a particular phase of microbiology. The grade-point average for all work must be 3.7 or better. All candidates for advanced degrees will be expected to assist in teaching in the department during their course of study.

(Graduate College for theses details.)

Students are admitted as Ph.D. candidates only. As such they are expected to demonstrate a broad and thorough knowledge of microbiology. All candidates must show capacity for doing independent research and writing a satisfactory formal dissertation.

The M.S. degree (with thesis) may be awarded after completion of part of the requirements for the Ph.D. degree. It is intended for students desiring either to continue their graduate work or to take up other professional work for which training in research is needed. A thesis based on the candidate's own research is required for the master's degree, and the student will be expected to pass an oral examination on the thesis. In no case will the M.S. degree be granted to a candidate with less than 45 semester hours of graduate credit (includes research credit).

Suggested elective courses include the following:

**Botany**

- 21M0 Mycology

- 22M0 Experimental Mycology

**Biochemistry**

- 45M0 Physical Biochemistry

- 45M0 Clinical Biochemistry

- 45M0 Special Topics

**Chemistry**

- 41LS Introduction to Organic Research

- 41LS Qualitative Organic Analysis

- 41LS Physical Chemistry I

- 41LS Physical Chemistry II

- 41LS Instrumental Methods of Analysis

**Preventive Medicine**

- 42L0 Principles of Epidemiology

- 42L0 Preventive Medicine

**Biostatistics**

- 43L0 Biostatistics

**Parasitology**

- 44M0 Parasitology

**Computer Science**

- 45L0 Introduction to Computers and Programming I

- 45L0 Computers and Programming II

- 45L0 Computers and Programming III

**Radiology**

- 57M0 Radiologic Technology

- 57M0 Radiologic Therapy

**Mathematical Statistics**

- 58M0 Introduction to Mathematical Statistics I

- 58M0 Introduction to Mathematical Statistics II

**Course Descriptions**

61:09 Medical Microbiology

- 3 to 6 semester hours

- Prerequisites and methods essential to study of microorganisms, their isolation and identification. Microorganisms involved in infectious diseases. Clinical and laboratory procedures and current concepts of immunology. Sophomore year, first semester. Prerequisites for students not enrolled in the College of Medicine, second-year medicine or advanced

61:17 General Microbiology

- 4 semester hours

- Lectures, radiation, and laboratory. The more important microbial systems and the fundamental principles governing microbial action in the environment. Open to liberal arts and graduate students. First semester.
Prepares the student for membership in The American Dietetic Association, to establish a base for continued study toward the Master of Science or Doctor of Philosophy degrees, and to encourage cultural interests. Twelve to fifteen rotating internships are offered, beginning in September. Application is made to the Dietetic Internship Director (Mrs. Eleonora Sanders) by those who have met the requirements of both The American Dietetic Association and the Graduate College. The internship must take place during the Graduate College, and carry a minimum of 23 semester hours of graduate credit in nutrition and related nutrition, and in hospital and laboratory administration. As a student and apprentice dietary staff member, opportunities are readily available for personal individual interests in clinical, metabolic, and administrative research and study.

Inmars are paid a stipend by the University Hospitals which partially covers registration fees and maintenance.

*Send for information from The American Dietetic Association, 15 E. Deansboro, Chicago, Illinois.

**Information and forms sent by Internship Director.

The Master of Science Degree

The plan for Master of Science degree is directed by the Nutrition Advisory Committee of the College of Medicine. The student participates in the Graduate College. A minimum of 20 semester hours of planned graduate credit (including a thesis) and satisfactory completion of both an oral and a written comprehensive examination are required. Under exceptional circumstances, a student may qualify for a degree without a thesis and 22 semester hours. Graduate College credit earned at this University during the dietetic internship within the last ten years are applicable toward the M.S. degree when approved by the Nutrition Advisory Committee. Similarly, a maximum of six semester hours of graduate credits from other universities are transferable.

Coursework beyond a basic core of 16-18 semester hours is determined by the student's interest, but all must meet the requirements of The American Institute of Nutrition. For example, research may be done in the fields of nutrition or physical chemical methods to biological systems. As a prerequisite for this M.S. program, a semester of analytical chemistry or biochemistry (or equivalent) is essential, and a full year of advanced biology, three semesters of advanced mathematics, and two semesters of physics are also highly desirable. Graduates of professional training is prerequisite for the M.S. in administrative dietetics.

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 M.S. degree or who will complete the Ph.D. program with the M.D. or D.O.D. requirements. The exceptional student may be allowed to complete work for the Ph.D. and bypass the Master's degree. The program usually requires three years to complete, and is designed to prepare the student for careers primarily in research and teaching. It is directed by the Nutrition Advisory Committee of the Graduate College.

Requirements include mathematics through calculus, physics, organic chemistry, analytical chemistry, physical chemistry, biochemistry, microbiology, and the study of cell and tissue physiology in both animal and human nutrition in health and disease. Students who have completed the M.S. in nutrition or a major in nutrition in another college or school of health-related sciences are also eligible. The individual field of specialization may relate to any of a wide variety of subjects including endocrinology, ecology,
OBSTETRICS AND GYNECOLOGY
Head of Department, W. C. Keettel
Office, W413 General Hospital

STAFF

Professor: James T. Bradbury, C. P. Copeland, William C. Keettel, M. R. Tanoue, C. A. White
Associate Professor: Robert M. Kretschmer, R. M.
Assistant Professor: H. J. Fishback, R. P. Galak, Lowell H. Hughes, Diane R. Van Orden

The courses in obstetrics and gynecology are designed primarily for students planning to enter a career in obstetrics and gynecology. The courses are open to students in other years for whom such studies are of interest. A laboratory seminar is available for students who have completed the required courses in obstetrics and gynecology and who wish to continue their study of these subjects.

COURSE DESCRIPTIONS

65:201 Nutrition Seminar 1 s.h.

65:202 Nutrition Seminar 1 s.h.

65:203 Clinical Nutrition 2 to 4 s.h.

65:205 Projects in Nutrition 1 s.h.

65:206 Projects in Nutrition 1 s.h.

65:207 Nutrition Research 1 s.h.

65:208 Hospital Dietetic Administration 2 to 4 s.h.

65:211 Nutrition of the Child 2 s.h.

65:213 Methods in Nutrition Research 1 or 2 s.h.

65:214 Evaluation of Nutritional Status 1 or 2 s.h.

65:215 Comparative Nutrition 2 s.h.

65:216 Analysis of Food Service Systems 2 s.h.

65:217 Recent Advances in Nutrition and Clinical Nutrition 2 s.h.

A two-week concentrated summer session course offered in odd years. Designed as a professional continuing education opportunity.

65:232 Research: Endocrinology 2 s.h.

65:225 Tumor Conference 2 s.h.

65:226 Gynecologic Pathology 2 s.h.

65:221 Psychosomatic Gynecology 2 s.h.

65:227 Obstetrical and Gynecological Research 2 s.h.

Laboratory or clinical investigation.

65:229 Grand Rounds 2 s.h.

Obstetrics and gynecology.

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Ophthalmology
Head of Department, Frederick C. Bliod Office, CM40-1 General Hospital

STAFF
Asst. Professor: J. J. Kelder, R. E. Resley.
Assistant Professors: Charlotte A. Beres, H. Stanley Thompson.
Research Associate: R. E. Allen.
Associates: Gene Brown, G. Ogden Strange. (3)

COURSE DESCRIPTIONS

67.1 Ophthalmology 12-h.
A didactic course in diagnosis and treatment of the common diseases of the eye and the relation of ophthalmology to general medicine. Sophomore year, third term.

67.3 Ophthalmology 12-h.
A clinical course in ophthalmoscopic diagnosis in medical and neurological cases and in disease of the eye and adnexa. Junior year, first and second terms.

67.5 Ophthalmology 12-h.
Clinical work in sections throughout the senior year.

67.301 Graduate Course in Advanced Ophthalmology 8-h.
Intensive course in the basic and clinical sciences of ophthalmology, limited to the resident physicians who have completed at least 2nd year of general internship and have been accepted for residency by the permanent staff of this department. Didactic lectures, laboratory work, and research. The lectures are given in the late afternoon every day during the academic year. In addition there are seminars each Thursday and a journal club on Tuesday noon. The laboratory work is done in the ophthalmic pathology laboratory and in the laboratory of physical optics. Each resident spends six mornings and half time in the pathology laboratory and two to three months in the laboratory of physical optics. The clinical training connected with this graduate course is in keeping with the requirements of the American Board of Ophthalmology.

67.302 Research in Ophthalmology and Thesis 12-h.
All physicians taking course 67.301 are required to spend at least six months full-time research. The area of research may be chosen by the resident or may be assigned. During this time the resident is expected to set up a project which can be followed up while he is in his clinical residency. This research project may lead to a Master of Science degree, provided the requirements of the College of Medicine are met. The area of research is to be decided before a committee including members of other departments. During the first year the resident is required to take a course in certain fields of research such as statics, electronics, animal care, etc.

ORAL SURGERY
Head of Department, Merle L. Hale Office, 2205 General Hospital

STAFF
Professor: Merle L. Hale.
Assistant Professor: John C. Montgomery.
Assistant Professors: Leslie H. Hils, James W. Thatcher.

COURSE DESCRIPTIONS

For Graduates

81.201 Hospital Procedures 2-h.
Hospital rules and regulations, patient and department records, and general information relative to hospitalized patients.

81.202 Basic Science Review 4-h.
Introduces head and neck anatomy with dissection. Bacteriology, pathology, etc. Special lectures by medical and dental staff.

81.203 Principles of Oral Surgery 2-h.
Basic surgical principles in detail. To include implant classifications and techniques, flap designs, suturing, etc.

81.204 Clinical Oral Surgery 4-h.
Clinical practice on assigned patient problems.

81.305 Pathology 4-h.
General pathology for two trimesters.

81.306 Tumor Conference 2-h.
A review of tumors of the head and neck and all current clinical specimens.

81.307 Surgical Anatomy 4-h.
A study of the head and neck structures found in major oral surgery procedures. Special emphasis on maxillofacial problems and surgical emergencies. May include animal surgery.

81.308 Maxillofacial Rehabilitation 4-h.
A review of cleft lip and palate and facial deformities.

81.309 Principles of Anesthesia 4-h.
A review of the literature on general anesthesia with a study of the agents used and their effects on the respiratory and cardiovascular systems.

81.310 Advanced Oral Surgery Seminars 4-h.
Includes seminar participation on assigned subjects.

81.311 Literature Seminars and Journal Club 4-h.
Special attention to material covered in assigned journals.

81.312 Surgical Case Reports 4-h.
Case reports of selected surgical problems.

81.313 Research: Thesis Project 4-h.
Satisfactory evidence must be provided for the oral surgery staff to evaluate reasonable progress with the thesis work.

81.314 Roentgen Interpretation 4-h.
A review of theory and technique with laboratory assignment.

81.315 Physical Diagnosis 4-h.
A review of principles of physical diagnosis. Second semester.

81.316 Principles of Surgery 4-h.
A review of the principles of oral surgery. Third semester.

81.317 Bone Pathology Seminar 4-h.
A weekly seminar for the study of bone lesions from surgical and macroscopic specimens. Same as 71.21.

81.318 Oral Pathology Conference 4-h.
Review and discussion conference of current clinical specimens.

81.319 Teaching Project 4-h.
Special assignments by the staff.
ORTHOPAEDIC SURGERY
Head of Department, Carroll B. Larson
Office, 11311 Children's Hospital.

STAFF
Professors: Michael Buddign, Adrian R. Flatt, Carroll B. Larson, E. V. Parson.
Profiessors Emeriti: Genevieve Stearns, W. D. Paul.
Assistant Professor: Michael H. Cooper, Donald B. Ketelhut, William Pedretti.
Assistant Professors: M. D. Schnell, Merlin P. Stromman.
Research Assistants: John McCloy, Angela Pedretti.

 COURSE DESCRIPTIONS
76:1 Principles of Orthopaedics. 1 s.h.
For junior medical students through the year.

76:2 Clinical Orthopaedics for Junior Medical Students. 2 s.h.
For senior medical students. Two weeks' assignment for clinical experience in orthopaedic surgery.

76:101 Fundamentals of Orthopaedics cr. arr.
For allied health science students only. Prior approval of instructor required. Lectures, demonstrations, and case presentations of orthopaedic disectors from the standpoint of etiology, clinical signs and symptoms, treatment, and prognosis.

76:210 Postgraduate Course in Orthopaedic Surgery cr. arr.
Observation of all phases of clinical orthopaedic care, ward care, operations, seminars, and basic science conferences. Arranged individually for periods of 3, 5, or 12 months. Write Director of Postgraduate Medical Studies, College of Medicine, Iowa City 52242.

Program for Graduate Training in Orthopaedic Surgery
Graduate training in orthopaedic surgery is available to a limited number of applicants. The course provides training in keeping with the requirements of the American Board of Orthopaedic Surgery and satisfies the requirements of the Graduate College toward the advanced degree of Master of Science. Candidates recommended by the department head should obtain an application form from the office of the Director of Admissions of the University and should follow instructions for admission procedures. A thesis is required, and the title must be approved by the department head and the student's advisor in the Graduate College when the student becomes an accepted candidate. An examination is arranged by the department head and the student's advisor in the Graduate College when the student becomes an accepted candidate. A certificate of proficiency in orthopaedic surgery is issued to the student when such proficiency has been demonstrated to the satisfaction of the department.

76:205 Kinesiology. 2 s.h.
The kinetics of normal and pathological motion. For graduate students in medicine and physical education.

76:206 Advanced Principles of Orthopaedics 2 s.h.
Didactic lectures and demonstrations concerning problems of orthopaedic care.

76:211 Postoperative Conference 2 s.h.
A weekly conference to review and discuss all cases operated upon in the preceding week. Registration is maintained on regular basis for each case under his supervision.

76:212 Induction Conference 2 or 3 s.h.
For 1 to 2 hours, five times weekly, problem cases are presented for disposition of treatment, both operative and nonoperative.

COLLEGE OF MEDICINE

76:214 Bone Pathology Seminar 2 s.h.
A weekly seminar for the study of bone lesions from surgical and necropsy specimens. The combined staffs from the Department of Radiology, Pathology, Orthopaedics, and Surgery participate.

76:215 Clinical Experiences in Patient Care cr. crv.
Course is divided into services of approximately three hospital assignments each. Assignment arranged by department head. Registrant is given responsibility for care of patients in the assigned areas under close supervision of staff. Course is required and continues a full academic year for the purpose of continuity.

76:218 Anatomy of the Extremities and Back 2 s.h.
A weekly laboratory course with material available for detailed dissection and for anatomic study of surgical approaches.

76:221 Advanced Orthopaedic Pathology 2 s.h.
A weekly seminar for the systematic study of problems of orthopaedic pathology. Registrant is responsible for presentation and discussion of specific problems.

76:230 Thesis crv.
Nec: The program also includes the following courses in other departments: Pathology 69:203, Graduate Instruction in Pathology; Physiology 72:205, Advanced Physiology of Exercise.

OTOLARYNGOLOGY AND MAXILLOFACIAL SURGERY
Head of Department, Brian F. McCabe
Office, 22500 Medical Hospital.

STAFF
Professor Emeriti: Dean M. Lierse, Scott N. Neger.
Assistant Professors: Charles V. Anderson, Charles H. Kasian, Brian H. Litten, Jeanne R. Smith, Diane B. VanDenark.
Associate Professors: Maxwell Armson, Patrick J. Corney, Lee A. Harker, Charles J. Krause, Richard J. Verts.
Research Associates: Tatsy Ruy, Tatsy Sekilisi, Rosina 7 Tharp.

 COURSE DESCRIPTIONS
68:1 Otolaryngology 1 s.h.
A didactic course in diseases of the ear, nose, throat, mouth, and jaw. Junior year.

68:3 Clinical Otolaryngology for Junior Medical Students 2 s.h.
Junior class, sections throughout.

Graduate Course in Otolaryngology
The postgraduate training program in otolaryngology, which is in accordance with the requirements of the American Board of Otolaryngology, is comprised of a four-year course. The total course consists of two phases: basic science and clinical science groups. The basic science group consists of a series of didactic lectures and laboratory studies preparatory to the actual clinical work.
COLLEGE OF MEDICINE

17.214 Renal Pharmacology 1 s.h.
Discussions of the mechanisms of action of drugs affecting renal transport systems. Prerequisites. Introductory course in physiology and pharmacology; consent of instructor. First semester; alternate years; offered 1971-72.

PHYSIOLOGY AND BIOPHYSICS
Head of Department, C. Adrian M. Hogben.
Office, 240 Medical Laboratories Building

STAFF

Professor: Frederick P. J. Diecke, G. Edgar Feik, Jr., Nicholas S. Halmi, C. Adrian M. Hogben, Byron A. Sobel.

Visiting Professor: J. Clodagh-Thompson.


Assistant Professors: Janet L. Parker, Hivoje Lockovitch, M. Ian Phillips, Marjett Westerling.

Instructors: F. Diane Ingeman, C. Michael Merlady.

Graduate Study

Graduate training in physiology and biophysics usually begins with the P.H. degree. Qualified students are accepted who have baccalaureate degrees in biological, chemical, physical, or other appropriate fields of study. Prerequisites for graduate study include a year each of biology, physics, organic chemistry, physical chemistry, and calculus. Students who are otherwise qualified may be accepted, but their subsequent program would include early completion of necessary prerequisites. (For admission procedure, apply to the Chairman, Graduate Studies Committee, Department of Physiology and Biophysics.)

In preparatory work for the comprehensive examinations, students are expected to demonstrate knowledge and capability rather than upon particular courses taken or credits obtained. Although no specific courses are required, most students are advised to take Biochemistry 9B166 and Physiology 72.012. The selection of other courses is determined by the individual's background and interests. In general, about one-half of formal coursework comprises advanced study in physiology. Additional coursework may be taken in one or two of the following areas: biochemistry, pharmacology, physics, chemistry, sociology, engineering, medical electronics, or radiation research. Most students may anticipate taking their comprehensive examination by the end of their second year of graduate study.

In general, students are expected to complete 24 credits of coursework under the immediate supervision of his adviser. No candidate will be recommended for the degree of Doctor of Philosophy until he has, with the approval of his adviser, presented an acceptable research publication and the manuscript has been submitted for publication in an appropriate scientific journal.

Detailed information concerning research opportunities in physiology and other programs for graduate study can be obtained from the department. Fellowship support is available for students accepted for graduate study.

COURSE DESCRIPTIONS

17.213 Introduction to Human Physiology 4 s.h.
Basic concepts of human physiology. Open to undergraduate students with prerequisites of Zoology 8B5, Chemistry 47.4, or equivalent, and consent of instructor. Three two-hour and one three-hour laboratory per week. Offered first semester.

17.218 Physiology of Exercise 4 s.h.
A course for pharmacology majors and other interested students. The course will introduce students to the field of exercise pharmacology. It will be presented with special emphasis on drug-induced injury, mechanisms of toxicity, present and potential indices, and drug safety evaluation. Forensic and environmental applications will be emphasized in this course. Prerequisites. 17.15. Second semester.
COLLEGE OF MEDICINE

72:110 Neurobiology and Behavior cr.arr.
Same as 01:110 except with additional seminars and reading assignments. Prerequisites, consent of instructor.

72:143 Analytical Study of Physiology 3 s.h.
Open to students with an adequate background in physics, chemistry, and mathematics. Students lacking prerequisites may register with the consent of the instructor. First semester.

72:151 Mammalian Physiology 6 s.h.
Lectures and laboratory dealing with the principles of animal physiology and related aspects of organic systems and cell types. Required of dental and pharmacy students. Open to graduate and senior upperclassmen having prerequisites of a year of biology or ecology, a year of physics, two years of chemistry, and either one semester of biochemistry or consent of instructor. First semester.

72:196 Research in Physiology and Biophysics cr.arr.
For graduate students who are not master's or doctoral candidates of the Department of Physiology and Biophysics. Prerequisite, consent of the head of the department.

72:201 Medical Physics 3 s.h.
Physical interpretation of biological observations. Such topics as biophysics, bioclastics, and flow and diffusion in living systems will be discussed. Recommended prerequisites: a year each of biology, physics, calculus, and consent of instructor. Two lectures and one three-hour laboratory per week. First semester, alternate years. Offered 1970-71.

72:202 Advanced Physiological Exercise 3 s.h.
Prerequisites: 72:131 or equivalent and 80:165 and 80:167. Student reports of immediate and chronic effects of exercise to biological systems. Includes lectures, laboratory. Second semester, alternate years. Offered 1971-72.

72:203 The Endocrine Glands 2 s.h.
Same as Anatomy 80:320. Lectures and readings on structure and function of the organs of internal secretion. Prerequisite, consent of instructor.

72:212 Advanced Physiology 5 s.h.
Required of freshman medical students and open to graduate students with adequate preparation in biological and physical sciences. Prerequisite, consent of instructor. Second semester.

72:221 Advanced Systematic Physiology 2 or 3 s.h.
Courses 72:221 and 72:222 involve detailed didactic and laboratory study of the function of biological systems. Each semester, a particular area such as respiration, renal physiology, metabolism, or central neurophysiology, will be designated for review. Prerequisites, Biochemistry 80:231 or 80:163, 12:322, and consent of instructor. First semester.

72:222 Advanced Systematic Physiology 3 or 5 s.h.
Continuation of 72:221. Second semester.

72:231 Advanced Renal Physiology 2 or 3 s.h.
Investigation in depth of the evidence used to develop the principles of renal physiology. Two lectures and one three-hour laboratory. Prerequisites, 72:221 or equivalent and consent of instructor. First semester, alternate years. Offered 1970-71.

72:241 Membrane Transport 2 s.h.
Will concentrate on active transport as it relates to cell homeostasis and upon passive transport and electrochemistry. Prerequisites, 72:221 and consent of instructor. First semester, alternate years. Offered 1971-72.

72:253 Advanced Gastrointestinal Physiology 3 s.h.
Lectures, conferences, and laboratory work. Prerequisites, a year each of biochemistry or equivalent and consent of instructor. First semester, alternate years. Offered 1970-71.

72:262 Environmental Physiology 3 s.h.
Lectures, reports, and laboratory work. The physiological adaptive mechanisms of man and his mammalian relatives are considered in detail, in relation to both the physical and the socioeconomic environment. Responses to heat, cold, light, and high and low pressures are analyzed; various lectures from departments of anthropology and geography consider the other stresses. Prerequisite, a basic graduate course in physiology and consent of instructor. Second semester, alternate years. Offered 1971-72.

72:271 Advanced Cardiovascular Physiology 3 s.h.
Recent developments. Open to graduate and postgraduate students with permission. Prerequisites, 72:131 or equivalent and consent of instructor. First semester, alternate years. Offered 1971-72.

72:281 Advanced Neurophysiology (Musculature) 3 s.h.
[Part of a two-year sequence.] Open to graduate and postgraduate students. Examination of electromechanical, chemical, and thermal phenomena at the cellular levels in contracting skeletal muscle. Prerequisites, adequate background in biological and physical sciences and consent of instructor. First semester, alternate years. Offered 1970-71.

72:282 Advanced Neurophysiology (Biophysics of Excitable Membranes) 3 s.h.
[Part of a two-year sequence.] Open to graduate and postgraduate students. Foundation for an understanding of the generation, propagation, transmission of excitation, and information processing in the central nervous system. Prerequisites, a basic graduate course in physiology and consent of instructor. Second semester, alternate years. Offered 1970-71.

72:283 Advanced Nerve Action (Sensory Physiology) 3 s.h.
[Part of a two-year sequence.] Open to graduate and postgraduate students. Examination of the physiology of the sensory mechanisms in the nervous system. Prerequisites, neuroanatomy, biophysics of excitable membranes and consent of instructor. First semester, alternate years. Offered 1971-72.

72:284 Advanced Neurophysiology (CRS, Control of Locomotion and Posture) 3 s.h.
[Part of a two-year sequence.] Open to graduate and postgraduate students. A lecture-seminar course designed to examine in depth the problems of transmission and information processing at various levels in the nervous system. Prerequisites, neuroanatomy and neurophysiology courses and consent of instructor. Second semester, alternate years. Offered 1971-72.

72:291 Research: Physiology cr.arr.
First semester.

72:292 Research: Physiology cr.arr.
Second semester.

72:301 Special Topics cr.arr.
Reports and discussions of selected topics. First semester.

72:304 Special Topics cr.arr.
Second semester.

72:311 Seminar: Physiology cr.arr.
First semester.
COLLEGE OF MEDICINE

Second semester.
72:401 Thesis 2 cr.
First semester.
Second semester.

PREVENTIVE MEDICINE AND ENVIRONMENTAL HEALTH
Head of Department, Franklin H. Top, Sr.
Office, 106 Medical Laboratories Building

STAFF
Associate Professors: W. J. Haukley, Jr., R. S. Heil, Paul R. Leaverton, Kenneth MacDonald, Dan McDonald, Robert Morris, Marcus Powell.
Associate: William McConnell.
Instructors: Gutmane Berukska, Dean P. Bonderman, Leon F. Burmister, Josephine Derry, Melvin Daniel Rockwell.
Visiting Lecturers: Rise Evans (Radiation Research Laboratory), Henry R. Hamilton (Department of Internal Medicine), Isaac Horwitz (Department of Internal Medicine), VA.

Advanced Degree Potentials or Requirements
Graduate courses and courses are offered in preventive medicine and environmental health. Programs leading to M.S. and Ph.D. degrees are available for qualified students. The following areas of study provide student opportunities which are designed to equip them for speciality careers. (See Graduate College and College of Engineering sections of the Catalog.)

Health education. Designed primarily for students who expect to teach hygiene and environmental health in secondary schools and other artis colleges, or who wish to become public health educators. A broad background in chemistry and the biological sciences is desirable. (M.S. and Ph.D.)

Environmental health science. Designed to prepare students for employment by federal, state, and local governmental agencies, voluntary agencies, and industry. People are employed as workers in sanitation, industrial hygiene, safety, and quality control programs. (M.S. and Ph.D.)

Health laboratory science. A graduate program for students who expect to work professionally in facilities providing health laboratory type services. Areas of specialization include histology, bacteriology, serology, pharmacology, virology, and environmental sciences. Program guidelines must be approved by the senior staff of the State Epizoic Laboratory. A background in biological sciences is desirable. (M.S. and Ph.D.)

Public health parasitology. A curriculum for students who expect to specialize in teaching and research in the parasitology diseases common to man. A background in biology is desirable. (M.S. and Ph.D.)

Public health bacteriology. A curriculum for students who expect to specialize in teaching and research in the prevention and control of infectious diseases. A background in biology and chemistry is desirable. (M.S. and Ph.D.)

Industrial hygiene. Designed for the individual student based upon the background of the student and the program. Ph.D. degree requirements are biostatistics and epidemiology. Comparative medicine. A graduate program is offered in the area of disease conditions, common to man and animals. Specific courses in epidemiology and/or applied medicine is desirable at moving public health problems associated with man-animal interactions. A knowledge of the previous background in a basic applied, or clinical sciences are given preference. (M.S. and Ph.D.)

Environmental toxicology. An opportunity is provided for students to study the epidemiology of environmental toxicants particularly pesticide. Field and facilities are available to provide depth and insight in characterizing the cause-and-effect relationship of economic poisons and other pollutants to human health. Students desiring work in this area should possess a strong background in microbiology, biochemistry, biological science, or medicine. (Ph.D. only)

COURSE DESCRIPTIONS

63:101 Health Science I 3 cr.
Factors which determine personal health. Methods of preventing diseases in the individual and community. Lectures, demonstrations, readings. Open to juniors and seniors.

63:102 Health Science II 3 cr.
(Environmental Biology) Course for sanitary engineers and other persons who, in addition to a knowledge of basic bacteriology, require an understanding of the practical aspects of the microorganisms and biota of specific environments. Same as Civil Engineering 53:102.

63:103 Health Science III 3 cr.
(Environment Control) Lectures and demonstrations covering the adjustment of the environment to the individual. Municipal supervision of sanitary measures. Prescribed, 63:101 or equivalent. Enrollment limited. Second semester.

63:104 Health Education Workshop 3 cr.

63:120 Public Health Parasitology 3 cr.
Parasites of public health importance; life cycles, ecology, interference factors, diagnosis, and prevention. Lectures, demonstrations, conferences, and laboratory.

63:122 Public Health Entomology 3 cr.
Insects as vectors in the causation and transmission of disease. Arthropod ecology and control.

63:133 Milk and Food Sanitation 3 cr.
Sanitary aspects of milk production, distribution, and storage. Acquaintance with laboratory procedures and field training will be included. Open to seniors and graduate students. Enrollment limited.

63:140 Fundamentals of Parasitism 3 cr.
Mechanisms of biological adaptation. Host factors, environmental factors.

63:151 Parasitology for Medical Students 3 cr.
Holothrix, protozoa, and other parasites of public health importance: their life cycles, intermediate hosts, methods of diagnosis, and prevention. Lectures, demonstrations, conferences, and laboratory. Freshman year, third term. Medical and graduate students.

63:152 Preventive Medicine and Environmental Health 2 cr.
The delivery and priority of health care in organized health programs. Relationship of man to his total environment in terms of disease prevention and control. Problems of infectious agents, air, water, soil, and stress-producing community health problems. Sophomore year, first semester. Medical students.

63:154 Preventive Medicine and Environmental Health 3 cr.
Principles involved, methods, and official organization
73:101 Psychiatry for Related 
Professions 1 or 2 s.h.
Basic concepts and clinical syndromes for students of psychology, social work, nursing, occupational therapy, recreation, physical therapy, speech pathology, etc. Pre- 
requisites: No specific head of professional program in which student is enrolled.
73:105 Research: Psychiatry cr.arr.
Medical students, graduate students, and physicians who have had training in scientific methodology admitted for special investigations in problems, biological or psycho-
logical, related to psychiatry.
73:106 Research: Psychiatry cr.arr.
Continuation of 73:105, but may be taken as an independ-
ent unit.

Graduate Course in Psychiatry

The postgraduate psychiatric training program is de-
signed to fulfill two objectives: to train physicians broadly for the practice of psychiatry as a specialty, and to train teachers and research workers in the field of psychiatry. A plan of supervised clinical experience and of didactic instruction is outlined to attain these ends. Ordinarily the training covers a period of three years.

An applicant must be a graduate of a recognized Class-
A veterinary school and must have completed an internship of one year. Physicians with previous psychiatric ex-
perience or academic training of a suitable character may apply for advanced standing. Those who desire shorter training periods, either to begin their psychiatric experi-
ence at Iowa or as a preparation for the practice of gen-
eral medicine, pediatrics, surgery, obstetrics, or other 
fields, may arrange residences of less than three years.

Candidates who successfully complete the course of clinical experience, of lectures, conferences, and seminars, and who write acceptable theses, are awarded a degree of Master of Science. To complete these requirements, a total of 30 semester hours must be secured. The grade policy in course in psychiatry is restricted to physicians; individual courses are open to qualified students in allied areas with permission of the instructor. A certificate of proficiency in psychiatry is issued to the candidate to the degree when such proficiency has been demonstrated to the satis-
faction of the department.

Students are registered in the Graduate College. (See Graduate Rules for admission procedures and degree requirements).

Basic Group of Courses

73:202 Advanced Clinical Psychiatry I 2 s.h.
Briefer instruction. Patients under active treatment used to illustrate psychopathology. Mechanisms of adjust-
ment and maladjustment, and application of psychother-
apeutic techniques. Two times a week throughout the year.
73:203 Advanced Clinical Psychiatry II 2 s.h.
Lectures and discussions of important symptoms and signscases of neurosis, anxiety neuroses, schizophrenia, 
senile psychoses, organic and psychological syndromes, 
treatment of major affective reactions. 79:040 Clinical Conferences 3 s.h.
Admission and discharge case presentations by residents and house patients. Contributions from various professors 
with psychiatry considered as applied to diagnosis, treatment, and care of psychiatric conditions of patients. Five 
times a week throughout the year.
73:305 Seminar: Advanced 
Psychopathology 2 s.h.
Psychopathology of the various psychiatric syndromes, superego mechanisms, ego mechanisms and depth psychologies. Schools of psychiatric thought.

73:306 Seminar: Psychotherapy 2 s.h.
Techniques and theories of dynamic psychotherapy as applied to various psychiatric syndromes and interviewing patients.
73:307 Seminar: Biology of Behavior 2 s.h.
Biological factors of behavior general, neurotransmission, neu-
rogenic, biochemical, pathological and pharmacological fac-
tors relative to normal and abnormal behavior and the relation of these factors to therapy.
73:308 Psycho-physiologic Relations 2 s.h.
Psychophysiology in the production of physical signs and symptoms, interrelations of physical disease and malad-
ditional factors of current literature.
73:309 Out-patient Clinic Psychiatry 2 s.h.
Individual and conference instruction with case material from the out-patient clinic. Three times a week through-
out the year.
73:310 Child Psychiatry I 2 s.h.
Lectures, case demonstrations, and discussions concerning the dynamics of personality development. Diagnosis and treatment of the common behavioral disturbances of infancy and childhood.
73:311 Child Psychiatry II 2 s.h.
Supervised experience in practical problems of diagnosis and treatment of children's behavioral disorders. Diag-
nostic interviews with parents and children. Supervised experience in interview and play therapy techniques. Group and individual discussions on specific problems of therapy. Three times weekly throughout the year.
73:312 Seminar: Administrative Medico-
Legal Psychiatry 1 s.h.
Public health laws relating to commitment, care, and 
treatment of mentally ill persons; organization and admin-
istration of state hospitals, private sanitarium, psychopathic hospitals, psychiatric units in general hospitals; medico-
legal problems involving psychiatric patients.
73:316 Theory and Methods of Psychological 
Examining in Clinical Psychiatry 2 s.h.
Evolution of testing procedures; standardization and indi-
vidual differences in intelligence to present concepts which 
depend on modern and traditional measures of personality char-
acteristics. Lectures, discussions, clinical case studies, and 
clinical practice.
73:318 Readings in Psychiatry 1 s.h.
73:319 Journal Club 1 s.h.
73:320 Special Topics Seminar 1 s.h.
73:323 Electroencephalography 2 s.h.
Lectures and discussions on faintly experimental and 
clinical electroencephalography. Special emphasis 
upon techniques, quantitative techniques, and quantita-
73:325 Thesis 4 s.h.
73:333 Law and Psychiatry 1 s.h.
A clinic open to seniors in Colleges of Law and Medicine. 
Clinical course considered a medicine-legal point of view 
by means of clinics and test study. Same as Law 333.

The Basic Group also includes: Anatomy 62:207, the 
Ventricular Nervous System, and 62:300 Review of Anatom-
ical and Neurology. Neurophysiology of the Ventricular Nerv-
ous System; and Preventive Medicine 62:105, Biostatistics.

Elective Group of Courses

73:330 Research in Psychiatry cr.arr.
73:331 Problems in Psychiatry cr.arr.
The Elective Group also includes courses in other de-
partments of the University, taken with permission of the 
Department of Psychiatry, that meet as individual's special needs or interests, such as in anthropology, soci-
ology, psychology, and child welfare.
RADIATION RESEARCH LABORATORY
(RADIATION BIOLOGY)

Head of Department, Titus C. Evans
Office, 14 Medical Laboratories Building

STAFF

Professors: Titus C. Evans, J. William Cahone, Edgar F. Riley.
Assistant Professors: Kenneth L. Cooper, Brian S. Wainwright.
Research Associate: Dorothy D. Schottellins.
Instructor: Donna Bessey.

Advanced Degrees

Students enrolled in the Graduate College may earn Master of Science or Doctor of Philosophy degrees with a major in radiation biology. A candidate must satisfy all applicable requirements of the Graduate College. Students with no more than a bachelor's degree are advised to earn one advanced degree in one of the closely related fields.

Specific requirements for the M.S. degree include 15 semester hours of credit in radiation biology plus a thesis. Other science courses to meet the minimum requirement of 30 semester hours will be decided on an individual basis.

Ph.D. candidates must satisfy the requirements of the Graduate College and the following specific requirements. At least 20 of 60 required semester hours of graduate credit should be earned in radiation biology. Other graduate science courses to improve a background of knowledge will be decided on an individual basis. A reading knowledge of French and German, or a substitute acceptable to the staff, is required. A candidate must demonstrate an adequate knowledge of the field during a comprehensive examination, and an ability to do independent research by successfully defending and defending a thesis. A limited number of part-time appointments may be available. These provide some teaching and some research experience as well as some financial assistance.

COURSE DESCRIPTIONS

77:303 Introductory Radiation Biology 4 cr.h.
Characterization and biological effects of ionizing radiations, properties and use of radioisotopes, radiological applications, and the biological basis for protection practices. Laboratory provides experience in the use of radiation detectors, measuring devices, radiobiological techniques, and demonstrates radiation effects. Prerequisite, consent of instructor.

77:306 Radiological Safety and Health Physics 3 cr.h.
Lectures, discussions, and laboratory deal with radiation hazards, control regulations, problems of design and use of radiation facilities in medical, academic, and industrial situations, and the biological bases for protection practices. Laboratory provides experience in controlling radiation hazards with emphasis on those involved with medical use of radioisotope. Prerequisite, consent of instructor or permission of department of physics or chemistry or consent of instructor.

77:307 Seminar 1 cr.h.

77:311 Physics of Radiobiology I 4 cr.h.
Lectures and laboratory exercises. Review of relevant physical principles, atomic structure, chemical, and radiative processes of tissues. Nuclear structures and reactions. Interactions of alpha, beta, gamma, and neutron radiation with matter. Prerequisite, 77:205, 8 semester hours of physics, calculus desirable.

77:218 Physics of Radiobiology II 4 cr.h.
Continuation of 77:211. Radiation detection devices. Instrumentation and techniques for radiobiological research and for clinical procedures. Prerequisite, 77:211.

77:220 Mammalian Radiobiology 4 cr.h.
Further development of the mammalian radiobiology portion of 77:211. Lectures and laboratory exercises dealing with radiation effects on organ systems in mammals. Topics include skin, lungs, bone marrow, transplantation, irradiation of selected organ systems, and use of agents which modify the radiation response. Prerequisite, 77:205 and consent of instructor.

77:223 Cellular Radiobiology 4 cr.h.
Lectures and laboratory: influence of radiation on cell growth, multiplication, differentiation, and function. Modifica-
tion of radiobiological effects by alteration of radiation of environmental factors. Prerequisite, 77:205 or consent of instructor.

77:324 Radiocisotopes in Biological Research 4 cr.h.
Further development of the radiocisotope portion of 77:205. Lectures and laboratory exercises on the use of isotopes in biology and medicine. Requirements of biological sample, purification technique. The isotopes studied include 1-131, Fe-59, Cr-51, P-32, Sc-46, Au-198, Co-60, C-14, Ca-44, and Bi-214. Counting equipment and techniques include liquid scintillation counting, gas flow counting, and use of pulse height analysers. Prerequisites, 77:205 and consent of instructor.

77:328 Radiocisotopes in Clinical Investigations 4 cr.h.
Lectures and laboratory exercises dealing with properties and uses of radioactive isotopes (including 1-131, Cr-51, Fe-59, Ca-44, Au-198, P-32, Sc-46, K-40, and labeled compounds) in clinical investigations. Prerequisite, 77:205 or consent of instructor.

77:303 Research: Radiobiology cr.arr.

77:306 Research: Radiobiology cr.arr.

77:307 Special Topics cr.arr.

77:308 Special Topics cr.arr.

77:310 Thesis cr.arr.

77:310 Thesis cr.arr.

RADIOLOGY

Head of Department, James H. Christlieb
Office, C138 General Hospital

STAFF


Professor Emeritus: R. Daniel Kuyk.


Assistant Professor: Ted R. St. John.


Assistant: Tapan K. Chasenify, Petronio Lorenz, Alfred C. Sado.

Fellow: Yutsuko Suzuki.
Instructor: Glenn Lasslew, Donna Bessey.

COURSE DESCRIPTION

74:1 Roentgen Interpretation 1 cr.h.
Diagnosic lectures covering certain aspects of roentgen interpretation and radiation therapy.

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Acting Head of Department, S. E. Ziffren, M.D., in charge.

STAFF


Clinical Associate Professors: L. B. Bascom, J. D. Laos, W. S. Sharpe, F. D. Stahl.


Instructors: D. E. McDonald, G. Brett.

COURSE DESCRIPTIONS

75:5 Clinical Surgery for Junior Medical Students 8.5 h.

Each fifth of the junior class serves on the surgical service in the junior clinical clerkship for a period of two months. A junior clerk examines and follows two or more new patients each week assigned from the surgical wards and from the affiliated Iowa City VA Surgical Service. The clerk participates in various aspects of the patient's care and takes part in informal teaching exercises conducted by the surgical staff members of the ward until to which the clerk is assigned. Daily one-hour lecture demonstration conferences are held six days per week with senior staff member. Each clerk is assigned for four weeks at a time to a senior staff member who, through personal conferences and case working groups, assists in the student's progress. Regularly scheduled exercises in surgical cathetherization and in the animal laboratories are held during the clerkship.

75:31 Surgical Clerkships for Seniors 4.5 h.

Each senior student is assigned for one month in the surgical service to examine patients and participate in various phases of the patient's care in the Surgical Orthopedic and Emergency Service. The service at the ward or operating room of the University Hospitals or the Iowa City Veterans Administration Hospital. One week is spent in full-time activity in the Department of Anesthesiology.

75:150 Principles of Surgery cr.arr.

Listed under Physical Therapy.

Program for Graduate Training in Surgery

Graduate training in surgery is available to a limited number of applicants. The course satisfies the requirements of the Graduate College for the degree Master of Science and is included in the training required for certification by the American Board of Surgery. Ordinarily graduate registrants rotate in the same clinical services and participate in the clinical experience in the same manner and degree as various grades of attending residents. They may concurrently serve in one of the various grades of the residency or as Fellows in Surgery. Admissions requirements. For admission the applicant must have the permission of the department head and approval of the Director of Admissions. In general, the applicant must have completed 30 credits of academic work at a liberal arts university or college, including at least 9 of the credits in the medical sciences. Applicants who have been accepted by the Director of Admissions will be required to accept a position in the residency which must be approved by the department head and the Dean of the Graduate College. It must be

filed with the Graduate College in appropriate manner prior to enrollment in the program. A certificate of proficiency in surgery will be issued by the College of Medicine to accompany the Master of Science degree when such evidence of proficiency exists. The satisfaction of the department.

A program of studies for the degree must be completed and filed in the Graduate College Office. The program should include work in courses outside the major department of the Graduate College for admission procedures and degree requirements.

69:201 Graduate Instruction in Pathology cr.arr.

Either six- or twelve-month course in anatomy and surgical pathology for graduate students. The program is designed for full-time work in medical students.

60:208 Review of Anatomical Neurology cr.arr.

Important elements of the central nervous system with emphasis on functional relationships. Offered only upon sufficient demand.

75:201 Surgical Anatomy cr.arr.


75:203 Mortality and Morbidity Conference cr.arr.

A weekly conference. Case presentation and discussion. Systematic study of the gross anatomy with emphasis on surgical applications. Anatomy of the such system, first trimester: anatomy of the thorax, abdomen, pelvis, and perineum, second trimester: anatomy of the alimentary and urogenital systems, third and fourth trimesters.

75:205 Daily Surgical Conference cr.arr.

One-hour session each week for presentation of surgical problems with emphasis on diagno.

75:206 Surgical Conference cr.arr.

Continuation of 75:205.

75:220 Breast Clinic no cr.

75:221 Oncology Clinic no cr.

75:222 Neuroradiologic Conference cr.arr.

Weekly two-hour conference primarily for graduate students in neurology, neurosurgery, and radiology. Correlation between neuroradiologic diagnostic tests and pathologic findings. Diagnosis and differential diagnosis.

75:223 Surgery Seminar cr.arr.

Non-repetitive (over four years) review of basic science and clinical material of value in practice of general surgery.

75:224 Radiology and Clinical Case Conference cr.arr.

Weekly conference for students, residents, and staff where current research and radiologic findings are presented.

75:225 Research Seminar no cr.

Presentation of current research by members of the staff.

75:226 Intermediate Clinical Conference cr.arr.

Participation in case presentations by graduate registrants is required during various periods of rotation in the anesthesia, orthopedic, and urologic services.

75:227 Research Surgery cr.arr.

Carefully selected seniors carry out individual research projects under the supervision of staff members.

The following courses are required and are scheduled on a continuous calendar-year basis.

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are of approximately equal length. Rotation is made at
monthly intervals, and is scheduled by the head of the
department. Increasing responsibility in patient care
under close staff supervision is provided. Each may be
repeated.
75:215 Outpatient Clinical Experience 3 a.h.
75:216 Surgical Ward and Operating
Room Clinical Experience 3 a.h.
75:217 Surgical Rotation Clinical
Experience 3 a.h.
75:230 Thesis cr.arr.

UROLOGY
Head of Department, Rubin H. Flocks
Office, E406-II General Hospital

STAFF
Professors: Raymond G. Buug, David A. Colp, Rubin
H. Flocks.
Assistant Professors: W. Bonney, C. H. Hawtrey, J. D.
Schmidt.

COLLEGE OF MEDICINE

COURSE DESCRIPTIONS

79:1 Didactic Urology 1 a.h.
Twelve hours in sophomore year.
79:103 Clinical Urology 1 a.h.
One hour every other week throughout year for junior
and seniors.
79:104 Clinical Clerkships in Urology 2 a.h.
Each junior student is required to spend two weeks full
time in urological clerkship.
79:105 Urological X-Ray Interpretation 1 a.h.
One hour clinic throughout year.
75:106 Urology Grand Rounds 1 a.h.
One hour weekly throughout year.
79:107 Urologic Seminar 1 a.h.
Two hours every week throughout year.
Education for the practice of nursing was recog-
nized as a responsibility of The University of
Iowa as far back as 1896 when a School for Nurses
was established. The nursing program was given
the status of an independent unit and, by this
action, it became the tenth college of The Uni-
versity of Iowa in 1945. This independence places
education for the practice of nursing in a favored
position at Iowa because the faculty is entitled to
determine curriculum, to decide the types of
programs it will offer, and to be responsible for
the quality of the degrees it awards.

With the Colleges of Medicine, Dentistry, and
Pharmacy, the College of Nursing is an integral
part of the University Health Center, and thus
shares in and contributes to teaching, research,
and patient-care resources which have earned
international recognition. This provides an un-
usually fine setting for college preparation for
nursing because the educational and clinical re-
sources which are needed for this type of pro-
fessional education are available on or near the
campus. This makes it possible for the faculty
and students to be full participants 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 which prepares for
licensure as a registered nurse is fully approved
by the state licensing agency, the Iowa Board of
Nursing. In addition, both the baccalaureate and
the graduate programs are accredited by the De-
partment of Baccalaureate and Higher Degree
Programs, National League for Nursing, which
is the professional accrediting agency for college
and university programs of nursing education.

Graduates of the College of Nursing are pre-
pared for the practice of professional nursing in
hospitals, public health agencies, and other health
services, and they are qualified for beginning
positions requiring managerial skills. This under-
graduate education in nursing forms the base for
graduate study to prepare for teaching, super-
vision, administration, research, or clinical special-
ization.

PROGRAMS

The College of Nursing offers a baccalaureate
program leading to the degree Bachelor of Science
in Nursing for high school graduates and regis-
tered nurses seeking college preparation for the
practice of nursing; graduate programs leading
to the degree Master of Arts, for graduates of col-
lege programs who wish to specialize in specific
areas of nursing practice as preparation for the
leadership positions of teaching, supervision, and
administration; and a program of continuing edu-
cation offered without college credit for nurses
already in practice.

Baccalaureate Program. The curriculum for the
bachelor’s degree in nursing at Iowa organizes coursework in the following areas: communica-
tion skills; the social, biological, and physical
sciences which provide an essential background of
knowledge for the professional nursing courses;
and the various aspects of the nursing major.

In the regular program, nursing students enter the
College of Nursing as sophomores after com-
pleting the freshman year of a required sequence of courses in the College of Liberal Arts at Iowa
or in another regionally accredited institution.
A student may also enroll after two years of a
prescribed sequence of general education and
science courses in the College of Liberal Arts or
in a cooperating junior or senior college in Iowa
and, upon admission to the College of Nursing,
begin nursing courses in an eight-week summer
session.

Registered nurses, by completing prescribed
coursework and meeting all other requirements,
may qualify for the baccalaureate degree.

Graduate Programs. The College of Nursing
offers a program of study leading to the Master
of Arts degree in three clinical areas—medico-
surgical nursing, pediatric nursing, and psychiatric
nursing—and in nursing service administration.
Graduate students in nursing register in the Grad-
uate College and the M.A. degrees are conferred
by that College. (For admission requirements,
see Master of Arts in Nursing, below.)

Continuing Education. The program offers non-
credit units of instruction to meet needs of groups
of registered nurse practitioners for the purpose
of maintaining and enhancing nursing abilities.
(For information contact Continuing Education,
College of Nursing.)

SPECIAL PROGRAMS

The Cooperative Plan. Anticipating the pro-
vision for an increased enrollment in nursing at
College of Nursing

Iowa (see Facilities), the College faculty developed a plan for cooperative involvement of other selected Iowa institutions in the University's undergraduate program in nursing. The plan is designed to better meet students' needs and to better utilize the general education and science course resources of Iowa colleges and universities not offering degree programs in nursing.

The plan permits the student to complete the first two years of study at any cooperating institution by enrolling in a specially designed sequence of courses. After successful completion of the sophomore year at a cooperating institution, the student will be accepted for transfer into the baccalaureate program in nursing at Iowa provided the student has completed all courses in the prescribed transfer sequence and meets all the general requirements and provisions for admission to the College of Nursing. (See Admission Requirements.) A maximum of 0.5 semester hours (or the equivalent) will be accepted for credit from a junior college.

Under the cooperative plan, students enter the College of Nursing in the summer session after the sophomore year to take the nursing courses scheduled in the sophomore year of the regular program.

Institutions participating in the cooperative program include Iowa State University, Ames; the University of Northern Iowa, Cedar Falls; Upper Iowa College, Fayette; Briar Cliff College, Sioux City; Morningside College, Sioux City; Iowa Central Community College, Fort Dodge; North Iowa Community College, Mason City; and Area TVI Community College, Marshalltown.

Anticipated participants include Kirkwood Community College, Cedar Rapids; Eastern Iowa Community College, Muscatine; Luther College, Decorah; and Clarke College, Dubuque.

Prospective nursing students who want more information about the cooperative plan should consult the cooperating institution of their choice.

THE PROGRAM FOR REGISTERED NURSES

Registered nurses are required to meet the liberal arts and science requirements of the baccalaureate program and an additional elective course in anthropology, psychology, or sociology. Upon completion of all but 8 to 12 semester hours of the liberal arts courses, the following nursing courses are scheduled for the last two semesters and a summer session of work: 0.40 Nursing of Adults and Children, 0.64 Public Health Nursing, 0.06 Practicum—Public Health Nursing, 0.16 Fundamentals of Community Health, 0.04 Nursing in the Social Order, 0.06 Senior Practicum, 0.04 Practicum—Senior Nursing.

Challenge examinations may be taken in medical-surgical nursing, maternal-child health nurs-

ing, and psychiatric nursing to validate the nursing abilities for a total of 35 semester hours of credit. Credit for these examinations is awarded after successful completion of the first year course, 0.40, 0.61.

Registered nurses interested in the baccalaureate program should write to the College of Nursing for advisement before enrolling at The University of Iowa.

FACULTY

All three programs share in the teaching resources of all the faculty. Senior faculty members teach undergraduates as well as graduate students while less experienced faculty contribute specialized knowledge to graduate student instruction. The College of Nursing also draws upon the resources of the other Colleges of the University for experts to teach subject matter related to the study of nursing.

FACILITIES

A new College of Nursing building, scheduled for completion in 1971, will provide specialized facilities for nursing education, and will provide space for significantly increased enrollments in both the undergraduate and graduate programs.

Credit limitation of the new building for nursing is a part of a $70 million Health Center expansion program. Other phases of the program which will benefit nursing include construction of new Basic Science and Health Sciences Library Buildings, also scheduled for 1971 completion.

The College of Nursing utilizes the many and varied health agencies and facilities in the Iowa City-Cedar Rapids areas. These include the University Hospitals, a community hospital, the local Veterans Administration hospital, extended-care facilities, and a number of Public Health Nursing Agencies.

ADMISSION REQUIREMENTS

Students may be admitted to the College of Nursing upon completion of a minimum of 35 semester hours (preferably 35) in general liberal arts courses in the College of Liberal Arts of the University of Iowa or in another regionally accredited institution, including satisfactory completion of the following requirements:

Rhetoric. The University of Iowa transfer applicants must have satisfied the rhetoric require-

ments of the College of Liberal Arts at The University of Iowa. Applicants from other institutions may qualify by presenting 6 semester hours of credit in English composition and 2 semester hours of credit in speech.
Mathematics. Students are advised to have a minimum of 2½ units of high school mathematics. Otherwise, a college course in mathematics comparable to or higher than 22M:1 Basic Mathematical Techniques must be completed for which no credit is given toward the hours earned for graduation. A satisfactory score on the mathematics battery of the American College Test will satisfy the requirement.

Chemistry. Students must have completed 4 semester hours of college credit in inorganic chemistry. Students from the University of Iowa College of Liberal Arts and Sciences should also complete the course in organic chemistry and biochemistry. Students who transfer from other accredited colleges may, if necessary, complete the organic chemistry and biochemistry requirements after admission to the College of Nursing.

Tests. All applicants are required to complete the American College Test. Applicants who are graduates of associate degree or diploma programs of nursing also must have successfully passed the examination for registered nurse licensure before admission to nursing courses.

To be considered for admission, an applicant should have attained a cumulative grade-point average of at least 2.2 on all college work undertaken. The grade-point average is based on the marking system of The University of Iowa in which a grade of A is equivalent to 4 points. Other marking systems will be evaluated by the Office of Admissions.

Fulfillment of the specific requirements for admission listed above does not assure admission to the College of Nursing. From the applicants meeting the minimum requirements, the Admissions Committee of the College of Nursing will select those applicants who, in their judgment, appear to be best qualified.

The Nursing Admissions Committee may require personal interviews of applicants.

Address all inquiries regarding admission to the Director of Admissions, The University of Iowa, Iowa City 52240. Applicants in the regular one-year transfer program may be considered for admission for the fall semester only, and may apply for admission to the College of Nursing between July 1 and April 15 of the year preceding their expected enrollment. The closing date for receiving applications for the two-year co-operative program is November 15 for the following summer session. For applicants who are registered nurses the deadline date is November 15 for the spring semester and summer session and April 15 for the fall semester.

Counseling. At the time of admission to the University, each nursing student is assigned a College of Nursing faculty adviser who works with the student until graduation in developing individualized educational and professional plans.

Registered nurses and prospective one year transfer students are urged to consult a College of Nursing adviser for assistance in planning for undergraduate studies in nursing at Iowa.

Applicants to the College of Nursing may request permission to reregister, if they were in good academic standing at the time of withdrawal, and if they show that the reasons for withdrawal no longer exist. Requests for permission to reregister should be addressed to the Dean of Nursing.

The faculty reserves the right to request withdrawal of any student whose health, performance, or conduct demonstrates unfitness to continue preparation for nursing.

GRADUATION REQUIREMENTS

The student must complete at least 120 semester hours of the required program in general education and nursing courses; must achieve at least a 2.00 (C grade-point average in each of these two areas and in all work undertaken at The University of Iowa; and must complete at least the last 30 or 45 of the last 60 semester hours at The University of Iowa.

EXPENSES

Students pay the usual University fees throughout the program. Expenses for board and room depend on where the student chooses to live. See Admissions-Registration-Fees and Housing sections of the Catalog, or consult the University Housing Office, Jessup Hall.

The initial cost of a student's uniform which includes three uniforms, two caps, and a sweater is approximately $33. This amount is payable when ordered at the end of the freshman year. The student will need to purchase white shoes, bandage scissors, and a watch with a sweep second hand. Senior students are expected to provide their own means of transportation for Public Health Nursing.

Financial aids. For information about financial aid available to nursing students, see the All-University and Nursing lists in the Scholarships and Loans section of the Catalog, or consult the Office of Student Financial Aids, Old Dental Building.

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.
### COLLEGE OF NURSING

1. A Bachelor of Science degree in nursing which included 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 not required);

3. Grade-point average of 2.70 in the baccalaureate program or demonstrated ability in graduate courses as stipulated by the Graduate College (conditional-status admission to the nursing major may be granted to applicants with a grade-point average of at least 2.50; and, for the purpose of taking admittance courses, to applicants with grade-point averages of not less than 2.50).

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 nursing service administration in two semesters and a summer session.

All regulations of the Graduate College pertaining to academic standing, probation, and dismissal are applicable to graduate students in nursing. Transfer credit applicable to the degree is limited to 6 semester hours and must be approved by the Dean and advisor. A thesis is required of students in the medical-surgical nursing major and may be selected by others. A field study or other major project is included in the final course in all other majors for nonthesis students.

In addition to the degree requirements listed below for each major, written comprehensive examinations are required of both thesis and nonthesis students.

#### Degree Requirements

<table>
<thead>
<tr>
<th>1. Medical-Surgical Nursing—30 semester hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>36.221 Advanced Medical-Surgical Nursing</td>
</tr>
<tr>
<td>36.220 Research Methodology</td>
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<tr>
<td>36.230 Research in Nursing</td>
</tr>
<tr>
<td>36.599 Thesis</td>
</tr>
<tr>
<td>36.590</td>
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<tr>
<td>Electives from one related area (physiological or behavioral sciences)</td>
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</table>

<table>
<thead>
<tr>
<th>2. Nursing of Children—32 semester hours</th>
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<tbody>
<tr>
<td>36.243, 244, 245</td>
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<tr>
<td>244 Advanced Nursing of Children 14 s.h.</td>
</tr>
<tr>
<td>36.120 Introduction to Methods of Nursing</td>
</tr>
<tr>
<td>36.220 Research in Nursing</td>
</tr>
<tr>
<td>36.120 Issues in Nursing</td>
</tr>
<tr>
<td>Electives (from relevant areas)</td>
</tr>
<tr>
<td>37.599 Thesis</td>
</tr>
<tr>
<td>36.590</td>
</tr>
<tr>
<td>(An elementary course in statistics is required prior to admission or in the first semester.)</td>
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</tbody>
</table>

### Outline of Undergraduate Curriculum

#### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>4E5.8, 8</td>
<td>9</td>
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<tr>
<td>10.</td>
<td>9 to 8</td>
</tr>
<tr>
<td>33.2</td>
<td>3</td>
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<tr>
<td>31.</td>
<td>3</td>
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<tr>
<td>31.</td>
<td>3</td>
</tr>
<tr>
<td>34.1</td>
<td>3</td>
</tr>
<tr>
<td>34.1 Introduction to Sociology</td>
<td>4</td>
</tr>
<tr>
<td>34.1</td>
<td>3</td>
</tr>
<tr>
<td>34.1</td>
<td>3</td>
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<tr>
<td>34.1 Introduction to Sociology</td>
<td>4</td>
</tr>
<tr>
<td>17.318</td>
<td>4</td>
</tr>
<tr>
<td>90.1</td>
<td>3</td>
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<tr>
<td>41.314</td>
<td>4</td>
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<td>72.113</td>
<td>4</td>
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<td>96.25, 26</td>
<td>6</td>
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<td>96.29, 27</td>
<td>4</td>
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<tr>
<td>96.30</td>
<td>4</td>
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<tr>
<td>Literature Core Course</td>
<td>4</td>
</tr>
<tr>
<td>Medical-Surgical Nursing</td>
<td>4</td>
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<tr>
<td>Premedical: Medical-Surgical Nursing</td>
<td>4</td>
</tr>
<tr>
<td>Maturity Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Premedical: Maturity Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Nursing Care of Children</td>
<td>3</td>
</tr>
<tr>
<td>Premedical: Nursing Care of Children</td>
<td>3</td>
</tr>
<tr>
<td>Elective: Anthropology, Political Science, or Sociology</td>
<td>3 to 4</td>
</tr>
<tr>
<td>Literature Core Course</td>
<td>4</td>
</tr>
<tr>
<td>Fundamentals of Community Health</td>
<td>2</td>
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<tr>
<td>Psychiatric Nursing</td>
<td>3</td>
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<tr>
<td>Premedical: Psychiatric Nursing</td>
<td>3</td>
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<tr>
<td>Public Health Nursing</td>
<td>3</td>
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<tr>
<td>Premedical: Public Health Nursing</td>
<td>3</td>
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<tr>
<td>Nursing in the Social Order</td>
<td>3</td>
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<tr>
<td>Social Nursing</td>
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<tr>
<td>Premedical: Social Nursing</td>
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#### Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tr>
<td>62.315</td>
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<tr>
<td>58.254</td>
<td>3</td>
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<tr>
<td>58.224</td>
<td>3</td>
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<tr>
<td>58.225</td>
<td>3</td>
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<tr>
<td>58.226</td>
<td>3</td>
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<tr>
<td>58.227</td>
<td>3</td>
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<tr>
<td>Premedical: Senior Nursing</td>
<td>3</td>
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</tbody>
</table>

#### Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Literature Core Course</td>
<td>4</td>
</tr>
<tr>
<td>Medical-Surgical Nursing</td>
<td>4</td>
</tr>
<tr>
<td>Premedical: Community Health</td>
<td>2</td>
</tr>
<tr>
<td>Psychiatric Nursing</td>
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<tr>
<td>Premedical: Psychiatric Nursing</td>
<td>3</td>
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<tr>
<td>Public Health Nursing</td>
<td>3</td>
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<tr>
<td>Premedical: Public Health Nursing</td>
<td>3</td>
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<tr>
<td>Nursing in the Social Order</td>
<td>3</td>
</tr>
<tr>
<td>Social Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Premedical: Social Nursing</td>
<td>3</td>
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</tbody>
</table>

#### Master of Arts in Nursing

The faculty of the College of Nursing believes that graduate education in nursing is built upon a sound undergraduate base of general and professional education. Advanced clinical preparation furthers understanding of nursing theories and skill in their application and occurs through a formal program of study at the postbaccalaureate level. Graduate education in nursing includes the acquisition of knowledge from diverse areas of human learning, the study of concepts and principles underlying functions executed in leadership roles, and the systematic investigation of clinical problems.

This graduate program which is accredited by the National League for Nursing offers majors in medical-surgical nursing, nursing of children, psychiatric nursing, and nursing service administration. Preparation is provided for positions in nursing as clinical specialists, teachers, supervisors, or administrators.

Admission requirements. Graduate students in nursing register in the Graduate College, and degrees are conferred by that College. The general requirements of the Graduate College relating to admission (see Graduate College) apply with the following special requirements of the College of Nursing:
3. Psychiatric Nursing—32 semester hours

96:232, 233,
96:254, 255,
Advanced Psychiatric Nursing 18 s.h.
Introduction to Methods of Nursing Research 3 s.h.
96:290 Research in Nursing 3 s.h.
96:291 Therapeutics and Nourishment 3 s.h.
Electives from a related field 7 s.h.
Thesis 3 s.h.
(An elementary course in statistics is required prior to admission or in the first semester.)

4. Nursing Service Administration—32 semester hours

96:260, 261,
96:256, 259 Clinical Nursing 12 s.h.
Introduction to Methods of Nursing Research 3 s.h.
96:290 Research in Nursing 3 s.h.
96:293 Issues in Nursing 3 s.h.
(An elementary course in statistics is required prior to admission or in the first semester.)

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.

STAFF

Professor and Dean: Laura C. Dostan.
Professor: Myron K. Kimbrough.
Professor Emeritus: Gladys Bonet.
Associate Professor: Eva Kneisley, Ada Jacobs, Nancy Jerdahl, Marjorie Leford, Anna Overland, Ella Rasmussen, Hope Soferenko, June Tripathi, Anna Whiddon.
Instructor: Lydia Alcantara, Sally Becket, Sister Agnes Marie Crabbe, A. Aluskey Deighty, Thelma Frank, Karen Kerfoot, Jean Knott, Sandra Miller, Sister Patricia J. Miller, Sandra Powell, Marjorie Price, Dixie Reed, Joan Reas, Lezlie Rubel, Mildred Sandra, Sandra Sanders, Pamela Sant, Florence Schmidt, Frances Van Buren, Shirley Verly, Dorothy Wray.
Lecturer: Grace Theresa Gould.

Undergraduate Courses

96:24 Foundations of Nursing 3 s.h.
Basic concepts and skills related to health, disease, and nursing care. Lectures and seminars. Anatomy 661 and Physiology 72:13 must be taken prior to or concurrently with 96:24 and 96:25.
96:25 Practicum: Foundations of Nursing 2 s.h.
Laboratory, discussion, and selected nursing practice experiences. 96:24 and 96:25 must be taken concurrently.
96:26 Foundations of Nursing 3 s.h.
96:27 Practicum: Foundations of Nursing 2 s.h.
Laboratory, discussion, and selected nursing practice experiences. 96:24 and 96:25 must be taken concurrently. Prerequisites. 96:24 and 96:25 or equivalent.
96:28 Foundations of Nursing 4 s.h.
Basic concepts and skills related to health, disease, and identification and management of nursing care problems. Lectures and seminars. Consult College of Nursing for prerequisites.
96:29 Practicum: Foundations of Nursing 4 s.h.
Laboratory, discussion, and selected nursing practice experiences. 96:28 and 96:29 must be taken concurrently. Consult College of Nursing for prerequisites.
96:30 Human Development and Behavior 4 s.h.
Developmental stages of human behavior from conception through senescence. Psychological, intellectual, emotional, and social factors. Open to freshmen with consent of instructor.
96:32 Medical-Surgical Nursing 6 s.h.
Emphasis on understanding alterations of normal body functions and their effect upon the individual. A rationale for nursing care evolves while factors affecting the adult's response to illness or therapies are identified. Nursing care plans are prepared and the action is determined. Prerequisite. Junior standing.
96:37 Practicum: Medical-Surgical Nursing 6 s.h.
Guidance in the application of 96:32 in the care of the medical or surgical patient. Prerequisite. Junior standing.
96:40 Nursing of Adults and Children 3 s.h.
Physical and behavioral sciences, mental health, and public health concepts and patient teaching integrated into nursing care skills. Registered nurse students.
96:41 Practicum: Nursing of Adults and Children 3 s.h.
Application of nursing principles to care of adults and children, and validation of nursing skills obtained through study in diploma or associate degree programs. Registered nurse students.
96:42 Maternity Nursing 3 s.h.
Application in study to diploma in maternity and newborn infants. Prerequisites. Junior standing.
96:44 Practicum: Maternity Nursing 3 s.h.
Application of nursing principles to care of mothers and infants during antepartal, intrapartal, and postpartal periods. Prerequisite. Junior standing.
96:46 Nursing Care of Children 3 s.h.
96:48 Practicum: Nursing Care of Children 3 s.h.
Application of nursing principles to care of children. Prerequisite. Junior standing.
96:113 Introduction to Methods of Research \nDevelopment of a scientific approach to knowledge and to problem solving. Relationships among theory, research, and practice are considered, as are specific research approaches, methods of data collection, and problems of measurement of variables. Development of research proposal begins.

96:128 Perspectives in Nursing \nIssues relating to and complexities in meeting nursing's total commitment to society.

96:220 Nursing Research \nAnalysis and critical appraisal of nursing theories and nursing research. Communication of research findings. Completion of research proposal. Prerequisites: 96:130, statistics.

96:232 Advanced Medical-Surgical Nursing II \nContemporary findings in natural, behavioral, and applied sciences for derivation of concepts and principles underlying the rationale for nursing intervention. Focus is on major problem areas confronted in the care of medical-surgical patients.

96:333 Advanced Medical-Surgical Nursing II \nContinuation of 96:332; prerequisites, 96:332.

96:362 Advanced Nursing of Children I \nGrowth and development of the child; philosophies of child care; health protection, and anticipatory guidance. Experiences with well children in a variety of settings are provided.

96:383 Advanced Nursing of Children II \nChildren's responses to illness and hospitalization, care of the ill child in a variety of settings. Nursing responsibilities in facilitating optimum health care for children. Prerequisites, 96:382.

96:444 Advanced Nursing of Children III \nIndividually planned experiences in selected clinical or functional areas; investigative studies, and terminal conferences. Prerequisite, 96:383.

96:523 Advanced Psychiatric Nursing I \nPsychiatric-Mental Health and Communication theories, concepts, and problems pertinent to psychiatric nursing specialization in various mental health and care systems.


96:535 Clinical Practice in Psychiatric Nursing \nSupervised individual and group psychiatric-mental health nursing and interdisciplinary experiences in the general hospital and psychiatric care settings.

96:535 Clinical Practice in Psychiatric Nursing II \nContinuation of 96:534.


96:525 Clinical Nursing II \nContinuation of 96:526; prerequisites, 96:524.

96:526 Nursing Service Administration I \nOrganization theory. The complex nature of the modern community hospital. Includes case discussions.

96:561 Nursing Service Administration II \nThe functions of the nursing department and of the nursing service administrator in a complex hospital setting. Case discussions. Prerequisites, 96:551.

96:562 Nursing Service Administration III \nContinuation of 96:561. Application of administrative theories to the realities of nursing service administration. Class discussion, individual and group conferences, and field study projects. Prerequisite, 96:551.

96:588 Supervision in Nursing \nSupervisory process in providing nursing care in health care institutions.

96:595 Thesis
Pharmacy students at Iowa share the opportunities and enjoy the privileges of a major modern university.

With the Colleges of Medicine, Nursing, and Dentistry, the College is an integral part of the University Health Center, whose teaching, research, and patient-care programs have earned international recognition.

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, and law; the College of Pharmacy provides laboratory and manufacturing services to other colleges and departments of the University, particularly to the University Hospitals.

The College of Pharmacy is not departmentalized, but has the following areas of specialization:

- Pharmacy
  - Physical Pharmacy, Professional Practice
  - Industrial Pharmacy, Biopharmaceutics
- Institutional Pharmacy
- Clinical Pharmacy, Hospital Pharmacy
- Administrative Pharmacy
- Medicinal Chemistry
  - Inorganic Medicinals, Organic Medicinals
  - Analytical
  - Pharmacology (see Department of Pharmacology, College of Medicine)

The College offers programs leading to the Bachelor of Science, Master of Science, and Doctor of Philosophy degrees, and provides year-around continuing education programs for practicing pharmacists.

The College is accredited by the American Council on Pharmaceutical Education, and is a member of the American Association of Colleges of Pharmacy.

THE UNDERGRADUATE PROGRAM

Basically, the Bachelor of Science program in pharmacy comprises one year of prepharmacy studies, taken in the College of Liberal Arts at Iowa or in any accredited community or liberal arts college, and four years of pharmacy studies.

The professional curriculum includes a minimum of 18 semester hours of electives. Through his choice of electives, the student may focus on such special areas as hospital pharmacy, industrial pharmacy, or pregraduate study.

Scholastic Standards. Graduation from an 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.

Pass-Fail Courses. Pharmacy students are permitted to enroll in a maximum of 12 semester hours of coursework on a pass-fail basis, provided such coursework is limited to one course in any semester, that it is limited to elective courses outside the College of Pharmacy, and that it is approved by the student's adviser. A student may lower his cumulative grade-point average by receiving an F in a course taken on a pass-fail basis, but cannot raise his average with a pass grade.

Registration and Reciprocal Registration. An applicant for licensure to practice pharmacy in Iowa must present evidence of graduation from an accredited college of pharmacy, and must have completed one year of practical experience, as specified by Iowa law, before receiving his registration certificate. Registration in Iowa permits reciprocal registration in nearly all other states.

Placement. Members of the College of Pharmacy faculty endeavor in every way to assist graduates of the College in securing good positions. Because the demand for well-qualified pharmacists is usually greater than the supply, this effort is successful for virtually all graduates.

GRADUATE PROGRAMS

Master of Science and Doctor of Philosophy degree programs are available in administrative pharmacy, hospital pharmacy, physical pharmacy, medicinal chemistry, pharmacognosy, and industrial pharmacy. A specific brochure on these programs may be obtained from the Dean of the College of Pharmacy. Prospective graduate students in pharmacy should refer to the Graduate
FACILITIES AND SPECIAL RESOURCES

The College of Pharmacy Building is centrally located on the University’s main campus, in close proximity to the College of Medicine, University Hospitals, and other units of the Health Center. Of direct interest to pharmacy students in the current $70 million Health Center expansion program are a Basic Science Building and a Health Sciences Library, both scheduled for 1971 completion.

Completed in 1963, the Pharmacy Building is a five-story structure especially designed to provide the most advanced facilities for a comprehensive program of pharmacy education. In addition to classrooms, an auditorium, and the pharmacy library, the building houses well-equipped separate laboratories and a greenhouse for instruction at the undergraduate and graduate levels in the various areas of specialization.

The Pharmacy Library comprises approximately 6,500 volumes, including not only comprehensive selections of books and periodicals on pharmacy, but an extensive collection of books and periodicals in the basic sciences and in the medical sciences. Additionally, the unusually complete and comprehensive holdings of the medical and chemistry-botany libraries are available to undergraduates and graduate students in pharmacy.

The Division of Pharmaceutical Services is maintained for the purpose of buying, manufacturing, and distributing all drugs, medicines, and special products to the Hospital Pharmacy and the various colleges and departments of the University.

The Industrial Pharmacy Laboratory 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. Senior students are given practical experience in dispensing under the supervision of Hospital Pharmacy staff members, all of whom are registered pharmacists. Approximately one-quarter-million ward orders are filled annually, which affords a diversified experience of great value to the graduate.

The Iowa Veteran Druggists’ Museum was established at Iowa in 1951, when the Iowa College of Pharmacy voted to make the College of Pharmacy the repository of historical material relating to pharmacy.

RESEARCH

The research activities of the faculty contribute to good teaching at both the undergraduate and graduate levels. They have led to the development of new drugs, improved dosage forms, advances in cancer chemotherapy, and have contributed to new College of Pharmacy educational programs, such as the clinical pharmacy program and the Drug Information Service.

EXPENSES AND FINANCIAL AID

For information about expenses, see the Admissions and Housing sections of this Catalog. For information about financial aid available to University students generally, and to College of Pharmacy students only, see the Scholarships and Loans section of the Catalog, or consult the Office of Student Financial Affairs, Old Dental Building.

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.

Total: 28 to 32 semester hours in prepharmacy coursework.

Rhetoric: Satisfactory of the College of Liberal Arts requirement.

Inorganic chemistry and qualitative analysis: 8 semester hours.

College algebra and trigonometry: 6 to 8 semester hours.

Physics: 8 semester hours or principles of animal biology: 5 semester hours. Students from other institutions may substitute comparable coursework in biology or zoology.

Students who present minor deficiencies in meeting the above requirements may be admitted to the College of Pharmacy upon recommendation of the Director of Admissions and the College of Pharmacy.

To be considered for admission to the College of Pharmacy, the applicant must have earned at least a 2.0 (C) cumulative grade-point average on all college coursework attempted.
COURSE DESCRIPTIONS

Each course is designated by a code or department number, a course number, and a title. For Pharmacy, 46 is the code number. Following the colon is the course for which a student must have completed the prerequisite and the fall term in which the course may be offered. Courses numbers from 46.101 to 46.119 are open to all students. Courses numbered 46.120 and above may not be substituted for transfers from non-accredited institutions. The courses must be completed within six years of the date of initial registration in College of Pharmacy. The courses are offered on a selective basis and are subject to change without notice.

The Professional Curriculum

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STAFF

Dean: Louis C. Zepf

Dean Emeritus: Rudolph A. Koons

Professors: Seymour M. Riehl, Joseph G. Cashin, David P. Craig, John L. Lach, Louis C. Zepf

Assistant Professors: Harold J. Black, Henry P. Kostick, Mary K. Kostick, Mary P. Kostick, John P. Kostick, Robert V. Smith

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Associate Director, Pharmaceutical Services: Duane E. Kass

Coordinator, Hospital Pharmacy Services: Wendie L. Kerr

Coordinator, Hospital Pharmacy Education Services: Wendie L. Kerr

Director, Hospital Pharmacy Services: Harold J. Black


Lecturer: Thomas W. Blakeney


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Lecturer: Thomas W. Blakeney

12:151 Human Physiology 
Elecive 
Total semester hours 
Second Semester 
46:132 Pharmaceutical Chemistry: Organic 
46:356 Pharmacognosy 
71:101 Pharmacology 
Elecive 
Total semester hours 
Fourth Year: First Semester 
46:41 Pharmacognosy 
46:43 Pharmacy: Professional Practice 
46:45 Pharmacy: Administrative 
46:139 Clinical Pharmacy: Case Study and Laboratory 
71:103 Pharmacology and Toxicology 
Total semester hours 
Second Semester 
46:40 Industrial Field Trip 
46:42 Pharmacy: Agricultural 
46:44 Pharmacy: Professional Practice 
46:46 Pharmacy: Administrative 
46:52 Pharmacy: Senior Seminar 
46:110 Clinical Pharmacy: Case Study and Laboratory 
91:150 Law in a Technological Society 
Elecive 
Total semester hours 
Professional Electives 
46:101 Pharmacy: Projects 
1 to 3 
46:104 Pharmacy: Biopharmaceutics 
2 
46:106 Industrial Pharmacy 
3 
46:107 Hospital Pharmacy 
3 
46:108 Hospital Pharmacy 
3 
46:135 Pharmaceutical Chemistry: Drug Analysis 
Pharmacy Undergraduate Courses 
46:13 Pharmacy: Calculations 
3 a.h. 
Systems of weights and measures used in the United States and their relationships. Calculations involve algebra, logarithms, trigonometry, and trigonometric functions. 
46:14 Pharmacy: Orientation 
3 a.h. 
Ethics, organization, and development of the science and profession of pharmacy. 
46:23 Pharmacy: Solids 
3 a.h. 
Particle size measurement, characteristics of small particles, properties of solids: the formulation, preparation, and evaluation of solid dosage forms. Prerequisites, 46:13, Chemistry 4129, Physics 261. 
46:38 Pharmacy: Solutions 
4 a.h. 
Properties and mechanisms of solution, extraction, colorimetry and analysis, buffer systems, and preparations of pharmaceutical solutions. Prerequisites, 46:23, Physics 262. 
46:33 Pharmacy: Polyphasic and Plastic Systems 3 a.h. 
Application of physical and chemical laws to the formation and preparation of polyphasic and plastic dosage forms. Prerequisites, 46:38. 
46:42 Pharmacy: Agricultural 
2 a.h. 
A two-hour lecture course acquaints the student with the therapeutic agents used in the prevention and treatment of animal diseases. Bacteriotics, fungitics, rodenticides, and herbicides for farm and home use. Prerequisites, 46:13, physiology, and pharmacology. 
46:43 Pharmacy: Professional Practice 3 a.h. 
For senior students. Two lecture and three laboratory hours per week. Development of the prescription; stocks and their control; preparation of dosage forms and drug dispensing. Fundamental techniques of compounding, packaging, and pricing. Prerequisites, 46:38, 46:132. 
46:44 Pharmacy: Professional Practice 
3 a.h. 
Continuation of 46:43. Two lecture hours, three laboratory hours. Emphasis on prescriptions requiring special compounding techniques, such as ophthalmic, nasal, and otic solutions, and aerosols. Discussion of drug stability, preservation of solutions, and diagnostic aids. 
Graduate Courses 
46:101 Pharmacy: Projects 
1 to 3 a.h. 
Basic and applied research problems of pharmaceutical significance. One conference and one or two laboratory periods weekly. Prerequisite, senior or graduate standing. 
46:108 Pharmacy: Physical 
2 a.h. 
Two lecture hours a week covering theology and microbiology in dispensary systems. 
46:109 Pharmacy: Physical 
2 a.h. 
Two lecture hours and one illustrated-demonstration hour a week. Surface and interfacial phenomena, adsorption, and stabilization in pharmaceutical systems. 
46:104 Pharmacy: Biopharmaceutics 
2 a.h. 
Mechanism of drug absorption and the interrelationships between the properties of pharmaceuticals, their dosage forms, and their pharmacodynamic effects. Prerequisite, 46:38, is understood by the element of inorganic and organic graduate stu-dent. 
46:203 Pharmacy: Physical 
2 a.h. 
Application of physical principles involved in separation by liquid-liquid extraction and problems involved in preservation and stabilization of pharmaceuticals. 
46:206 Pharmacy: Stability of Pharmaceuticals 
3 a.h. 
46:321 Pharmacy: Quality Control 
1 a.h. 
Lecture and laboratory. Instrumental analysis as applied to pharmaceutical quality control. Theory and applications of spectrophotometer, Karl Fischer titrator, nephelometer, and potentiometric titrators, chromatography, etc. 
46:329 Pharmacy: Advanced Biopharmaceutics 
2 a.h. 
The effect of physical-chemical properties and pharma-tochemical manipulations on drug availability are considered with emphasis on the rate of release from various dosage forms and formulations. Prerequisites, Mathematics 2324/7, Chemistry 4132. 
46:321 Pharmacy: Seminar 
0 or 1 a.h. 
Assigned readings and reports on the latest advances in pharmaceutical research of pharmaceutical sciences. Required of all students doing advanced work. May be repeated. 

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46:233 Pharmacy: Seminar 0 or 1 s.h.
46:233 Pharmacy: Research cr.arr.
46:234 Pharmacy: Research cr.arr.
46:235 Pharmacy: Aerosols 3 s.h.
Lecture and laboratory covering the theories and techniques involved in the preparation and packaging of aerosolized, self-propelling products.

Pharmaceutical Chemistry

Undergraduate Courses

46:16 Pharmaceutical Chemistry: Inorganic 3 s.h.
Lectures on physical, chemical, and medicinal properties, methods of production, modes of administration, applications, and use of the official and more important medicinal inorganic chemicals employed in pharmacy as medicine and for other purposes. Prerequisite or corequisite, Chemistry 421.

46:131 Pharmaceutical Chemistry: Organic 3 s.h.
Organic medicinal agents, many of which have evolved from the chemical structures of natural products. Comparative biological activity and toxicity, degradation mechanisms, functional group chemistry, chemical modification, and synthesis of these agents. Compounds classified according to therapeutic use. Prerequisite, Chemistry 421.

46:132 Pharmaceutical Chemistry: Organic 3 s.h.
Continuation of 46:131.

46:135 Pharmaceutical Chemistry: Drug Analysis 3 s.h.
Theory and applications of modern instrumental procedures for the assay of medicinal agents. Specific emphasis on chemical, physical, chemical, and instrumental techniques. Two lectures and one laboratory. Prerequisite, consent of instructor.

Graduate Courses

46:205 Medicinal Chemistry: Conformational Analysis 2 s.h.
Basic concepts of conformational analysis. Recent selected literature references on the subject. The application of this science to the design and synthesis of biologically active molecules. Prerequisite, Chemistry 422.

46:207 Medicinal Chemistry: Spectrometric Interpretation 1 s.h.
Interpretation of ultraviolet, infrared, nuclear magnetic resonance, and mass spectroscopic data. Discussion of the correlation of combined data and synthesis to medicinal chemical research.

46:208 Medicinal Chemistry: Vitamins 2 s.h.
Isolation, structure elucidation, metabolic role, biochemistry, and synthesis of vitamins and coenzymes. Emphasis is placed on those aspects relating to medicinal chemistry. Prerequisite, consent of instructor.

46:210 Medicinal Chemistry: Chromatographic Methods 2 s.h.
Theory and applications of adsorption, gel filtration, electrophoretic, ion exchange, and partition chromatography. Pertinent emphasis on the applicability of column, paper, and thin layer techniques to medicinal chemical problems. Newer methods from current literature are also discussed. Prerequisite, consent of instructor.

46:211 Medicinal Chemistry: Heterocyclics 3 s.h.
Discussion, primarily from the current literature, of selected heterocyclic ring systems of medicinal importance. Special references to synthesis, mechanism, and stereochemistry as they relate to biological effects. Prerequisite, 46:209, Chemistry 422.

46:215 Medicinal Chemistry: Selection Topics 3 s.h.
Discussion from current literature, of applications of modern theoretical organic chemistry to the study and understanding of biological phenomena. Chemical and biochemical aspects of the autoactivity and autacogens and of chemical agents influencing it. Prerequisite, 46:132, Pharmacology 410, or consent of instructor.

46:211 Medicinal Chemistry: Research cr.arr.

46:218 Medicinal Chemistry: Research cr.arr.

46:227 Medicinal Chemistry: Seminar 0 or 1 s.h.
Assignments and reports in case of recent advances in research in medicinal chemistry. Required of all students doing graduate work in medicinal chemistry. May be repeated.

46:228 Medicinal Chemistry: Seminar 0 or 1 s.h.
Pharmacognosy

Undergraduate Courses

46:36 Pharmacognosy 4 s.h.
Lectures and laboratory on the chemistry and biochemistry of medicinally important natural products from plants, animals, and microorganisms. Prerequisites, Chemistry 421B, Biochemistry 451.

46:41 Pharmacognosy 4 s.h.
Continuation of 46:36.

Graduate Courses

46:319 Pharmacognosy: Methods 3 s.h.
The occurrence, distribution, and isolation of primary and secondary natural products, and techniques of handling and storing biological materials are discussed. Emphasis is placed on methods of isolation including biological and physicochemical screening, HPLC, manipulation, distillation, crystallization, and chromatography. Methods for the isolation of specific groups of substances such as alkaloids, glycosides, aglycones, and terpenes are covered. Lecture and laboratory. Prerequisite, consent of instructor.

46:320 Pharmacognosy: Antibiotics 2 s.h.
The most commonly employed antibiotics are discussed. Topics covered include history, production, methods of isolation and purification, physical and chemical properties, mechanism of action, resistance, usage. Prerequisite, consent of instructor.

46:322 Pharmacognosy: Biogenesis of Natural Products 3 s.h.
Discussion of the basic biogenetic pathways involved in the formation of alkaloids, steroids, glycosides, saponins, and aromatic compounds, and aspects of their degradation in living systems. General methods employed in studying biosynthetic processes are also discussed. Emphasis is placed on chemical derivations will be considered. Some review of the more recent topics in the biogenesis of steroids, and chemical systems and their biodynamics. Emphasis on regulatory mechanisms and the physiological role of secondary plant products will be covered. Prerequisite, consent of instructor.

46:323 Pharmacognosy: Special Topics 1 s.h.
Discussion of research reports of recent advances in the field of natural products. Prerequisite, consent of instructor.

46:324 Pharmacognosy: Research cr.arr.

46:341 Pharmacognosy: Advanced 2 s.h.
Dissertation of topics pertinent to natural products obtained in the medicinal plants course. The topics for the dissertation include such topics as microscopy, drugplant interactions, chemotaxonomy, pharmacognosy education, recent literature, and selected laboratory experiments. Prerequisite, consent of instructor.
Course: Pharmaceutical Administration
Undergraduate Courses

46:45 Pharmacy: Administration 3 a.h.
Consideration of the social and economic factors affecting the pharmaceutical environment. Specific application of principles of finance, management, marketing, economics, and management in the practice of pharmacy are discussed. Prerequisites: Accounting 64 A/B, Economics 68 E.

46:46 Pharmacy: Administration 3 a.h.
Continuation of 46:45.

46:52 Pharmacy: Senior Seminar 1 a.h.
Current problems relevant to the practice of pharmacy. Prerequisites, senior standing.

Graduate Courses

46:151 Pharmacy Administration: Drug Development and Marketing 3 a.h.
Problems inherent in developing a new pharmaceutical product are discussed. Lectures are focused on new product generation from the source of the idea through the placement of the product on the market. Coordination between research and management is emphasized. Prerequisites, consent of instructor.

The economic and marketing environment of the pharmaceutical industry is analyzed. Concentration ratios, elasticity of demand, risk, and prescriber motivation and other factors influencing pharmaceutical economics and marketing will be discussed. Frequently references will be made to the governmental investigations of the industry. Prerequisites, consent of instructor.

46:251 Pharmacy Administration: Research 4 a.r.

46:252 Pharmacy Administration: Research 4 a.r.

46:253 Pharmacy Administration: Research Methods 3 a.h.
Scientific approaches to the solution of problems in pharmacy administration are discussed. The research problem, the design, and the relation between the two are emphasized. Prerequisites, Statistics 225,63 or equivalent; corequisites, Education 77,342 or Economics 65,180.

46:254 Pharmacy Administration: Health Economics 3 a.h.
Analysis of supply and demand of health resources and the influence of third party payment on medical care utilization are discussed. Cost accounting, analysis of health programs and manpower considerations in the health sciences are emphasized. Pharmacy is considered in its relationship to the health care system.

Industrial Pharmacy

46:40 Industrial Field Trip no cr.
One three-day trip annually to pharmaceutical plants to study industrial methods of production, quality control, and marketing. Prerequisites, senior standing.

46:106 Industrial Pharmacy 3 a.h.
Lectures, principles and processes of pharmaceutical manufacture. Laboratory: processing on a pilot-plant scale. Open to undergraduates for elective credit. Prerequisites, 46:23.

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Course: Pharmaceutical Administration
Graduate Courses

46:105 Industrial Pharmacy: Survey 3 a.h.
Organization, challenge, and unit operations in the production of pharmaceuticals. Prerequisites, 46:31.

46:223 Industrial Pharmacy 2 to 4 a.h.
Experimental laboratory work, library reading, lectures, and conferences. Problems include development of pharmaceutical preparations on an industrial scale. A comprehensive paper on the results of the work. One lecture, three to nine library and laboratory hours per week.

46:234 Industrial Pharmacy 2 to 6 a.h.
Continuation of 46:223.

Application of physicochemical and physiological principles to the formulation and design of pharmaceutical dosage forms. Two lectures and one laboratory a week.

46:236 Industrial Pharmacy: Research 4 a.r.

46:238 Industrial Pharmacy: Research 4 a.r.

Clinical Pharmacy—Hospital Pharmacy
Undergraduate Courses

46:26 Pharmacy: Institutional Practice 2 a.h.
Lectures devoted to the roles of the pharmacist in the institutional setting (small hospital, extended-care facility, and nursing home) primarily from the viewpoint of the community practitioner. Subject matter includes standards of practice, institutional organization, laws and regulations, federal and state health programs, drug distribution and control, pharmacy and therapeutics committees, pharmacy record keeping, drug information services, and educational programs. Prerequisites, 22 standing.

46:109 Clinical Pharmacy: Case Study and Laboratory 2 a.h.
Introduction to pharmaceutical aspects of patient care; use patient-care process, reference sources, terminology, use of clinical literature, and the functions of the pharmacist in the clinical setting. Clinical conferences and supervised practice in the decentralized pharmacy and the inpatient setting. Prerequisites or corequisites, 46:108, Pharmacology 77,390.

46:110 Clinical Pharmacy: Case Study and Laboratory 2 a.h.
Continuation of 46:109.

46:111 Clinical Pharmacy: Laboratory 2 a.h.
Application of basic sciences to pharmacy practice through clinical conferences and supervised practice in the decentralized pharmacy and the inpatient setting. Laboratory conferences by arrangement. Prerequisites, 46:109.

46:112 Clinical Pharmacy: Laboratory 2 a.h.
Continuation of 46:111.

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Course: Pharmaceutical Administration
Graduate Courses

46:107 Hospital Pharmacy 3 a.h.
History, operation in hospital operational procedures, interdepartmental relations, departmental records, purchasing and inventory control, and therapeutic agent classification. Application of pharmaceutical principles as they impact in a hospital pharmacy setting.

46:108 Hospital Pharmacy 3 a.h.
Continuation of 46:107. Emphasis on pharmacy as a service.

335
46:113 Hospital Pharmacy: Special Topics 2 s.h.
One lecture hour; emphasis on information relevant to the practice of hospital pharmacy.

46:204 Hospital Pharmacy: Parenterals 2 s.h.
Two lecture hours; theory and application of principles relative to parenteral preparation and therapy.

46:243 Hospital Pharmacy: Research cr.arr.

46:244 Hospital Pharmacy: Research cr.arr.

46:245 Hospital Pharmacy: Seminar 0 or 1 s.h.
Assigned lectures and reports on recent advances in the pharmaceutical sciences. Required of all students doing graduate work in hospital pharmacy. May be repeated.

46:246 Hospital Pharmacy: Seminar 0 or 1 s.h.

46:247 Hospital Pharmacy: Administrative Problems 3 s.h.
Application of basic organizational and administrative theory to practical problems in hospital pharmacy administration: materials and personnel management, budgeting and forecasting, systems and physical plant design. Prerequisites, 46:236, Microbiology 61:161 or equivalent.

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Required Courses from Other University Departments

4.11 Elementary Quantitative Analysis 3 s.h.
4.21 Organic Chemistry I 4 s.h.
4.12 Intermediate Organic Chemistry II 3 s.h.
4.141 Intermediate Chemistry Laboratory I 2 s.h.
6.1 Principles of Economics 4 s.h.
6.4 Principles of Accounting 4 s.h.
29.1 College Physics 3 s.h.
29.2 College Physics 3 s.h.
37.3 Principles of Animal Biology 3 s.h.
61.157 General Microbiology 4 s.h.
71.101 Pharmacology 4 s.h.
71.102 Pharmacology and Toxicology 3 s.h.
71.151 Mammalian Physiology 4 s.h.
91.150 Law in a Technological Society 2 s.h.
99:111 Biochemistry 5 s.h.
AFRO-AMERICAN STUDIES
Chairman of Program, Charles T. Davis
Office, 119 Old Capitol

Vigorous efforts are being made to develop a satisfactory curriculum and attract capable faculty to portray the experiences of the black people in America. This program is concerned 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 excision of prejudices and stereotypes. The curriculum is designed to place the black experience in its historical context. It recognizes the need for both black and white participation, and it will provide training in a field that has been ignored for too many years. The ultimate objective is to provide university students with an understanding of the black man's contribution to American civilization—past and present.

Afro-American Studies have been organized to further research and teaching in the area of black culture. The student wishing to specialize in Afro-American Studies will familiarize himself with the graduate coursework for such as examination field at the time of comprehensive examinations, and write an interdisciplinary dissertation on some aspect of Afro-American culture.

Current plans call for a four-stage development combining present courses with new courses. The curriculum is being developed in four phases for the purpose of enabling the students and faculty to systematically add and relate courses. Certain courses are considered essential to the curriculum; therefore, they have been designated core courses. They are courses: 45:15, 45:21, 45:119, 45:118, 45:239, 45:237, M115, M118, 112:126. The support courses have titles that are directly related to the core courses, and the total number of credits is 30. In addition, the optional courses are: 119:118, 112:119, 113:118, 115:116, 111:116, 68:136, Tru:333, 332:304, 33:61, 33:53, 45:137. The related courses are those that are temporally related to the core program and they are: 119:114, 122:102, 17:104, 17:150, Tru:305, 17:109, 66:226. The Committee on Afro-American Studies also sponsors the Afro-American Cultural Center.

American Studies Program in Professors Bonding (Edu-
cation), Elder (African-American), Evans (Urban Affairs),
Curry (Urban Studies), Lane (Education), Van Dyke (Political Science), American Civilization), Ehrlich (Sociology), Hoyt (Business Administration), Hunter (English), Rider (Education), American Studies Center (Anthropology), Dryf (Education), Weitsman (Geography), Bethel (Education), Greene (Edi-
tication).

COURSE DESCRIPTIONS
Courses primarily concerned with the American Experience

AFRO-AMERICAN STUDIES
45:15 The Black Revolution and Its Leadership 3 s.h.
45:11 The Contemporary Black Experience 3 s.h.

American Civilization

45:115 Afro-American Literature I 3 s.h.
45:116 Afro-American Literature II 3 s.h.
45:210 The Culture of Black America: An Interdisciplinary Approach 3 s.h.

Anthropology
112:114 Spanish Speaking Peoples of the United States 3 s.h.
113:118 Social Anthropology of the Caribbean 3 s.h.
112:119 Urban Anthropology 3 s.h.
113:120 Peoples of Africa 3 s.h.
113:124 Peoples and Cultures of North Africa and the Middle East 3 s.h.

Art
11H:108 Primitive Art: Africans 3 s.h.

Business Administration
63:150 Individual Rights in an Industrial Society 3 s.h.
63:205 Business and Society 2 s.h.
63:257 Employment Relations and Public Policy 3 s.h.

Economics
5E:137 Economics of Urban Problems 3 s.h.

Education
TF:104 Education in Newly Developed Countries 2 or 3 s.h.
TF:130 Educational Sociology 2 or 3 s.h.

TF:200 Seminar: Value Problems in the Administration of American Education 3 s.h.

7P:109 Social Development of the School Age Child 2 or 3 s.h.

337
INTEGRIDISCIPLINARY PROGRAMS — 7U:193 Teaching the Educationally
Disadvantaged 3 a.h.

Geography
44:161 Africa 3 a.h.

History
16:51 Survey of American History, 1602-1817 3 or 4 a.h.
16.52 Survey of American History, 1877 to Present 3 or 4 a.h.

Sociology
34:118 Race and Ethnic Relations 3 a.h.
34:178 African Social Structure and Change 3 a.h.

Urban and Regional Planning
102:102 Urban Politics 3 a.h.
102:204 Planning of Metropolitan Areas 4 a.h.

GENETICS
Chairman of Program, George E. Hossenlo, Jr., Office, 227 Zoology Building

The interdisciplinary program in genetics brings together teaching and research activities in genetics. The program is administered by the Genetics Curriculum Committee. This committee encourages and coordinates activities in genetics and emphasizes the unifying aspects of this approach to biology. It is especially appropriate because genetics cuts across traditional divisions in biology. The genetics program is centered in the Departments of Botany, Microbiology, and Zoology. More detailed descriptions of the courses in genetics may be found in the listings of these departments.

The University does not offer degrees in genetics. (A Ph.D. in genetics is being considered. Persons interested in this program should direct inquiries to the chairman of the genetics program.) Undergraduates wishing to prepare themselves for graduate work in genetics may do so by earning the B.A. degree in botany or zoology. In addition they should include a year of calculus in their program. A suitable program can also be developed under the major in general science. Students wishing to exercise this option should consult with one of the members of the genetics staff in order to plan an adequate program.

Genetics Curriculum Committee: Professors Wayne Carles, Erich Sie; George E. Hossenlo, Jr., chairman. The faculty members participating in the genetics program are: Professors: Hossenlo (Zoology), Millikan (Zoology), Mohler (Zoology). Associate Professor: Sib (Microbiology). Assistant Professors: Carles (Botany), Guim (Zoology), Hugman (Zoology), Walker (Microbiology).

COURSE DESCRIPTIONS

Botany

2102 Genetics 2 or 4 a.h.
Same as Zoology 21:109.

Microbiology

61:175 Topics in Microbial Genetics 3 a.h.
61:270 Molecular Mechanisms in Heredity 3 a.h.

Zoology

37:101 Principles of Human Genetics 3 a.h.
37:109 Genetics 3 a.h.
37:151 Fundamental Genetics 3 or 4 a.h.
37:121 Population Biology 4 a.h.
37:169 Advanced Genetics 4 a.h.
37:163 Population Genetics 3 a.h.
37:163 Behavioral Genetics 3 a.h.
37:165 Quantitative Genetics 3 a.h.
37:171 Molecular Genetics 3 or 4 a.h.
37:172 Topics in Molecular Genetics 2 a.h.
37:214 Drosophila Genetics Seminar 1 a.h.
37:260 Developmental Genetics 3 a.h.
37:262 Behavioral Genetics Seminar 2 a.h.

NUCLEAR SCIENCE AND TECHNOLOGY

A Program of Graduate Studies

Nuclear science and technology is an interdisciplinary program leading to the Master of Science degree. It is open 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 areas 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 radiotopes, and the use of irradiation devices.

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

The members of the committee are:

William E. Bennett Chemistry
Richard E. Carlson Physics
Tina C. Bevers Radiation Biology
Edwin N. Oberg Mathematics
J. Marie Tryon Mechanical Engineering
James O. Oslur Chemical Engineering

Chairman Admission. To enter the program, a student must have a B.S. degree in engineering, chemistry, physics, mathematics, or general science and must satisfy the admission requirements of the Graduate College. Write to the Director of Admissions, The University of Iowa, Iowa City, Iowa 52242, for an application form for admission and for information about admission requirements.

The following courses are prerequisites for the nuclear science and technology program and they must be taken before entering the program or during the program without credit toward the M.S. degree.
Program requirements. For a Master of Science degree in Nuclear Science and Technology, 36 semester hours are required with a thesis. A thesis committee must meet before a thesis is begun. The thesis project is intended to be flexible, while conforming as nearly as possible to the following list:

Nuclear Physics 6 s.h.
recommended: 25-131, 192
Nuclear Reactor Analysis and Design 4 s.h.
recommended: 25-203, 25-205
Nuclear Technology 6 s.h.
recommended: 25-140, 25-144
25-216
Chemistry 3 s.h.
recommended: 8-170
Mathematics chosen from: 6 s.h.
28-115, 116
28-117
28-118
28-119
28-120
25-131
Radiation Biology 2 s.h.
recommended: 27-208 (Lectures only) or 27-308 (3 s.h.)
Electives 9 or 11 s.h.
Advanced courses in chemistry, physics, mathematics, engineering, radiation biology, computers, and research.

Total: with thesis 38 s.h.
without thesis 30 s.h.

NEUROBIOLOGY
Chairman of Program, Friedrich P. J. Diecke
Office, 245 Medical Laboratory

The neurobiology program is an interdisciplinary and interdepartmental program, which is being developed by a faculty committee representing the participating departments and colleges. The goal of the program is to further interdisciplinary research and to promote interdisciplinary training of undergraduate and graduate students in all areas of neurobiology ranging from ultrastructure and biochemistry of excitable membranes to neural mechanisms of behavior. Faculty members from the Departments of Anatomy, Biochemistry, Pharmacology, Physiology and Biochemistry, Psychiatry, Psychology, Speech Pathology and Audiology, and Zoology participate in the program.

Faculty: Committee: F. P. J. Diecke, chairman; Kalder Cortesano, H. Bernhard Hartman, William W. Kashe, Lewis S. Van Orden.
The following faculty members participate in the interdisciplinary neurobiology program: Department: Anatomy (Psychology and Neurology): Diecke (Pharmacology and Biophysics); Gaj (Psychiatry and Biochemistry); Harvey (Psychology); Ingram (Anatomy); Kashe (Anatomy); Keet (Psychiatry); Kallor (Psychology); Mitchell (Pharmacology); Riske (Anatomy); Schott (Psychology and Biophysics); Small (Speech Pathology and Audiology and Psychology); Associate Professors: Bindle (Zoology); Fox (Psychology); Karlson (Anatomy and College of Dentistry); Rapoport (Psychopharmacological HOSPITAL); Rebell (Psychology); Thorsen (Physiology and Biochemistry); Assistant Professors: Daloli (Psychiatry); Hartman (Psychology); K lover (Zoology); Lackovic (Neurology, Physiology and Biophysics); McNeil (Child Behavior and Development); Millard (Psychiatry); Phillips (Psychology and Biochemistry); Vago Uden (Pharmacology); Wernick (Speech Pathology and Audiology); Westecher (Physiology and Biophysics); Vermet (Anatomy).

INTERDISCIPLINARY PROGRAMS

Course Descriptions

Interdepartmental Courses

00-10 Neurobiology and Behavior 5 s.h.
Entry to the course is based on knowledge and awareness in the nervous system. The course presents material from pharmacology, physiology, neurochemistry, psychology, and the medical sciences in an integrated fashion. The course is offered for both graduate and undergraduate students.

Anatomy 5 s.h.

Introduction to the elements, organization, and function of the central nervous system. Lectures and conferences, laboratory exercises, and demonstrations.

20-01 The Visual Nervous System cr.arr.
Anatomical system as to components, structural relationships, and functions, including central mechanisms. Primarily for medical graduates. Offered upon sufficient demand.

20-035 Review of Anatomical Neurology cr.arr.
Important elements of the central nervous system with emphasis on functional relationships. Offered only upon sufficient demand.

Biochemistry 3 s.h.


Pharmacology 7 s.h.

Introduction to Neurobiology cr.arr.
Essentials, mechanisms of detoxification and behavior, but arranged to meet the needs of graduate students in pharmacology, physiology, psychology, and medicine. The course presents material from anatomy, physiology, pharmacology, and the medical sciences in an integrated fashion. Graduate students in pharmacology and other doctoral students will participate in seminars in pharmacology, in which review articles important current research papers are discussed critically. Prerequisite, consent of instructor. First semester.

Physiology and Biophysics 7 s.h.

Neurobiology and Behavior cr.arr.
Same as 20-10 with additional seminars and reading assignments. Prerequisite, consent of instructor.

20-25 Advanced Neurophysiology (Muscle) 3 s.h.

Part of a two-year sequence. Open to graduates and postgraduate students. Examines electrical, mechanical, chemical, thermal, and thermal phenomena at the cellular level in contracting skeletal muscle. Prerequisites, adequate background in physical and biological sciences and consent of instructor. First semester, alternate years. Offered 1971-72.

20-278 Advanced Neurophysiology (Biophysics of Exocytotic Membranes) 3 s.h.

Part of a two-year sequence. Open to graduates and postgraduate students. Foundation for an understanding of the generation and transmission of excitation and information processing in the central nervous system. Prerequisites, adequate background in biological and physical sciences and consent of instructor. Second semester, alternate years. Offered 1971-72.
72:283 Advanced Neurophysiology (Sensory Physiology) 3 s.h.
Part of a two-semester sequence. Open to graduate and post-graduate students. A 2-credit seminar course designed to examine in depth the problems of transmission and information processing at various levels of sensory pathways. Prerequisites: neuroanatomy, biophysics of excitable membranes, and consent of instructor. First semester, alternate years. Offered 1972-73.

72:284 Advanced Neurophysiology (CNS, Control of Locomotion and Posture) 3 s.h.
Part of a two-semester sequence. Open to graduate and post-graduate students. Objectives include discussion of the motor control and central nervous systems governing posture and movement. Prerequisites: neuroanatomy and neurophysiology courses and consent of instructor. Second semester, alternate years. Offered 1972-73.

Psychology

31:125 Brain Function and Learning 3 s.h.
Survey of psychological physiology with emphasis on sensory and motor systems and integrative processes of the nervous system. Prerequisites: 31:254 or consent of instructor. Modesties through which information is obtained regarding the organism's external environment. Prerequisites: 31:257 or consent of instructor. Presented 1972-73.

31:257 Introduction to Physiological Psychology 3 s.h.
Major facts and principles. Prerequisites: 31:257 or consent of instructor. Presented 1972-73.

31:258 Neuroneurochemistry and Behavior 3 s.h.
Development of behavioral concepts as they relate to neurotransmitters and neuroendocrine aspects of stress, hunger, and sex. Prerequisites: 31:257 or consent of instructor. Presented 1972-73.

31:259 Neural Mechanisms and Learning 3 s.h.
Information processing in brain, electroencephalography, sensory and motor coding, integrative functions, sleep, waking, and attention. Emphasis on related to behavior. Prerequisites: 31:257 or consent of instructor. Presented 1972-73.

31:350 Biochemistry and Behavior 3 s.h.
Biochemistry of the central nervous system with special emphasis on chemical systems affecting brain function and sensory systems. Emphasis is on chemistry and behavior produced by drugs, lesions, and genetic abnormalities. Prerequisites: 31:257, Biochemistry 10:185, or consent of instructor. Presented 1972-73.

31:371 Psychopharmacology 3 s.h.
Same as Speech Pathology and Audiology 3:254.

31:372 Psychopharmacology Laboratory 2 s.h.
Same as Speech Pathology and Audiology 3:255.

31:390 Behavioral Pharmacology 3 s.h.
Behavioral analysis of drug action in experimental animals including man, with special emphasis on physiological and biochemical mechanisms. Prerequisites: 31:250 or consent of instructor. Presented 1972-73.

31:391 Seminar: Chemical Influences on Behavior 2 s.h.
Selected topics on the relations between brain chemistry and behavior. Prerequisites: consent of instructor. Presented 1972-73.

31:355 Seminar: Brain Mechanisms and Behavior 2 s.h.
Selected topics on nervous system control of behavior. Prerequisites: consent of instructor. Presented 1972-73.

31:356 Seminar: Physiological Psychology 2 s.h.
Selected topics on the anatomical and neuroendocrine bases of behavior. Prerequisites: consent of instructor. Presented 1972-73.

31:377 Seminar: Neurophysiology 2 s.h.
Affiliated courses and, different processes. Prerequisites: consent of instructor. Presented 1972-73.

31:342 Seminar: History of Neurophysiology 2 s.h.
Selective review of development of knowledge and concepts of brain-behavior relations from antiquity to the present day.

Speech Pathology and Audiology

3:254 Psychophysiology 3 s.h.
Lectures and discussions on advanced topics and current research in auditory sensation and perception. Same as Psychology 3:317. Prerequisite: 3:113 or consent of instructor. Second semester. Presented 1972-73.

3:255 Psychophysiology Laboratory 2 s.h.

3:256 Physiology of Hearing 4 s.h.
Application of physiological techniques primarily electro- physiological to basic research in hearing. Micromanometry of auditory system (ASH), both peripheral and central, dynamics of the cochlea, electrophysiological responses at various levels in the ASH, excitation studies. These lectures and two laboratory hours each week. Prerequisite: 3:254 or consent of instructor. First semester. Presented 1972-73.

Zoology

37:138 Comparative Physiology 4 s.h.
Comparative analysis of physiological mechanisms among invertebrates and vertebrates. Prerequisites: 37:107 and Chemistry 64 or Physics 204, or graduate standing and consent of instructor. Presented 1972-73.

37:141 Comparative Neurophysiology 5 s.h.
Properties of receptors, integrative processes, and effector mechanisms, characterized by both vertebrate and inverte- brate species. Prerequisites: Zoology 37:124 or consent of instructor. Presented 1972-73.

37:226 Hormones and Behavior 2 s.h.
Discussions, readings, and reports dealing with topics of regulation of behavior. Prerequisite: consent of instructor. Presented 1972-73.

37:290 Neuroendocrinology 2 s.h.
Lectures, discussions, and reports on development of nervous system and stress organs, development of behavior, nerve growth, and regeneration. Prerequisites: 37:108 and graduate standing or consent of instructor. Presented 1972-73.

37:241 Seminar: Neurophysiology 2 s.h.
Reviews of recent literature of selected topics. May be repeated.

ALLIED HEALTH SCIENCES

DENTAL HYGIENE

Chairman of Program, Pauline Brine Office, J2 Dentistry Building

Two programs in dental hygiene are offered at The University of Texas:

1. A baccalaureate program with a major in dental hygiene leading to the Bachelor of Science degree.
2. A graduate program with a major in dental hygiene education and administration leading to the Master of Science.

The baccalaureate program is designed to include pre-professional requirements. This aspect of the curriculum
INTERDISCIPLINARY PROGRAMS

2. A bachelor's degree from an accredited college or university with content equivalent to a comparable U of I degree.

3. A minimum grade-point average of 2.5 in all previous college work.

4. Graduate Record Examination Aptitude Test scores of satisfaction.

Consideration is given to each applicant's personal maturity and professional motivation.

Degree Requirements: The candidate for the master's program will organize a schedule of courses under the guidance of the graduate advisor in dental hygiene. The curriculum provides courses in general education, dental hygiene education and administration, and electives. Content in general education includes theories of learning, curriculum development, problems in college teaching, and construction and use of classroom tests. Statistics and research methodology provide the student with a basic approach to engage in scientific inquiry. Electives may include such courses as speech pathology, nutrition, psychology, sociology, guidance and counseling, technical writing, public relations, and communications. Or, if the student has the necessary prerequisites, electives may be selected from the graduate courses in other departments.

To complete the 36-semester-hour program, it is necessary to be enrolled in the Graduate College for two semesters and one summer session. Students in the Graduate College may register for no more than 15 semester hours of graduate credit each semester.

Course of Study for B.S. in Dental Hygiene

The student must complete 36 semester hours of professional requirements before qualifying for professional courses. Preprofessional education includes the following courses:

Basic Skills (Historic, Physical Education) 12 s.h.

Biological Science 4 s.h.

General Science 3 s.h.

Sociology 3 s.h.

Elementary Psychology 3 s.h.

Statistics 3 s.h.

Humanities 9 s.h.

Language 4 s.h.

Technical Writing 3 s.h.

*Mathematics 3 s.h.

Natural Science 12 s.h.

75 Principles of Animal Biology 4 s.h.

4.5 Introductory Organic Chemistry 4 s.h.

4.8 Introductory Organic Chemistry 4 s.h.

Two and one-half units of high school mathematics satisfy this requirement.

Professional Curriculum Requirements

Junior Year

First Semester

80 Fundamentals of Dental Hygiene 4 s.h.

80 Dental Anatomy 4 s.h.

80 Histology 4 s.h.

82 Human Anatomy 4 s.h.

82 Physiology 4 s.h.

Second Semester

80.7 Dental Technology 1 s.h.

80.8 Medical Microbiology 4 s.h.

80.9 Prophylactic Techniques 2 s.h.

80.10 Dental Radiography 2 s.h.

80.12 Nutrition 2 s.h.

Electives (approved by adviser) 3 s.h.

Total Credits: 34
Graduate Courses

88:201 Directed Teaching Experience cr.arr.
Readings and discussions relate theories of learning with the teaching of clinical skills. Content includes current research in utilization of instructional mental, development of motor coordination and manual skills, and observation and analysis of student teaching. Participation in clinical activities is arranged to meet the needs of the individual student.

Continuation of 88:201 with emphasis on clinical supervisory and administrative experiences.

88:203 Practicum I cr.arr.
Historical development and changing concepts of dental and dental hygiene education. Readings on administrative, developmental and human relations in dental education relate administrative theories to functional operations.

88:204 Practicum II cr.arr.
Curricular design applied to the organization, development, and evaluation of curricula in dental hygiene education.

88:205 Research: Dental Hygiene cr.arr.
Application of research methodology through the development of an original research project.

88:206 Directed Teaching of Prophylaxis Technic cr.arr.
Preparation, application, and evaluation in teaching clinical dental hygiene science and technique.

MEDICAL TECHNOLOGY

Director, University Hospitals, Earl F. Rose Building
Director, Veterans Administration Hospital, Kenneth R. Cross

Office, Veterans Administration Hospital
The program in medical technology at The University of Iowa is accredited by the Council on Medical Education of the American Medical Association and the Board of Registry of Medical Technologists of the American Society of Clinical Pathologists. Fulfillment of requirements is based on successful completion of courses and a minimum of twelve months of professional clinical experience, available in Iowa City at the University Hospitals or Veterans Administration Hospital. Upon completion of this four year program, students will be eligible to receive the Bachelor of Science degree with a major in general science and medical technology and also by eligibility for national certification as a medical technologist.

Pre-professional Curriculum Requirements
Complete the following requirements are necessary for admission to the professional program.
1. Completion of the College of Liberal Arts requirements in rhetoric, literature, social sciences, historical-cultural core, foreign language, and physical education.
2. At least 40 semester hours in science, which must include:
   - 16 semester hours in chemistry including courses in general, biologic, and organic chemistry.
   - 16 semester hours in biological sciences including courses in general zoology, microbiology, and parasitology.
   - 2 to 4 semester hours in mathematics including a course in statistics.

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INTERDISCIPLINARY PROGRAMS

***Recommended Science Electives:***

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Pre-23 Introduction to Medical Technology</td>
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<tr>
<td>1221 Introduction to Human Physiology</td>
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<tr>
<td>37111 Microscopic Anatomy</td>
</tr>
<tr>
<td>37112 Principles of Human Genetics</td>
</tr>
<tr>
<td>3911 Physical Education</td>
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<tr>
<td>4211 Elementary Human Anatomy</td>
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</tbody>
</table>

Professional Program

The professional curriculum consists of lectures, seminars, and practical application of scientific knowledge to laboratory tests in the following clinical laboratory areas:

- Hematology: The study of blood and pathology of blood forming tissues. Includes enumeration, identification and evaluation of blood cells, coagulation factors, and routine urinalysis.
- Immunohematology: Principles and techniques of blood grouping, compatibility testing, antibody identification and compency training.
- Clinical microbiology: Identification of pathogenic microorganisms by applying the principles of bacteriology, mycology, virology, parasitology, and parasitology.

Clinical Biochemistry: Theory and practice of routine methods of chemical analysis, preparation of reagents, instrumentation, automation, and special procedures in determining chemical constituents.

STAFF

<table>
<thead>
<tr>
<th>University Hospitals</th>
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<tbody>
<tr>
<td>Associate Professor: Karl F. Ross</td>
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<tr>
<td>Assistant Professor: Donald P. Nicholson</td>
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<tr>
<td>Veterans Administration Hospital</td>
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<tr>
<td>Associate Professor: Kenneth V. Cross</td>
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<tr>
<td>Assistant Professor: D. M. Azad</td>
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<tr>
<td>Instrument: Karl M. Berglund, Gladys J. Dowary</td>
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</table>

NUCLEAR MEDICAL TECHNOLOGY

Program Coordinator, R. E. Peterson
Office, C139 General Hospital
Student Advisor, Glenn A. Lessard
Office, C139 General Hospital

Nuclear medicine is the science and clinical discipline concerned with the diagnosis application of radionuclides in tracer amounts and the therapeutic use of radionuclides. As a highly sophisticated diagnostic tool to the medical profession, nuclear medicine has advanced from a laboratory to a high level of development in the last two decades. The role and significance of the nuclear medical technologist are greatly increased as allied medical specialties come to rely upon nuclear medicine and its trained technologist.

Program Objectives

The preprofessional and clinical education of a nuclear medical technologist emphasizes a well-rounded curriculum. Upon satisfactory completion of the preclinical and clinical program of study, each student is eligible to take the American Society of Clinical Pathologists' national registry examination in the specialty of nuclear medical technology. After the candidate completes this examination, thereby becoming a registered nuclear medical technologist, he or she may apply for certification in Nuclear Medicine at the University of Iowa School of Medicine or in the Basic Science degree in general science (see General Sciences).

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INTERDISCIPLINARY PROGRAMS

Educational Program
All students in the College of Liberal Arts who designate nuclear medical technology as their major are assigned to nuclear medical technology advisories for guidance in the completion of the preclinical courses of study.

Preclinical Program. The required courses in this year emphasize 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 the science core courses, the preclinical studies must also 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 summarization of the prerequisites for acceptance into the nuclear medical technology program:

1. Proficiency in rhetoric, physical education, and foreign language.
2. Satisfaction of core requirements in the literature, social science, and cultural-historical areas.
3. Completion of the minimum 36 semester hour requirements with two exceptions:
   a. A combination of 10-15 semester hours in physics, chemistry, or zoology, respectively.
   b. A combination of 20-25 semester hours in physics, chemistry, or zoology, respectively.
4. A minimum of 4 semester hours in mathematics. Note: A minimum of 36 semester hours must be completed prior to entrance into the eleventh-month clinical year with a 2.5 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, operating instrumentation, radiochemistry, radiopharmaceuticals, basic pedagogical techniques, electromyography, cinematography, sound localization, health physics, principles of nursing care techniques, photographic chemistry, and darkroom techniques, principles of clinical administration, doctors' conference, and case critique, computer methods of medicine, clinical chemistry, kinetic studies, and medical ethics.

Rotations are established in the following areas within the departments of nuclear medicine at both medical facilities and include, in addition to the basic clinical and pharmaceutical laboratory, tracer techniques and researches, special areas, and census scanning, and in were kinetic studies.

Clinical laboratory, inclusion of hospital functions and facilities are provided by brief rotations in radiation biology, radiation protection, and several clinical laboratory facilities.

Recommended Courses of Preclinical Study

Preclinical Year

Freshman Year

Semester Hours

Rhetoric 8
Mathematics (22M1 or advanced courses) 4
Physical Education 4
Geography (41 or 43) 4
Historical-Cultural Core 8
General Chemistry and Qualitative Analysis (4/4) 4
Elective 2

Total 34

Sophomore Year

Semester Hours

Literature 8
Principles of Animal Biology (292) 5
Principles of Physical Science (291 and 292) 8
College Physics (391 and 292) 8
Organic Chemistry (4/4) 8

Total 51 to 53

Junior Year

Semester Hours

Social Science Core 8
Introduction to Human Physiology (270) 4
Elementary Human Anatomy (400) 4
Electives 16

Total 52

Senior Year

First and second semester of the 12-month training program 30

Suggested Science Electives

Elementary Quantitative Analysis (411)
Biochemistry (90/161)
General Microbiology (111/112)
General X-ray Radiation Biology (77/203)

Admission

Prospective students in nuclear medical technology are encouraged to apply for study and to provide a transcript of previous work as early as possible in the preclinical year, since the class size is limited to six students. The twelve-month training program starts in September of each year. For application information and forms, write to the Director of Admissions, 1 Jessep Hall, Iowa City 3234. For further information, refer to the College of Liberal Arts in the catalog and to the booklet, Information for Prospective Students.

STAFF

Professor: R. L. Peterson
Associate Professor: R. H. Cheung
Assistant Professor: T. K. Chandhuri
Instructor: G. A. Jarolimek
Clinical Instructor: J. Hooper, R. Mueller, Wm. Twilley, Eugene V. Weiser

PHYSICAL THERAPY

Professional Program

Director, Terry B. Jones
Office, E2 Children's Hospital
Master of Arts Degree Program
Director, Gary L. Simid
Office, W5 Children's Hospital

The physical therapy curriculum is accredited by the Council on Medical Education of the American Medical Association and the American Physical Therapy Association.

Professional Program in Physical Therapy

The professional program builds on the student's undergraduate education in order to provide a broad base in pursuit of the goals of a professional education. Satisfactory completion of the professional curriculum qualifies the candidate for the Professional Examination Service (P.E.S.) test to qualify for licensure in Iowa and most other states.

The educational program in physical therapy offers a two-year professional curriculum leading to certification in physical therapy. Each new class begins in the month of September. Students may enter the curriculum upon completion of the junior year of college work. The student must receive a bachelor's degree in his undergraduate major upon completion of the first year of the professional program. Students having received their bachelor's degree prior to application must meet this requirement. The degree may be awarded from a college different from the College of Liberal Arts of the University of Iowa, depending on requirements of the schools involved.

Classroom and laboratory instruction is presented in a manner intended to develop a sound basic knowledge of human anatomy, physiology, psychology, cytology, pathology, surgery, medicine, and psychological aspects of human
INTERDISCIPLINARY PROGRAMS

78:211 Problems in College Teaching 3
69:233 Principles of Organization and Personal Management 3
6A:116 Accounting 3
6A:139 Budgeting 3
81:133 Psychology of Learning 3

COMBINED PROGRAMS

Professor Retiring: W. D. Paul.
Assistant Professor Emeritus: Olive C. Fraw.
Assistant Professor Emeritus: Terry H. Jones, Leo J. Morrissy.
Clinical Assistant Professor: David Paul.
Instructor: Roger C. Skovly.
Lecturer: George Pugz.
Medical Adviser for Professional Program: Morvlp F. Streitmann.
Medical Adviser for Master's Degree Program: Richard C. Watson.

Clinical Supervisors: J. Armstrong (Rehabilitation Com-
mittee, Mason City, Iowa), E. Bedford (Waterloo Medical Surgical Group, Waterloo, Iowa), J. Blank (Glenwood State School, Glenwood, Iowa), P. Christopher (Water- lso Physical Therapy Clinic, Waterloo, Iowa), R. Cusman (Burlington Memorial Hospital, Burlington, Iowa), R. Davidsen (Merry Medical Center, Dubuque, Iowa), B. Dunvick (University of Nebraska-Douglas County Reha-
bilitation Center, Omaha, Nebraska), W. Jahnke (VA Hospital, Iowa City, Iowa), D. Knolling (University Hos-
pital, Iowa City, Iowa), R. LaRue (Western Illinois Uni-
versity Health Services, Macomb, Illinois), B. Meadows (Rockford Memorial Hospital, Rockford, Illinois), L. Men-
del (Frederick Memorial Hospital, Frederick, Illinois), R. Miller (Institute of Physical Medicine and Rehabilitation, Peoria, Illinois), W. Mohlen (Mercy Hospital, Iowa City, Iowa), F. Peetman (VA Hospital, Iowa City, Iowa), F. Peetman (Waterloo Physical Therapy Clinic, Waterloo, Iowa), D. Prather (St. Joseph's Hospital, Iowa City, Iowa), G. Sgou (Frederick Memorial Hospital, Fre-
derick, Illinois), T. Wheatley (Shift Memorial Hospital, Newton, Iowa).

COURSE DESCRIPTIONS

To be taken only by those in the professional program

First Year

First Semester

60:109 Human Anatomy 4 a.h.
63:160 Bacteriology 2 a.h.
72:133 Introduction to Human Physiology 4 a.h.
Students registering for this course are not required to register for 72:151.
72:151 Mammalian Physiology 6 a.h.
Students registering for this course are not required to register for 72:152.

101:101 Medicine I 2 a.h.
Introduction to medicine, and lectures concerning medical history, and medicine's relationship with allied health fields. Special emphasis placed on pathogenic conditions of various diseases treated by health specialties.
101:141 Professional Orientation and Ethics cr. a.t.
Lecture, panel discussion, and demonstrations. Field of physical therapy, allied health professions, professional ethics, and responsibility of the individual and the profession to society.

Second Semester

60:110 Human Anatomy and Neuroanatomy 4 a.h.
73:101 Psychology for Related Professions 2 a.h.

101:110 Therapeutic Exercise I 4 a.h.
Principles and techniques of therapeutic exercises related to the prevention, correction, and alleviation of disease and injury. This semester includes posture, posture evalua-
tion, and exercises.
101:115 Kinesiology 3 a.h.
Lectures and laboratory demonstrations relating to the study and application of biomechanical principles to nor-
mal functional anatomy of the human body.
101:131 Therapeutic Physical Agents cr. a.t.
Massage: First 7 1/2 weeks. The theory, physiological ef-
effects, and techniques of scientific massage as it is used in all aspects of physical therapy are discussed and ap-
plied.
Hydrotherapy: Second 7 1/2 weeks. Physics of water is ratiociated. The techniques, of whirlpool, hot and cold ap-
lications, and underwater exercises in relation to various physical disabilities are practiced and discussed.

Second Year

First Semester

64:112 Principles of Neurology 2 a.h.
75:150 Principles of Surgery cr. a.t.
101:102 Medicine II 2 a.h.
Lectures, demonstrations, and case presentations of med-
cal disorders from the standpoint of etiology, clinical signs and symptoms, treatment and prognosis. Prerequi-
site: 101:111.
101:106 Clinical Sciences 3 a.h.
Physical therapy principles and procedures in relation to specific medical, surgical, and orthopedic conditions. The significance of diagnostic tests and measurements for physical therapy procedures.
101:111 Therapeutic Exercise II 4 a.h.
Continuation of 101:110, which is prerequisite. Tests and measurements such as muscle testing, joint range of mo-
tion, gait analysis, and functional activities.
101:118 Clinical Education I 1 a.h.
The practice of physical therapy procedures in a hospital physical therapy department under supervision of quali-
ified physical therapists.

Second Semester

101:103 Medicine III 2 a.h.
Continuation of 101:102, with an emphasis on dermatol-
yogy; ophthalmology.
101:112 Therapeutic Exercise III 2 a.h.
Lectures, demonstrations, and case presentations in the principles and techniques of therapeutic methods relative to muscle reeducation and neuromuscular facilitation.
101:113 Rehabilitation Techniques in Physical Therapy 2 a.h.
Techniques and methods of establishing appropriate goals in the treatment of individuals requiring rehabilitation.
101:119 Clinical Education II 2 a.h.
Continuation of 101:118, which is prerequisite.
101:131 Administrative Service 2 a.h.
Administration of the physical therapy department; need for and utilization of space, equipment, communications, and records. Ethical conduct and duties in relationship with professional coworkers, patients, and lay personnel.
101:190 Electrotherapy 2 a.h.
Principles, methods, and techniques of the useful forms of physical therapy involved in therapeutic use in physical therapy. Current electromedical developments, and methods thought to be valuable are discussed. Lab-
oratory sessions are scheduled to aid the student in develop-
ment of his technique of application.

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Summer Session following Second Year

101:120 Clinical Education III 4 s.h.
Following successful completion of didactic work students are assigned to three different facilities for completion of their professional training.

To be taken only by those in the master's degree program

Physical therapy evaluation and treatment techniques which involve mechanical principles. Dissection of cadaver is included. Special emphasis is placed on gait.

101:275 Evaluation of Selected Neurological Disorders cr.arr.
Reflex testing methods for evaluating central nervous system development as well as facilitation techniques used to obtain active automatic motor responses with a progression towards more voluntary and purposeful movement.

101:280 Laboratory Exercise in Teaching Methods and Design 2 s.h.
Individual instruction, observation, and experimentation in teaching, guidance, and analysis of evaluation processes.

INTERDISCIPLINARY PROGRAMS

101:220 Advanced Electro-Therapy and Electro-Diagnosis 0 to 2 s.h.
Electronic methods used for treatment and diagnosis of neuro-muscular disorders. Special emphasis is made on electromyography.

101:301 Seminar: Thesis  cr.arr.
This course serves to guide and instruct the student in all facets which relate to the thesis: formulation of the problem, literature search, procedure for collecting data, analysis of data, organization of the thesis, and writing the thesis.

101:325 Independent Study  cr.arr.
A problem solving experience which is consistent with the student's interest and ability.

101:330 Analysis of Scientific Literature cr.arr.
A seminar to develop the student's ability to critically evaluate experimental research which relates to physical therapy.
The University's Main Library and its fourteen departmental libraries house a total of more than 1.5 million volumes.

About half of the University's library collections of books, periodicals, and newspapers, and approximately 500,000 government publications, are in the Main Library.

The Law Library, containing approximately 168,000 volumes, is one of the strong university law libraries in the midwest.

The Art Library contains approximately 28,000 volumes, Botany-Chemistry, 44,500; Business Administration, 4,500; Dentistry, 9,500; Education-Psychology, 91,200; Engineering, 31,300; Geology, 20,000; Mathematics, 22,500; Medical, 85,000; Music, 55,700; Pharmacy, 10,000; Physics, 20,500; Speech Pathology, 5,500; and Zoology, 19,200.

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

SPECIAL RESOURCES

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

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

The University's Leigh Hunt Collection, brought together by Luther A. Brewer of Cedar Rapids, Iowa, is considered one of the most complete in existence. It contains 2,871 separate volumes, 1,810 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 3,000 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 deluxe editions, including many superb bindings made especially for Mrs. Ranney.

The John Springer Collection of books on typography was given to the University by John Springer, a long-time Iowa City printer. The collection includes 3,850 volumes containing type specimens, books important in printing history, and volumes illustrating the art and progress of printing through the centuries.

The "Ding" During Collection comprises originals of nearly 6,000 carvings in which for more than forty years Ding recorded and commented on the economic, political, and diplomatic affairs of the United States. His carvings 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 Bolinger-Lincoln Collection, gathered by Judge James W. Bolinger of Davenport, Iowa, consists of about 4,556 books and pamphlets devoted to Abraham Lincoln. The collection is one of the best libraries of Lincolnia 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. Lately, a number of broadsides relating to Iowa and the Civil War period has been added to the collection, developing yet another phase of Lincoln's period in American history.

The Rydzen Collection comprises approximately 281 volumes of poetry, biography, and criticism, and 569 manuscripts or letters, relating to the contemporary English poet Edward Rydzen.

The French Revolution Collection includes more than 8,000 political pamphlets, chiefly from the years 1788-1793, supplemented by numerous French newspapers and government publications of the time.

The Iowa Authors Collection includes approximately 4,716 books written by Iowans, and more than 300 manuscripts.

The "X" Collection is a gathering of more than 11,000 early, rare, or special works on diverse subjects, including books of the fifteenth and sixteenth centuries, early Americans, Roxburghe
Club Publications, private press books, and selected modern first editions.

The Manuscript Collections includes more than 3,400 individually cataloged letters or manuscript items of English and American authors or historical figures, principally of the nineteenth and twentieth centuries, in addition to 155 inventoried collections of papers, diaries, and correspondence files relating to midwestern economic, political, and agricultural history.

The Map Collection contains 52,472 cataloged maps, 54,703 indexed aerial photographs, and 1,316 stones, gazetteers, and related reference items. The University Archives preserve materials relating to the history of the University. The collection of University publications from 1855 to 1909, originally assembled by Dean Amos N. Currier, is today supplemented by 438 file drawers of correspondence and records; approximately 1,250 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 Indians; the Levi O. Leonard Collection of manuscripts and documents dealing with railroading in the midwest, particularly the Union Pacific; the History of Hydraulics Collection; the Edgar Fowle Piper Collection of ballads and folktunes; and the Chautauqua Collection donated by Harry P. Harrison, manager of the Redpath Bureau. The Chautauqua Collection contains several thousand letters and business documents descriptive of the Chautauqua movement during the first half of the twentieth century.

STAFF

Director: Leslie W. Dunlap
Associate Director: Dale M. Beatz
Assistant Director: William C. Persell
Bibliographer: Frank R. Hamile
Assistant Director Emeritus: Grace Van Womeren
Acquisitions: Richard M. Kilbot, Head; E. Ann Fox, Kathleen B. Wadat.
Serials: Donald L. Pogge, Head; Helen S. Clark, Mary G. Cline, Mary B. Horton, John J. Newman, Anne E. Roberts, Clarice E. Niles.
Special Collections: Frances J. Polk, Head; Alan K. Leach, Robert A. McCown, Earl Hogen, Irene Stark, Emeritus.
Departmental Librarians: Art, Harlen L. Bizzell; Business Administration, Glen L. Plaske, Peter J. Harford, Chemistry-Biology, Paula L. Matt, David, Margaret A. Cermakowski; Education, Anne M. Ewea, Kathleen Maloney, Michael Nagy, Robert R. Thompson; English, Alice L. Cieri, Elizabeth M. Smith, Derek Gregg, Vera J. Minton; Medicine, Sandra L. Rollins, Robert L. Crysal, John D. Seave, David R. Parker; Dentist's, Volga, Ilan B. Benner, J. Morris Martin; Physics and Zoology, Jean W. Dick.

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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 60294. 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 15 for upperclassmen and transfer students.

Eligibility for Scholarships. To qualify for scholarship assistance, an entering freshman must have graduated in the upper 10 per cent of his high school class or have achieved a 28 composite ACT score or above; an upperclassman must have a 2.5 cumulative grade-point average; and a transfer student must have at least 3.0 transfer grade-point average.

Freshman Merit Scholarships. An entering freshman who meets minimum scholarship requirements (above), graduates from an Iowa high school the year he applies for assistance, is admitted to the University by February 1 of that year, registers as a full-time University student that fall, and has established a need for assistance, will receive consideration for a Freshman Merit Scholarship covering tuition.

(A student meeting other scholarship requirements and achieving a composite ACT score of 29 or above will be considered for a $100 Freshman Merit Award, as a matter of recognition, not based on need.)

Educational Opportunity Grants. Available to a limited number of undergraduates unable to attend college or university without such assistance, EOP grants range from $250 to $1,000 a year, but cannot exceed one-half of the recipient's total assistance. There are no specific academic requirements for an EOP grant, but the applicant must have shown academic or creative promise.

National Defense Education Act (NDEA) Loan Funds. The University's largest source for long-term education loans. Undergraduate students may borrow up to $3,000 a year and $5,000 overall; graduate students may borrow up to $2,500 a year and $10,000 overall. Applicants must be citizens or permanent residents of the United States. Freshmen have preference. To qualify, a freshman must have graduated in the upper-half of his high school class. 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 3 per cent interest beginning nine months after the borrower concludes his course of study. Ten per cent of the loan obligation is canceled each of the first five years the borrower is employed full-time teaching.

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. Loan maximums are $1,000 a year for undergraduates and $1,500 a year for graduate students. Repayment begins when the borrower concludes his course of study.

University Loan Funds. Short-term loans of up to $200 are available for school-year expenses. To qualify, the applicant must have at least a 2.0 high school and transfer grade-point average, and a 1.8 University average.

Part-Time Jobs. Most University students who take part-time jobs secure them through the Office of Student Financial Aid. The most numerous opportunities are in University food service and hospitals. Hours range from ten to thirty a week; the University recommends a maximum of twenty.

Work-Study. Much of the part-time work available through the Office of Student Financial Aid is provided under the federal Work-Study Program, whose purpose is to enable college-qualified members of low-income families to earn college expenses not covered by other assistance. Work-Study employees cannot work more than fifteen
SCHOLARSHIPS

Maytag Foundation Scholarships. Graduating high school seniors whose parents are full-time employees of The Maytag Company; fees plus cash grant; apply to The Maytag Company Foundation, Inc., Newton, Iowa.

Nile Kinnick Memorial Scholarship. Recipient nominated by the U of I athletic department.

Mary Sus Miller Memorial Scholarship. Art major, preferably from Fremont County, Iowa; fees partially.
Engineering Honors Scholarships. Entering
freshmen, and transfer students; resident tuition.
Foundry Educational Foundation Trustees
Scholarships. Students in courses related to cast
metals.
Lloyd A. Knowler Scholarship.
Lambert Scholarships. Civil Engineering.
C. P. McGreagh Scholarship.
Missouri Mining and Manufacturing Company
Scholarships.
Monsanto Scholarship. Chemical and me-
chanical engineering student.
Herman W. Nelson Memorial Scholarship.
Fred Stiebler Scholarships. $100 to $300.
Student Aid Scholarship. See All-University.
Western Electric Funds Scholarship in En-
ingineering. Tuition, fees, books.

GRADUATE
(The following are special scholarships and
fellowships; for information about general as-
sistantships, fellowships, and scholarships, see
Graduate College.)
American Foundation for Pharmaceutical Ed-
uation Fellowships. Pharmacy; $2,400, fees,
cost of special material for research; apply to the
Dean of pharmacy.

Arthur Andersen & Company Accounting
Award.

Bodine Scholarship. Zoology; for summer
work at a marine or other biological station; $200.

Rev. Dempsey Memorial Scholarship and
Award. $200.

Ernst and Ernst Accounting Scholarship. $1,000.

Haskins & Sells Foundation Award. Prospec-
tive accounting teacher; $2,500.
Melvin Luther King, Jr., Scholarships. See All
University.

I. B. McGladrey Accounting Award.
Price Waterhouse Foundation Award. Ac-
ing.

Barnes Sima Riddle Fund.

Sutherland Dow Graduate Scholarship in
Composition. Music; $3,000.

Touches, Ross, Bailey & Smart Award. Ac-
ing.

Arthur Young & Company Foundation Award.

DENTAL HYGIENE
Oral B Toothbrush Scholarship. $250.

DENTISTRY

Bock Dental Scholarship.
Oral B Toothbrush Scholarship. Junior or
senior; $500.

W. R. Proust Company Dental Scholarship.
Junior or senior; $500.

Schleichter Scholarship Award. Junior, prefer-
erably in orthodontics.

U of I Student Aid Scholarships. Two one-year
resident tuition scholarships.

U of I Dental Achievement Fund Scholarships.

ENGINEERING

ALCOA Foundation Scholarships. Freshmen.
Core Scholarships. See All-University.
Mellise Fisk Clements Scholarship.
Collins Radio Company Great. Electrical en-
ingineering; $2,000.

P. M. Deuser Engineering Scholarship.

Haskins & Sells Awards. Senior among top
five accounting students; $500.

Home Federal Savings and Loan Association of
Des Moines. Scholarships, research grants to
further education in finance, insurance, real
estate.

Iowa Foundation for Insurance Education
Scholarships. $700 each to three junior, senior,
or graduate students in insurance.

Life Insurance Scholarship. Junior business ad-
ministration; $500.

Maytag Foundation Scholarships in Business
Administration. $500 each to one senior in ac-
counting, one in marketing.

Murray Scholarships.

Murray Plaque. $200 stipend.

I. B. McGladrey Accounting Award.

Chester A. Phillips Scholarship. Business ad-
ministration senior in upper 10 per cent of class;
not less than $250.

Price Waterhouse Foundation Award. Ac-
counting.

Bruce M. Robertson Scholarship. Iowa high
school graduate; $1,000 for senior year.

Tochee-Ross and Company. Accounting.

Student Aid Scholarships. See All-University.

Western Electric Funds Scholarship. Business
Administration major; tuition, fees, books.

Arthur Young & Company Foundation Award.

Accounting.

DENTAL HYGIENE
Oral B Toothbrush Scholarship. $250.

DENTISTRY

Bock Dental Scholarship.
Oral B Toothbrush Scholarship. Junior or
senior; $500.

W. R. Proust Company Dental Scholarship.
Junior or senior; $500.

Schleichter Scholarship Award. Junior, prefer-
erably in orthodontics.

U of I Student Aid Scholarships. Two one-year
resident tuition scholarships.

U of I Dental Achievement Fund Scholarships.

ENGINEERING

ALCOA Foundation Scholarships. Freshmen.
Core Scholarships. See All-University.
Mellise Fisk Clements Scholarship.
Collins Radio Company Great. Electrical en-
ingineering; $2,000.

P. M. Deuser Engineering Scholarship.

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be obtained from the departments. The University also participates in fellowship and traineeship programs of the National Science Foundation, National Institutes of Health, Atomic Energy Commission, and National Aeronautics and Space Administration, and in the National Defense Edu-

LAW

Conrad Scholarships.
Michael Corcoran Financial Aid Fund.
Edgar C. Corry Memorial Scholarship. Preference to Iowa residents.
Dankewicz Scholarship.
Dillon Scholarships.
Harold J. Gallagher Scholarship and Loan Fund.
Graham Scholarships.
Claire E. Hamilton Scholarship. Outstanding sec-

Hammond Scholarships.
Iowa Law School Foundation Scholarships.
Iowa Trial Lawyers Academy Scholarship.
Laffey Scholarships.
Hurray Scholarships.
Harry M. Neas Memorial Scholarship Fund.
Prichett Scholarships. Apply to the Dean of
day-old, outstanding third-year student; $1,000
each.

Hammond Scholarships.
Iowa Law School Foundation Scholarships.
Iowa Trial Lawyers Academy Scholarship.
Laffey Scholarships.
Hurray Scholarships.
Harry M. Neas Memorial Scholarship Fund.
Prichett Scholarships. Apply to the Dean of
William H. Redman Scholarship Fund.
Joseph F. Rosenfeld Scholarship Fund. In ex-

LIBERAL ARTS

ALCOA Foundation Scholarships. See All-
Carr Scholarships. See All-University.
Margaret Foster Hoff Memorial Scholarship.
Home economics senior; resident tuition.
General Motors Foundation Scholarship. See
Old Gold Honors Scholarships. Honors Pro-

George Lauman and Jane Richardson Pollock
Scholarship. Freshmen and sophomores planning a
major in Chinese language and civilization; $100.

SCHOLARSHIPS AND LOANS

Pritchett Scholarships. Apply to Dean of liberal
arts.

Proudfoot Scholarships. Art majors, preferably from
Warren County, Iowa; $1,000.

Robertson G. Hunter Scholarship. Male stu-
dents from Midwest, particularly Iowa, interested in studying science; $1,000.

Student Aid Scholarships. See All-University.

Wyland Scholarships. $200.

JOURNALISM

James W. Blackburn Scholarship. High school
senior planning to enroll in the School of Journal-
ism; $1,000, paid $150 sophomore year, $900
junior year, $650 senior year; administered by
School of Journalism.

Harry S. Bueker Scholarship. Fifth-year journ-

Davenport Times-Democrat Scholarship. $300,
paid $100 junior year, $500 senior year.

Ruth Haly and Maurice Barnett Jones Scholar-
ship. $400 or more.

Minneapolis Star Scholarship. Junior; $400

John F. Hurray Scholarships in Journalism and
Advertising. Amounts vary.

George D. Perkins Scholarship. High school
senior planning to major in journalism; $350, paid
$150 junior year, $200 senior year.

Quill and Scroll Foundation Scholarships. High
school seniors planning to major in journalism; $200, paid $250 freshman year, $250
senior year.

Remsey Advertising Internship. To give out-
standing student in advertising an opportunity for
agency experience between junior and senior years; $800.

School of Journalism-Heard Foundation Schol-

Shields Foundation Scholarships. Amounts vary.

School of Journalism Merit Foundation Scholar-
ships. Freshmen, sophomores, juniors; amounts vary.

Richard and Jo Spencer Scholarship. $1,000.

United Press International Externship. To give
promising photography student experience pro-
viding photographs for a wire service or transmis-
sion; recipient selected by UPI; $500.

WMU News Scholarship. Radio-television jour-

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MEDICINE

(Awarded upon recommendation of the College faculty committee and dean)

Nutaniel G. Alcock Memorial Scholarship. Full resident tuition.

Anne Barach-Dunne Scholarship for Women. Woman student from Burlington, Iowa, or from elsewhere in Iowa.

Dr. and Mrs. H. S. Frenkel Scholarship. Full resident tuition.

Iowa Academy of Ophthalmology and Otolaryngology Scholarships. Full resident tuition.

Iowa Clinical Society of Internal Medicine Scholarships. Two freshmen; one of them in the Educational Opportunity Program; full resident tuition.

Iowa Obstetrical and Gynecological Society Medical Scholarship. Full resident tuition.

Iowa Psychiatric Society Medical Scholarship. Full resident tuition.

Flemish Medical Scholarship.

Jean and John X. Powers Scholarship. Iowa resident; $1,500.

Robb Memorial Scholarship. Interest in general practice; tuition.

WA-SAMA Scholarship. Junior; preferably doing honors work but not receiving other awards.

Dr. Theodore A. Willis Scholarships. $500.

NURSING

American Legion 40 & 8 Club Scholarships. $75 to two juniors for senior year.

La Ann Gerlich Memorial Scholarship. $250 to one junior.

Iowa Federation of Women's Clubs Scholarships. $300; registered nurses in first year of baccalaureate work who plan to do graduate study in psychiatric nursing.

Plumbers Auxiliary Scholarship Award. $100, Junior, for senior year.

Psychiatric Mental Health Traineeship Stipends. $1,800 plus tuition, fees, board and room allowance; monthly salary; juniors, seniors. Recipients commissioned 2nd lieutenants, with full pay, six months before graduation, serve two- or three-year terms of active duty in Army Nurse Corps after graduation.

Navy Nurse Corps Candidate Program. Tuition, fees, books, board and room allowance, monthly salary; juniors, seniors. Recipients receive enlistment's commissions, with full pay, six months before graduation, serve two- or three-year terms of active duty in Navy Nurse Corps after graduation.

Professional Nurse Traineeship Program. Tuition, stipend; registered nurses students preparing for positions in hospitals or schools of nursing within twelve months of graduation.

Public Health Nursing Traineeship Program. Tuition and stipend; registered nurses students preparing for positions in public health nursing within twelve months of graduation.

United States Public Health Service Nursing Student Loan Program. Amount of loan up to $1,500 per academic year, depending on financial need.

PHARMACY

American Foundation for Pharmaceutical Education Scholarships. Students in last three years of study; minimum 3.0 average; $600.

Col. Scholarships. See All-University.

John W. Dargen Foundation Scholarship. P2 standing; minimum 2.5 average; $200.

Drew Memorial Scholarships. See All-University.

Eligbee Scholarship. First-year student; $370.

Elks Charitable Trust and Foundation Scholarship. Minimum 2.5 average; $500.

General Motors Foundation Scholarships. See All-University.

Iowa Pharmacists Association Scholarship. Student who has completed P3; minimum 2.5 average; $500.

Iowa Pharmaceutical Association Women's Auxiliary Scholarship. Woman; $200.

Iowa Pharmacy Foundation Scholarships. $300.

May's Drug Stores Scholarship. $250.

Myers Scholarship. P2 standing; $100.

Oceo Drug, Inc. Scholarships. P2 standing; minimum 2.5 average; $300.

Schlegel Sophomore Scholarship. Student who has completed P2; $370.

Schlegel Junior Scholarship. Student who has completed P2; $370.
SCHOLARSHIPS AND LOANS

BUSINESS ADMINISTRATION
Beta Gamma Sigma Loans. High-ranking seniors and graduate students; apply to Beta Sigma, University of Southern California, Los Angeles.

DENTAL HYGIENE
Alpha Kappa Gamma Loan Fund. Seniors, second-semester juniors.
Iowa Dental Association Women's Auxiliary Loan Fund.
Wycliffe Feick Memorial Loan Fund. Preference to graduate students.
Charles H. Hawgood Memorial Loan Fund.

DENTISTRY
American Dental Association Loan Fund for Dental Education.
Brenna Memorial Student Loan Fund.
Gillette Hayden Scholarship Loan Fund of the Association of American Women Dentists. Promising women students; $1,000 maximum.
Iowa Dental Association Student Loan Fund. Freshmen.
Kellogg Loan Fund for Dental Students.
Old Gold Development Loan Fund.
Storie Loan Fund.
American Dental Trade Association. Seniors.
International College of Dentists (U.S.A. section) Student Loan Fund.

ENGINEERING
College of Engineering Loan Fund. Short-term loans.
Iowa City Engineering Club Loan Fund.
Ford Foundation Grant. Forgivable predoctoral loans to future engineering teachers; apply to Dean, College of Engineering.
Rose Rubottom Jones Memorial Loan Fund. $25 30-day emergency loans.
Phillip F. Morgan Student Loan Fund. See Graduate.

GRADUATE
Beta Gamma Sigma Loans. Business administration.
Carr Graduate Fund.
Wycliffe Feick Memorial Loan Fund. See Dental Hygiene.
Ford Foundation Grant. See Engineering.
Mabie Memorial Loan Fund. Speech and dramatic art.

LOAN FUNDS ALL-UNIVERSITY
Daughters of the American Revolution Student Loan Fund. Junior and senior women residents of Iowa; $250 maximum annually.
Dean's Loan Fund. $25 emergency 30-day loans.
Dolphin Club Loan Fund. Primarily for Dolphin Club members.
General Loan Fund.
Chloe-Jean Gesend Student Senate Aid. Underclassmen or graduates; short-term.
Warren and Nett Hayes Loan Fund. Allamakee County, Iowa, students.
Health Professions Student Loan Fund. Full-time medical, dental, and pharmacy students; federal fund, 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.
International Student Council Loan Fund. Foreign students; $50 maximum per school year.
Iowa City Kiwanis Club Student Loan Fund.
Iowa City Panhellenic Loan Fund. $100, one semester; interest-free.
Iowa Delta Association Loan Fund. Interest-free 30-day emergency loans; $50 maximum.
C. L., Sr., and Thekla Klinek Loan Fund.
Old Gold Development Loan Fund.
Strong Educational Foundation Loan Fund. Upperclassmen ages 21 or under; repayment at 3 per cent interest after graduation.
Symons Loan Fund. Preference to Anamosa, Iowa, High School graduates who have completed at least one year at the University.
SCOLARSHIPS AND LOANS

Philip F. Morgan Student Loan Fund. First preference to graduate students in sanitary engineering, second to undergraduates in civil engineering with sanitary engineering option, third to graduate and undergraduate students in civil engineering.

Susan Loan Fund.

LAW

American Bar Association Loans. Second- and third-year students; up to $1,500 a year; repayable after graduation.

Iowa Law School Loans. Long-term; repayable at 3 per cent interest beginning one year after graduation.

Law School Foundation Loan. Short-term.

Law Consolidated Loan Fund. Second- and third-year students; short-term.

LIBERAL ARTS

Thomas Cole Loan Fund. Geology students.

Deshler Loan Fund. Students who have completed at least one year.

Love Memorial Student Loan Fund.

Phi Epsilon Kappa Loan Fund. Physical education for men, women.

Gene Palmer Reed Loan Fund. Computer science students.

S.C. Williams Loan Fund. Sophomore or above.

MEDICINE

( Apply to the Dean of the College)

Booth Loan Fund.

Robert R. Gibson Memorial Loan Fund.

Graduates of the College of Medicine Loan Fund. Sophomore through senior year.

Iowa Medical Tuition Loan Plan. Iowa residents who agree to practice general medicine in Iowa for at least five years after completion of medical training; state fund, provides tuition up to three years.

Iowa State Medical Society Loan Fund. Junior and senior residents of Iowa.

Kellogg Loan Fund for Medical Students.

College of Medicine Loan Fund.

George M. Middletown Loan Fund.

Frank Roberta Memorial Loan Fund.

Shannon Trust Fund. Iowa residents.

Sibley Foundation Loan Fund.

NURSING

Nursing Student Loan Program. Full-time nursing students; federal fund, interest free during student's full-time registration; repayable at 3 per cent interest beginning one year after recipient terminates full-time registration; forgivable up to the rate of 10 per cent per year of full-time employment as professional nurse in public or nonprofit private institution, up to 50 per cent of balance unpaid at beginning of such employment.

Kellogg Loan Fund for Nursing Students.

U of I Nurses' Alumnae Student Loan Fund. Juniors, seniors; $500 maximum.

S. Larson Thompson Loan Fund.

RESERVE OFFICERS TRAINING CORPS

Alumni and friends of the University have provided a number of awards, prizes, and honors in recognition of students' special achievements. Detailed information on criteria and procedures for the selection of recipients may be obtained from the administrative office. Generally, recognition is in the form of certificates, plaques, medals, desk sets, or similar items; cash awards of $50 or more are indicated on the following list:

**GENERAL**

**Alpha Chi Sigma Award.** Male with highest scholastic standing for first two semesters of graduate work in chemistry, chemical engineering, or biochemistry.

**Ballantine Award.** $50; senior, for efforts in self-assistance while maintaining satisfactory full-time study.

**Band Service Keys.** Six semesters of band membership.

**Briggs Award.** Senior with highest scholastic average among students elected to Phi Eta Sigma as freshmen.

**Brown Award.** Outstanding potential in radio broadcasting at University-operated stations.

**Fosler Award.** $100; active Mortar Board member.

**Hancher Award.** $50 government bond; junior woman most nearly exemplifying qualities and contributions of Mrs. Virgil H. Hancher to the University community.

**Hoffman Award.** Junior; academic excellence, critical intelligence, character, broad and conscientious concern for ultimate and spiritual questions.

**Don G. Mullen Award.** $50; leadership, loyalty, and devotion to University.

**Penningroth Award.** $80; junior; leadership, scholastic achievement, participation in student activities.

**ATHLETIC**

**Athletic Board Cup.** Graduating varsity award winner outstanding in athletics and scholarship.

**Athletic Scholarship Cups.** Numeral winners in each intercollegiate sport; highest scholastic average freshman year and varsity squad member sophomore year.

**Forest Rockeawski Football Scholastic Achievement Award.** Senior varsity football award winner outstanding in scholarship.

**1 Certificate.** Graduating students who have lettered in one or more intercollegiate sports.

**Western Intercollegiate Conference Athletic Association Medal.** Graduating senior varsity award winner outstanding in scholarship and athletics.

**COLLEGE OF BUSINESS ADMINISTRATION**

**Beta Alpha Psi Key.** Member with highest scholastic record.

**Beta Gamma Sigma Award.** Highest-ranking junior member.

**Delta Sigma Pi Key.** Highest ranking senior man in the College.

**Iowa Society of Certified Public Accountants Outstanding Accounting Senior Award.**

**Phi Gamma Nu Key.** Highest-ranking senior woman in the College.

**COLLEGE OF DENTISTRY**

**Academy of General Dentistry Award.** Outstanding senior general practitioner.

**Alpha Kappa Gamma Scholarship Award.** Graduate student hygiene student with highest scholastic average (B minimum).

**Alpha Omega Award.** Graduate student with highest scholastic average.

**American Academy of Dental Medicine Award.** Dental medicine senior; achievement, proficiency, and promise.

**American Academy of Gold Foil Operators Award.** For gold foil excellence.

**American Academy of Oral Roentgenology Award.** Senior; special interest in oral roentgenology.

**American Association of Endodontists Award.** Senior; highest proficiency and interest in endodontics, and exemplifying A.A.E. ideals.

**American Association of Orthodontists Award.** Senior; exceptional interest in development of oralofacial complex.

**American College of Dentists Award.** Senior; outstanding paper on topic assigned by A.C.D.
American Institute of Electrical Engineers Award. Best paper presented before student branch of A.I.E.E.

American Society of Civil Engineers Award. Highest ranking senior.

American Society of Mechanical Engineers Award. Best paper presented before student branch of A.S.M.E.

American Society of Tool Engineers Award. $700; senior in mechanical engineering; scholastic achievement, interest in tool and production engineering.

Chi Epsilon Award. Highest ranking sophomore, senior in civil engineering.

Eta Kappa Nu Award. Junior in electrical engineering; highest scholastic average first two years.

Institute of Electrical and Electronic Engineers Awards. Three best papers presented before Cedar Rapids section of Institute.

Edwin B. Kurtz Award. Senior in electrical engineering; scholarship, character, professional promise, service to department and/or College.

Pi Tau Sigma Merit Award. Junior in mechanical engineering; greatest personal development first two years.

 Tau Beta Pi Prize. Sophomore; highest scholastic standing as freshman.

Theta Tau Engineer Award. Upperclassman; highest in competition based on popularity, scholarship, service to College.

COLLEGE OF LAW


Nathan Burrows Memorial Competition. $250 and $100; best papers on copyright law.

Iowa State Bar Association Award. $100; graduating senior; highest all-around standing, including scholarship and demonstrated legal capacities and leadership qualities.

Murray Prize. $200; senior of exceptional promise and ability.

Supreme Court Day Contests. Four Junior Arguments winners participating in Supreme Court Day arguments before Iowa Supreme Court.

COLLEGE OF LIBERAL ARTS

American Institute of Chemists Medal. Outstanding senior in chemistry.

Bryn Mawr Prize. $500; best essay relating to the science of government.
Chi Omega Award. Graduating woman with highest average in anthropology, economics, political science, psychology, or sociology (combined among departments).

Clapp Memorial Award in Composition. Music major.

The Davis Award. $100; senior in physics.

Dean's Awards. $100; freshman, sophomore, junior in Honors.

Hamilton Watch Award. Graduating senior most successfully combining proficiency in major field with academic and/or extra-curricular achievement in social sciences, humanities.

Johnson Memorial Prize. Graduating senior; all coursework in College; highest academic rank in College class.


Geology: General excellence in geology.

Greek: Excellence in Greek language and literature, by examination.

Latin: Sophomore; excellence in Latin language, by examination.

Mathematics: Undergraduate; enrolled in 22M:7 or below; by examination covering algebra, plane trigonometry, analytical geometry, and differential and integral calculus.

(Also see Forensic)

DAV Medal. Senior woman; highest standing in American history.

Pearce Prize. Senior in chemistry; highest scholastic standing.

Phi Lambda Upsilon Award. Junior in chemistry; highest scholastic standing.

Pi Lambda Theta Prize. Senior woman; high scholarship, personal qualifications, promise in education, qualifications for teaching certificate.

Senior Prize. $500; senior, highest promise for graduate study.

Sigma Lea Sprengler Memorial Award. Outstanding senior in home economics; $100; second semester.

Genevieve Stairman Book Award. Woman graduate student; highest standing in chemistry or allied science.

Wilson Memorial Prize. Excellence in German language and literature.

JOURNALISM

Leon Barnes Community Journalism Award. $200; junior; demonstrated interest and outstanding promise in community journalism.

Luther A. Brewer Key. Graduating senior; highest in scholarship, leadership, promise.

Conger Reynolds Award. Outstanding student in public relations.

AWARDS—PRIZES—HONORS

James F. Fox Award in Public Relations. Outstanding graduate student.

Iowa Press Women's Award. Outstanding senior woman.

Johnson Memorial Prize in Journalism. Best news, sports, and feature stories for Daily Iowan. Ruth Bailey Jones Memorial Award. Senior woman; high scholastic rank, demonstrated interest in development of human understanding and appreciation in all forms of human expression.

Journalism Alumni Academic Merit Award. Freshmen, sophomores, juniors; first and second in their classes.

Kappa Tau Alpha Scholarship Award. Undergraduate or graduate KTA initiate; highest scholastic average.


Outstanding Freshman in Journalism Award.

Jacob E. Reizenstein Award. Outstanding emerging enterprise, capability in news writing.

Howard A. Schmanker Award. Senior receiving Luther A. Brewer Key.

Sigma Delta Chi Award. Outstanding male graduate.

COLLEGE OF MEDICINE

Miford E. Barnes Award. Outstanding junior in preventive medicine and environmental health.

Walter L. Biering Award in Bacteriology. Outstanding sophomore.

Borden Award. $500; graduating class member; meritorious undergraduate research.

Irving H. Borts Award. $100; best paper presented at Student Research Conference.

Iowa Obstetrical and Gynecological Society Prize. $300; senior, best research paper or statistical review in obstetrics and/or gynecology.

Jane Leifelde Award. Outstanding third-year student in internal medicine.

Longe Awards. Two outstanding members of each class.

John T. McClenoch Award in Physiology. Outstanding freshman.

MacKuen Memorial Prize. Outstanding senior.

Prentiss Memorial Prize. Outstanding freshman in gross anatomy.

Roche Award. Sophomore best exemplifying ideals of modern American physician.

Upsilon Achievement Award in Pediatrics. Outstanding senior.

COLLEGE OF NURSING

Carmelita Calderwood Henry Award. $250; senior; excellence in clinical practice.

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AWARDS—PRIZES—HONORS

Senior Nurse Scholarship Award. $50; two worthy juniors.

Women's Auxiliary to the Iowa Association of Plumbing Contractors, Inc., Scholarship Award. $100; senior; Iowa resident.

Women's Auxiliary to the Iowa Association of Plumbing Contractors, Inc., Vida Gibbs Memorial Scholarship Award. $100; senior; Iowa resident.

COLLEGE OF PHARMACY

Cheek's Prize. Most deserving student in biochemistry.

Getzky Leadership Award. Senior; potential for outstanding leadership.

Gregor Pharmacy Award. $50; junior; minimum 2.0 average, professional attitude, need.

Johnson and Johnson Award. Senior; scholastic excellence, progressive attitude, ability to apply good principles of pharmaceutical administration to retail pharmacy.

James W. Jones Award. Senior; minimum 2.5 average, definite potential as community pharmacist.

Merek Prize. Two seniors; high standing in subjects related to dispensing.

Norse Memorial Award. Junior; outstanding achievement in pharmacy technology series.

Pharmacy Faculty Award. $150; outstanding seniors.

Rexall Trophy. Outstanding senior.

Rho Chi Prize. Highest first-year scholastic average.

Scherling Prize. Excellence in organic chemistry.

FORENSICS

Forensics Association Awards. Meritorious achievement by undergraduate participants in intercollegiate speaking activities.

Lofrove Memorial Prize. Winner, freshman speech contest.

Louden Prize in Debate. $50; at least junior standing, participation with distinction in at least two major debates.

Northern Oratorical League Prizes. $100 and $50; winners of League contest.

MILITARY

Governor's Award.

American Legion ROTC Award. Military, scholastic excellence.

Chicago Tribune Award. First, second place in first, second-year debates.

Distinguished Military Student Badge. Seniors.

Johnson County Reserve Officers Association Medal. Basic students; excellence in military subjects, extracurricular activities connected with military departments.

Military Scholastic Medal and Clasp. "A" rating in military leadership, minimum 3.5 scholastic average.

Minute Man Medal. First-year basic students; leadership, soldierly bearing, knowledge of ideals of founders of United States.

Society of American Military Engineers Award.

Arm Forces Communications and Electronics Award. Fourth-year cadet majoring in electrical engineering, electronics engineering, or communications engineering; leadership and academic accomplishments in detachment and campus activities.

Army ROTC

Superior Senior ROTC Award.

Academic Achievement Award. Seconds, thirds, and fourth-year cadets; top 10 per cent of class previous year.

Basic and Advanced Leadership Award.

Association of the United States Army ROTC Award. Outstanding third-year cadet.

American Ordinance Association Award. Outstanding four-year cadet assigned to Ordnance Corps.

AUSA History Award. Outstanding MS II history student.

Brigade Commander Award.

Outstanding Campa Leader in Army ROTC.

Outstanding Athlete in Army ROTC.

Outstanding Academic Student in Army ROTC.

Outstanding Rifle Team Member.

The Defense Supply Association Award.

National Defense Transportation Award.

Superior Cadet Award.

Legion of Valor.

Hughes Trophy.

Pilot Badge.

ROTC Medal for Heroism.

Air Force ROTC

AFROTC Commendation Award. Seniors; highest award in the U of I AFROTC program.

Air Force Association Detachment Award. Advanced cadet; most outstanding achievement in AFROTC.

General Dynamics Award. Sophomore cadet; outstanding qualities, interest in flying.

Air Force Times Award. Senior.

National Defense Transportation Association Award. Senior; leadership, academic achieve-
ment, aptitude for military service, at least 25 semester hours in courses related to air and/or surface transportation.

Flight Instruction Program Ground School Award. Seniors; successful completion of FIP Ground School, including FAA private pilot's license examination.

Army Military Studies Athletic Award. U of I Color Guard Award.

Outstanding AFROTC Cadet Awards. Pilot or Navigator Badge. AFROTC FFP training.

U of I Outstanding Performance Award. Third.

Outstanding Service Award. Advanced cadet. U of I Scholaristic Award. Graduating AS/00 cadet; highest cumulative grade point average. Brooks W. Booker Award. Greatest contribution to campus-wide activity or function.

HONORARY AND RECOGNITION GROUPS

Membership in the following organizations is based on high scholarship and/or such other factors as indicated:

Alpha Lambda Delta. Freshman women; minimum 3.5 average.

Alpha Omega Alpha. Medicine.

Alpha Phi Omega. Men's service organization; Boy Scouts of America affiliation.

Angel Flight. Women's auxiliary, Arnold Air Society.


Chi Epsilon. Civil engineering; scholarship, extracurricular activities.

Eta Kappa Nu. Electrical engineering; scholarship, extracurricular activities.

Eta Sigma Phi. Classical languages.

Gamma Alpha. Graduate scientific research; men.

Guidon Society. Women's auxiliary, Army ROTC.

Iota Sigma Pi. Chemistry; women.

Kappa Tau Alpha. Journalism; 3.2 minimum average after freshman year.

Mortar Board. Women; all-University; elected end of junior year; scholarship, leadership.

Omicron Delta Epsilon. Economics.

Omicron Delta Kappa. Male upperclassmen; all-University; scholarship, leadership.

Omicron Kappa Upsilon. Dentistry.

Omicron Nu. Home economics.

Order of the Coef. Law; scholarship, character.

Pershing Rifles. ROTC cadets; military ability.

Phi Beta Kappa. Liberal Arts.

Phi Eta Sigma. Freshman men; all-University; minimum 3.5 average.

Phi Lambda Upsilon. Chemistry.

Phi Sigma Iota. Romance languages.

Phi Upsilon Omicron. Home economics.

Phi Delta. French.


Pi Omega Pi. Business administration, education.

Pi Tau Sigma. Mechanical engineering; scholarship, activities.

Purple Mask (National Collegiate Players). Outstanding work in University Theatre, scholastic distinction.

Rho Chi. Pharmacy; scholarship, character, personality, leadership.

Sigma Delta Pi. Spanish.

Sigma Iota Epsilon. Management.

Sigma Phi Alpha. Dental hygiene; upper 20 percent of senior class, character, service.

Sigma Theta Tau. Nursing; scholarship, professional, and personal qualities.

Sigma Xi. Science.

Tau Beta Pi. Engineering.

PROFESSIONAL GROUPS

Alpha Chi Sigma. Men; chemistry, chemical engineering.

Alpha Delta Sigma. Advertising; men.

Alpha Kappa Gamma. Dental hygiene; women.

Alpha Kappa Kappa. Medicine; men.

Alpha Kappa Psi. Business administration; men.

Beta Alpha Pi. Accounting; men.


Delta Sigma Delta. Business administration; men.

Delta Theta Phi. Law; men.

Gamma Alpha Chi. Advertising; women.

Kappa Beta Pi. Law; women.

Kappa Epsilon. Pharmacy; women.

Nu Sigma Nu. Medicine; men.

Phi Alpha Delta. Law; men.

Phi Alpha Theta. History.

Phi Beta Pi. Medicine; men.

Phi Delta Kappa. Education; men.

Phi Delta Phi. Law; men.

Phi Epsilon Kappa. Physical education; men.

Phi Gamma Nu. Business administration; women.

Phi Kappa Sigma. Medicine; men.

Pi Lambda Theta. Education; women.

Pi Omega Pi. Dentistry; men.

Sigma Alpha Eta. Journalism; men.

Theta Sigma Phi. Journalism; women.

Theta Tau. Engineering; men.
The three main functions of higher education—teaching, research, and service—are tightly interwoven in the philosophies and policies of The University of Iowa. As it transmits knowledge through its classrooms, it strives to increase knowledge through research, and to make both the knowledge and resources of the University available and useful. Although the University recognizes that teaching is its primary obligation, it also recognizes that creative activity is a requisite function of a faculty as well if its teaching is to have the qualities of relevance, freshness, and effectiveness expected of a quality institution of higher learning.

The University does not define research narrowly. A pioneer in the acceptance of work in the creative arts in satisfaction of the thesis requirement for advanced degrees, it holds to the position that the term "research" applies to creativity in all fields. Imaginative originality, be it in the fine arts or in the sciences, is a common characteristic and significance in the overall intellectual life of the institution.

Because of the vital position of research and creative activity in the University's structure, the Office of the Vice-President for Research has been established as the central office to maintain an overview of the many individual research commitments of the institution and to initiate continuing studies of the nature, extent, requirements, and results of the University's research effort. This office has an interlocked 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. A University Research Council aids the Vice-President for Research in carrying out his duties. It assists him in a regular advisory capacity in a manner parallel to the advisory function provided to the Dean of the Graduate College by the Graduate Council.

The University Research Council consists of nine senior faculty members with widely recognized personal involvements in basic research or creative activity. Members include two each drawn 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:

1. The establishment of general policies with respect to the University's research and creative efforts.
2. The review of policies and procedures concerned with securing and allocating funds for support of research and creative activity.
3. The consideration of additional matters related to the general research and creative functions of the University and the health of basic scholarship on the campus.

The Graduate College, with the advice of the University Research Council and other appropriately involved officers and committees of the University, 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 his 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.

The Office of the Vice-President for Research also provides support for several University-wide services required by the research and creative activity of the faculty. They include the following:

- University Computer Center. The Center was established in 1958 to provide a centralized, high-speed computing facility for the diverse research and educational activities of the University. The Center is under the administrative supervision of the Vice-President for Research who, in consultation with the University Computer Committee, advises the Center Director on problems pertinent to the use and growth of the University's computer facilities.

Located in East Hall, the Center has evolved through several changes and now has a system capable of an extremely wide variety of scientific data-processing applications. At present the
Institutional Research

Major computer system is the IBM 360/65 with three-quarters of a million positions of high-speed core memory and one million positions of slow-speed core memory, two large disks, and eight tape units. It is now used in remote batch processing in connection with a regional computer activity partially funded by NSF, involving ten colleges in Iowa and one in 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 a healthy interchange of students, faculty, and ideas between the two staffs.

The number and variety of computer-related courses offered at the University have been constantly expanding as the concepts and techniques of computer applications continue to grow. The Computer Center is available to all students, faculty, and staff members of the University. The Center provides educational and consultative services, compatible with its resources, to assist users in preparing projects for computer analysis. For complete information on the Center the reader is directed to the UCC User's Guide, available at the UCC Library.

The Radiation Protection Office. The Radiation Protection Office at The University of Iowa was created in September, 1963. This office provides all of the technical and administrative assistance required by research programs which involve radioactive materials and radiation-producing devices. These services include monitoring for contamination, disposing of radioactive waste, administering the personal dosimetry program, providing technical assistance, providing liaison with the Atomic Energy Commission and other regulatory agencies, inspecting X-ray units, and handling the administrative responsibilities necessary for this type of program. A Radiation Protection Manual has been published which sets forth the necessary administrative and technical procedures that are employed at The University of Iowa. Copies of this manual are available at the Radiation Protection Office.

Other programs. Funds are available for the support of graduate assistants who are assigned to research projects of members of the faculty; for small grants to cover 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 the use in specific research projects; and for honoraria and expenses of visiting lecturers.

The Office of the Vice-President for Research maintains a resource library of information on public and private agencies that provide funds for research and study. Students and faculty are invited to consult with the staff concerning needs for financial support and procedures to be followed in applying for the support.

Although not directly connected with the Office of the Vice-President for Research, some other specially designed research and research-support units should be mentioned here because of their special role in the conduct of research in the University. These units include: Accident Prevention Laboratory, Agricultural Law Center, Institute of Agricultural Medicine, Center for Research in Biochemical Pharmacology and Toxicology, Child Development Clinic, Children's Research Unit, Clinical Research Center, Communication Research Laboratory, Iowa Educational Information Center, Bureau of Educational Research and Service, Institute of Gerontology, Institute of Hydraulics Research, Center for International Studies, Center for Labor and Management, Iowa Lakeside Laboratory, Mass Communications Research Bureau, Center for Modern Letters, Neurosurgical Research Center, Laboratory for Political Research, Institute of Public Affairs, Radiation Research Laboratory, Iowa Center for Research in School Administration, Television Center, Center for Textual Studies, Transportation Safety Research Program, Institute of Urban and Regional Research. For further discussion of any of these units the reader is directed to Chapter 5, Section F, of the Faculty Handbook.
Established by special appropriation of the General Assembly of Iowa, the purpose of the Extension Division is to render a larger service to the Commonwealth and to the people of Iowa by carrying out to every part of the State the knowledge, the thought, 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 campus-wide and others of which are both campus-wide and statewide. The Division’s organization and services include the following:

**Bureau of Instructional Services (Correspondence Courses, Extension Classes, European Studies Program)**. Correspondence courses are open to all who are prepared to pursue them with benefit. Courses are available to students who wish to earn credit to apply toward a degree at The University of Iowa or some other college or university, and to those who wish to enroll for the satisfaction of special requirements for professional advancement, preparation for special occupations, or self-improvement.

Students who do not desire or expect credit toward a degree at The University of Iowa are permitted to register for any course in which they have an interest and are prepared to enable them to do the work of the course. Approval by an official adviser of the college in which the student is enrolling is recommended for each such registration if degree credit is to be allowed.

An enrollment fee of $4, paid only once, is required of each new student. A course fee is assessed at the rate of $17 per semester hour for all credit courses, which are payable at the time of registration.


For a bulletin, *Independent Study*, write to the Bureau of Instructional Services, Division of Extension and University Services, East Hall, Iowa City 52240.

**Armed Forces Institute courses**. The University of Iowa, in cooperation with the War Department, 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 pays only an enrollment fee and the cost of text materials. The government pays the cost of instruction. This service is open to all enlisted personnel who have been in the Army for four months or in the Navy for two months, and also to officer personnel of the Navy, Coast Guard, and Marine Corps. A list of approved courses may be obtained by writing to the Bureau of Instructional Services.

**Veterans Administration courses**. Veterans may enroll for correspondence courses under Public Law 550. An agreement with the Veterans Administration provides for the payment of course fees, without any allowance for subsistence or books and supplies.

**Education for Veterenae**. The Veterans Readjustment Benefit Act of 1956 includes provision for educational benefits under the Educational Assistance for Veterans and Inservice Personnel. Veterans desiring more information should write to the Veterans Services Office.

**Extension classes**. A limited program of extension classes is offered off-campus in the fields of nursing training, social work, liberal arts, business administration, education, and engineering by special arrangement. Two types of courses are offered: contract courses for industry, and public service courses in the areas listed.

The fee for public service courses is $35 per semester hour. Classes are scheduled during six months of sessions, and a minimum of twenty students is required for a class.

For information on extension classes write the Bureau of Instructional Services, East Hall, Iowa City 52240.

**European Studies Program**. A program of overseas class opportunities for credit has been offered to interested students. For information write to Bureau of Instructional Services.
no charge. There is a nominal charge for off-campus equipment and projectionist service.

Media Production Unit: Objective: to produce graphic, still photographic, and motion picture materials.

A staff of production technicians and artists is complemented by the facilities and equipment capable to produce materials which include: graphics, charts, maps, titles, layouts, posters, illustrations, models, exhibits, and overhead transparencies; black and white and color photographs, negatives, microfilm, 2 x 2 slides, 3 3/4 x 4 slides, portraits, microphotographs, and all types of specialized photography; motion pictures (silent or sound, black and white or color, 16mm or 8mm), videotapes (¼" and 17'), filmstrips (silent and sound), 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: Objective: to provide media, personnel, facilities, and services to specific audiences.

Satellite centers are established as needs demand through cooperative arrangements between the Audiovisual Center, departments, schools, colleges, and other service agencies.

The Medical Audiovisual Center is maintained for the College of Medicine and other health science areas to provide services in media consultation, medical art, medical illustration, medical photography, medical plastics, audiovisual equipment utilization, and instructional materials acquisition.

The Dental Audiovisual Center is supported in terms of staff and budget facilities.

The Educational Media Laboratory, in cooperation with the College of Education, is equipped with audiovisual equipment and materials, and supported with Audiovisual Center staff for the teaching of educational media courses.

Radio broadcasting services. WSUI and KSUI-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 includes University lectures, classroom broadcasts, supplementary material for extension services, School of Music events, news broadcasts, and University commencements, convocations, and induction ceremonies. Special feature programs regularly highlight campus activities through interviews of outstanding members of the University faculty and outstanding campus guests. In addition, listeners may hear outstanding music,
Groups such as band, orchestra, and chorus performances, and artist recitals, are regular features.

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 publishers' list prices. This makes it possible for one to obtain a large variety of test materials from a single source at savings in time and transportation costs. Orders received for items regularly carried in stock are usually shipped within twenty-four hours. Items not carried in stock are furnished as a special service at a carrying charge above the publishers' prices. For a catalog, write to Bureau of Educational Research, East Hall, Iowa City 52242.

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. Examples are the Iowa Adult Education Association, the Iowa Public School Adult Educators, and the Iowa Division, American Association of the United Nations. Organizations such as community groups, parent-teacher associations, luncheon clubs, etc., may often obtain speakers from the University at a reasonable cost. Many members of the faculty of the University are available also for high school commencement addresses.

Publications. The Division publishes and selectively distributes bulletins of several kinds, which describe and list available educational opportunities through courses, conferences, exhibitions, broadcasts, audiovisual and other materials, and others which deal with a wide range of subject matters and ideas.

Scholarly and Professional Publications

The University of Iowa Studies. Includes publications of research conducted by members of the University. The imprint of the University is controlled by the University Editorial Board. A catalog and price list of publications is obtainable from the Department of Publications.

Studies in Character. Discontinued: Volume IV, Number 2, final issue. This series is continued as a subdivision of Iowa Studies in Child Welfare.


Studies in Engineering. Forty-three numbers have appeared.
Studies in the Humanistic Series. The 9th volume is current. A 10th volume can be purchased only in Italy.

Studies in Natural History. The 21st, No. 3 volume is current.

Studies in Psychology. Discontinued; biennial; 23 volumes have appeared.

Studies in Spanish Language and Literature. Fifteen numbers have appeared.

Aims and Progress of Research. Eighty-three numbers have appeared.


The University of Iowa Monographs. Eight titles have been published.

Philological Quarterly. The 49th volume is current.

The Iowa Journalist. Formerly The Iowa Publisher; published monthly.

Iowa Studies in Mass Communications. Published by the Graduate College and the School of Journalism; two numbers have appeared.

Studies in Business and Economics. New series; 9 numbers have appeared.

Studies in Economic Education. Two numbers have appeared.

A Primer of Economics. Five numbers have appeared.

Center for Labor and Management. Current publications are the 26th number in the Reprint Series; the 14th number in the Conference Series; the 19th number in the Monograph Series. The Research Series has been discontinued; 26 numbers have been published. The Information Series has been discontinued; 7 numbers have appeared.

The University of Iowa Extension Bulletin. Discontinued; 847 numbers have been published.

General University Publications

The title, Bulletin of the State University of Iowa, was replaced by The University of Iowa Publication, which was later replaced by the current title, The University of Iowa Bulletins. This series is issued monthly during the year except December. It includes the administrative publications of the University such as general bulletins and catalogs.

Spectator. Published 6 times yearly by The University of Iowa for alumni, parents of students, and friends of the University.

The University of Iowa Press

The University of Iowa Press is a book-publishing agency of the University, established to publish the results of scholarly research. 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 during the summer 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. (See also Bostany and Zoology.)

Iowa Lakeside Laboratory Course Offerings

L101 Field Biology 5 a.h.
L102 Aquatic Ecology 5 a.h.
L104 Aquatic Ecology (second term) 5 a.h.
L105 Plant Taxonomy 5 a.h.
L107 Helminthology 5 a.h.
L108 Protozoology 5 a.h.
L109 Morphology of Algae 5 a.h.
L111 Research 5 a.h.
L112 Research 5 a.h.
L114 Independent Study 5 a.h.
L116 Biology of Insects 5 a.h.
L122 Quantitative Limnology 5 a.h.

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 620 acres. One tract is reserved for biological research; the other for University-wide activities.

An advisory committee, composed of representatives of many colleges and departments, is working on a long-range master plan for development of the area. Uses to which the area may be put include recreation, nature study, scientific research, conferences, short courses, outdoor education, and many others. Developments in the area to date include provision of an access road, water supply, electric power, maintenance and storage facilities, a boathouse and sailing facilities, field archery course, facilities for handicapped persons, and picnic areas.

Institute of Public Affairs. This agency serves as a research and training link between the University and public officials and units of government on the local and state levels in Iowa. Through the Institute, related areas of the University and their research facilities are brought in contact with the problems faced by public officials in the state.

A full-time research and training staff is maintained in the Institute. In addition, long-range research projects which may be undertaken in partial fulfillment of the requirements for advanced degrees, may be planned in
cooperation with the Graduate College and the related departments of the University. A graduate student interested in such research may apply for appointment through the Graduate College, the Institute, and the related departments of the University as a Public Affairs Research Assistant. Such appointments carry a monthly cash stipend paid on the basis of qualifications and service. The results of studies done by research assistants and of such other studies as are of interest to public officials are published and distributed by the Institute.

A close cooperative relation 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. Frequently these publications are prepared by the Institute’s full-time staff or public affairs research assistants in cooperation with organized groups of public officials.

Such publications and other projects are jointly planned by representative public officials and public-spirited citizens who meet regularly with the director, and aid in the formulation of Institute policy in the interest of improving governmental and administrative techniques to meet the real needs of public officials in Iowa.

Short courses and in-service training for government officers are held on the University campus. University students may arrange to attend the sessions of these courses.

Information is available at the Institute for students of the University who are interested in political or career governmental service.

Bureau of Police Science. This bureau cooperates with a group of Area Schools that offer the Associate of Arts degree in Law Enforcement by teaching, as a part of the program, a series of supplementary law enforcement courses on the campus and 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. Research programs in areas of public safety are also carried out.

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. The state organization, which is supported by gifts from foundations and others, coordinates activities at all four-year colleges and universities in Iowa to encourage students to become active in political affairs after graduation. These programs are planned in cooperation with leaders of the legally recognized political parties of the state, and college teachers and administrators.

Iowa Community Services. The Division serves as administrative and fiscal agent for Iowa Community Services, a cooperative state-federal program to expand the continuing education services of colleges and universities toward solving community problems. A state advisory council assists in identifying community problems, recommends appropriate activities which will assist in solving those problems, and approves proposed programs submitted by colleges and universities in Iowa. The program was authorized by the U.S. Congress in Title I of the Higher Education Act of 1965.
HEALTH AFFAIRS

The foregoing sections covering the Colleges of Dentistry, Medicine, Nursing, and Pharmacy contain information concerning the courses and programs offered and the services available through these professional colleges. In addition, numerous programs or agencies, representing cooperative efforts of varying numbers of colleges, departments, and federal and state 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. When it was first organized in 1927, it operated under the Extension Division. Later, in 1939, it became a joint project under its present arrangement.

The State Department of Health provides the personnel, the salaries, and office supplies; the University provides the office space and equipment. The program is under the direction and general supervision of the Director of the Dental Health Division, Iowa State Department of Health.

The personnel of the Bureau consists of the director, a dental health consultant, and a secretary.

The primary purpose of the Bureau is to promote a statewide 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 diseases, and the correction of dental defects. As a means of accomplishing the educational objective, authoritative material is developed and provided to the classroom teacher. The preventive aspect of the program is emphasized through home participation in a radio 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. In 1968-69, approximately 63 per cent of the public school districts and parochial schools in Iowa participated in the program.

DIRECT HEALTH SERVICES

Located on the University campus and carefully integrated in its program are four major health units of The University of Iowa which render direct health services to the people of the state. Each is supported by appropriation from public funds, and each devotes its major effort to the provision of service. However, to the extent that the provision of the service may also aid in the preparation of young men and women in the health professions and in areas of special teaching, these service organizations are integrated in the University program. They are administered under the general University organization.

University Hospitals—For the medical and surgical treatment of patients referred by physicians.

Psychopathic Hospital—For the care, treatment, and maintenance of committed and voluntary patients.

State Bacteriological Laboratories—For the provision of a statewide bacteriological laboratory service to city, county, and state governments, physicians, and others.

University Hospital School—For the evaluation, management, special education, and research pertaining to physically handicapped and mentally retarded children. (See University Hospital School.)

Oakdale Hospital—For the treatment of tuberculosis and rehabilitation of patients with other chronic diseases.

IOWA MENTAL HEALTH AUTHORITY

A federally funded agency under the Public Health Service Act (P.L. 78-88), the Authority is placed under the final supervision of the Board of Regents with its own policy board, the Mental Hygiene Committee, established under Iowa Code. This agency, located at Psychopathic Hospital, is the central administration for Iowa’s 24 Community Mental Health Centers that make available local services for 75 per cent of the Iowa population. The centers are private nonprofit corporations with 467 citizens serving on
RELATERD SERVICES

the Boards of Directors and 172 personnel on the staff. They provide service to over 15,000 patients annually. The total budget of the centers exceeds $2.5 million annually, with the largest portion coming from local county taxes.

The Authority provides consultation on federal Construction Grants (P.L. 89-184) and Staffing Grants (P.L. 89-105). It maintains an Audiovisual and Pamphlet Service that provides free educational materials throughout the state. Consultation, staff development, recruitment, standards, and research are provided 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, the Children’s Rehabilitation Section and the Pine School Section, operate as one administrative unit within this program.

The Children’s Rehabilitation Section provides treatment and education for children whose physical handicapping condition makes it impractical for them to attend or to make satisfactory progress in 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. Ages range extends to twenty-one years. Approximately sixty children receive inpatient services at a given time. A comprehensive program of special management for the child is available in the fields of medical, dental, and nursing care; communication skills; various therapies; special education; physical education; industrial arts; homemaking; music; and child development. In addition, 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, insofar 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. Furthermore, the children’s schedules include physical education, music, homemaking, industrial arts and organized recreational activities. Attendance in the Pine School Section is on a day basis only. These children live at home and are transported daily to and from the University Hospital School.

Additionally, three other programs are housed in this University Hospital School complex: the offices of State Services for Crippled Children (see 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. (See College of Education, College of Liberal Arts, and Graduate College.) 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 in some other areas.

STATE SERVICES FOR CRIPPLED CHILDREN

Crippled Children’s Services are supported by federal appropriations through the U.S. Department of Health, Education, and Welfare, and matching state appropriations through the University Hospitals.

The purpose of these services is to provide facilities and treatment for selected cases, and to assist in planning for home and local care of crippled children. The Iowa SSCC defines a crippled child as “one who has a chronic or congenital health problem which hinders the realization of his full potential.” Services are available to children under the age of twenty-one years.

Diagnostic field clinics are conducted annually in forty-one communities through the state, and at Oakland. Patients are usually referred by local physicians or dentists. Medical examiners at the field clinics are staff members in the Departments of Pediatrics, Orthopedic Surgery, and Otolaryngology. Diagnostic services are also provided in the areas of speech pathology, audiology, and clinical psychology. Sixteen of the field clinics are specialized cardiac evaluation.
clinics staffed by cardiologists from the Depart-
ments of Pediatrics and Internal Medicine. The
22 Oakland clinics are combined clinics for cardic
and muscular dystrophy patients. There are 10
special ear-nose-and-throat evaluation clinics held
annually.
Special care programs are operated for children
who have cystic fibrosis, nephrotic syndrome, panhi-
ketonuria, muscular dystrophy; a number of
research and care programs for mentally retarded
and multiply-handicapped children and pre-
mature and other high-risk infants are main-
tained.
Two special research projects, "Congenital
Anomalies of the Hand" and "Validity of Five-
Year Prophylaxis in Non-Cardiac Rheumatic," are
subsidized by the Research Division of the U.S.
Division of Maternal and Child Health
Services (formerly the Children's Bureau).
Field workers in public health nursing, physi-

tical 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 pro-
gram in audiology and speech pathology within
the University, and other special training pro-
grams for staff.

GENERAL SERVICE UNIT
ADULT EDUCATION
ADVISORY SERVICE
This service within the College of Education
provides consultative and guidance service on the
problems of adult education programs with re-
spect to organization, techniques, subject matter,
and other aspects of continuing education in the
community.

COUNCIL ON SPEECH PATHOLOGY
AND AUDIOLOGY
The work of the various departments of the
University which have some bearing upon the
problems of speech and hearing handicaps is
coordinated by the Council on Speech Pathology
and Audiology. Teaching, research, and a well-
known service program are carried on. For
further information, see Speech Pathology and
Audiology.

U OF I ALUMNI ASSOCIATION
When he enrolls at The University of Iowa, a
student assumes an identity with this institution
which lasts throughout his lifetime. Whatever his
period of residence on the campus, the student's
identity with the University is perpetual; if he
chooses, his University association may continue
to be rich and meaningful throughout the years.

The leading agency through which Iowa stu-
dents retain their current identity with the Uni-
versity after they leave the campus is The Uni-
versity of Iowa Alumni Association. Organized
in 1857, the Association's current membership
includes the sons and daughters of former stu-
dents of all generations, throughout the world. Alumni retain their Association membership
through the payment of nominal annual dues, or
through the purchase of life memberships.
The Association publishes the Iowa Alumni Re-
sview, a bimonthly magazine for its members. In
addition to current institutional news, the mag-
azine contains a wide variety of intellectual con-
tent, and reports thousands of news items each
year about alumni themselves—an alumni news
service which is not otherwise available.
The Association's continuing objectives are:
1. To identify alumni with the University as a
continuing source of inspiration and enrichment
for their personal lives;
2. To strengthen public recognition of the Uni-
versity as an institution vital to the stability and
welfare of the state and of the nation;
3. Through organized alumni effort, to serve the
University in strengthening its programs in teach-
ing, research, and public service.
The Association is particularly active in its sup-
port of The University of Iowa Foundation, which
receives and administers private gifts and be-
quests for the permanent benefit of the Univer-
sity, and for support of specific and continuing
projects on the University campus.

THE UNIVERSITY OF IOWA
FOUNDATION
The University of Iowa is supported generously
by the state of Iowa, but it has always needed
financial aid from other sources, as well. Recent
growth has accentuated its needs.
The University of Iowa Foundation was orga-
nized in 1936 to provide private support for the
educational objectives of the University. The pri-
mary purpose of the Foundation is to strengthen
all of the University's scientific, literary, and ed-

tional pursuits by encouraging voluntary giv-
ing for its support.
A private nonprofit corporation, the Founda-
tion is empowered to solicit and receive gifts and
bequests; to accept trusts subject to the conditions
imposed thereon; and to hold, administer, manage,
use, or distribute gifts, bequests, and trusts, all
for the benefit of The University of Iowa. As 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 pro-
vide more funds for scholarships, fellowships,
student loans, library acquisitions, and faculty
research grants. The original purpose of the Foundation was to serve as a channel for alumni gifts to the University, and this continues to be an important phase of the Foundation’s activity. Thousands of alumni gifts are received each year as the result of campaigns for the annual alumni fund which are conducted by mail, telephone, and personal visits.

Costal campaigns for buildings, equipment, new programs, professorships, and other needs are also a regular and growing part of the Foundation’s activities. A recently completed $1,250,000 campaign to provide a new art museum—the keystone building of a new Fine Arts Campus—provided the seed money and impetus for a total fine arts project of nearly $15 million. The total project is being financed by a desirable blend of private gifts, state appropriations, federal grants, and fees from student tuition. The Foundation’s second capital campaign, $2 million to provide a Health Sciences Library, was completed in 1969.

Anyone who wishes more information about the needs of the University or the mechanics of making gifts or bequests to the Foundation should write to the President of The University of Iowa, or to the Executive Director of The University of Iowa Foundation, Iowa City, Iowa 52240.

MUSEUM OF NATURAL HISTORY

The Museum of Natural History is located in Macbride Hall. 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, single and collective, 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 scientific and artistic technique of curatorship and exhibition.

Habitat exhibits of North American mammals include the American bison, the antelope, the moose, the bear, the beaver. The specimens and the accessories for the exhibit were collected near Iowa City.

A large and well-known bird habitat exhibit is the Sayas Island Cycloramus. This is a complete representation of a bird island of the Hawaiian group. Other habitat exhibits include The Bering Sea, the Louisiana Swamp, the Fall Migration, and Crete 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.

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 19th century, are exhibited.

Several displays relate to the geology of Iowa, and include typical fossil specimens.

The Museum is open from 8:00 a.m. to 4:30 p.m. weekdays and from 1:00 p.m. to 4:30 p.m. on Sundays.

READING CLINIC

The Reading Clinic, a teacher-training unit within the College of Education, provides diagnostic and corrective service for school children having reading difficulties.

OFFICE OF PUBLIC INFORMATION AND UNIVERSITY RELATIONS

UNIVERSITY NEWS SERVICE

Through the Office of Public Information and University Relations, and its affiliated University News Service, the University seeks to foster a greater understanding of its far-reaching aims and activities, both within the immediate University community and among the public at large. To attain this goal, both offices cooperate with all members of the faculty, staff, and student body in helping to achieve support and good will for the University and for higher education in general.

Among the specific services of the Office of Public Information and University Relations are the establishment of liaison between University speakers and clubs and other groups; publication of Spectator, Faculty Newsletter, and University Operations Manual; the provision of campus tours and other services for guests; the preparation and display of exhibits, both on and off campus, of interest to University personnel, alumni, and friends; and the provision of public service programs for Iowa radio stations.

In addition, the Office serves in an advisory capacity in the announcement of University policy matters of major public interest and assists in internal communications within the University.

As a division of the Office of Public Information, University News Service helps tell the University’s story by providing news, information about the institution to the mass media of communication both inside and outside of Iowa. Other activities of the Service include the gathering and writing of informative material for special and general interest periodicals, assisting in the preparation of special University publications, the answering of myriad requests for information and assisting representatives of the mass media who visit the campus seeking information and material for articles and productions.

The University News Service also offers assistance to the colleges and departments of the University on matters of information and communication on campus and with the University organiza-
tions. Aid in planning and promotion of campus events is provided by the University News Service and the Office of Public Information. Two staff members work exclusively with the various health science departments and agencies on the campus in furthering public understanding of the University’s activities in medicine and allied fields.

Through the Sports Information Service the people of Iowa are informed of the University’s program of physical education and intercollegiate athletics.

OFFICE OF SPACE ASSIGNMENT AND UTILIZATION

The office serves in direction and coordination of the University’s use of its buildings and the room facilities in them. This service provides analysis of current and projected needs necessary in formulating University schedules and new building programs. The office operates under Planning and Development.

- UNIVERSITY PERSONNEL SERVICE

The University Personnel Service is responsible for a program of administering to 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 benefits administration for full-time, permanent, and contingent nonteaching employees of the University. It also participates in certain aspects of the academic personnel program and in payroll record keeping and collecting personal record data for both faculty and staff people.
STATE BOARD OF REGENTS

The University of Iowa, the Iowa State University of Science and Technology, the University of Northern Iowa, the Iowa Braille and Sight Saving School, and the Iowa School for the Deaf are governed by the State Board of Regents consisting of nine members. The membership of the Board is as follows:

Stanley F. Rodaker, President
E. Wayne Richey, Executive Secretary
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Casey Los, Algona
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Ned Perrin, Mapleton
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Associate Provoest, Planning and Development, George A. Chambers, B.A., M.A., Ph.D.
Assistant to the President, Robert E. Engel, A.B., B.D., Ph.D.
Special Assistant to the President, John W. Larson, B.A., J.D.

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Dean, Donald J. Galagan, D.D.S., M.P.H.

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University Schools
Director, Wesley A. Eber, B.A., M.A., Ph.D.

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Dean, Advanced Studies, Alvin H. Snuff, B.D., M.A., Ph.D.

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Director, Frank A. Seiberling, B.A., Ph.D.
School of Music
Director, Horace Vozman, B.S., M.A.
Department of Speech and Dramatic Art
Chairman, Samuel L. Becker, B.A., M.A., Ph.D.

School of Journalism
Director, Malcolm S. MacLean, B.A., M.A., Ph.D.

School of Letters
Director, John C. Gerber, B.A., M.A., Ph.D.
School of Library Science
Director, Frederick Weisman, B.S., B.L.S.

School of Religion
Director, George W. Forell, B.D., Th.M., Th.D.
School of Social Work
Director, Frank Z. Glick, A.B., A.M., Ph.D.

LAW
Dean, David H. Vernon, A.B., LL.B., LL.M., J.S.D.

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NURSING
Dean, Laura C. Dustan, B.S., M.N., M.A., Ed.D.

PHARMACY
Deans, Louis C. Zofy, Ph.G., B.S., M.S., D.Sc.

OTHER EDUCATIONAL UNITS
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Dean, Robert F. Ray, Ph.D.
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Bureau of Educational Research
Director, J. Leonard Davies, Ph.D.
Bureau of Police Science
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Center for Conferences and Institutes
Director, Brooks W. Booker, B.S., M.A.
Bureau of Instructional Services
Director, J. Leonard Davies, Ph.D.

Institute of Public Affairs
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Iowa Lakeside Laboratory
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Director, Charles C. Spiker, B.A., M.A., Ph.D.

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PSYCHIATRIC HOSPITAL
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STATE BACTERIOLOGICAL LABORATORY
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Consulting Director, Franklin Henry Top, A.B., M.D., M.P.H.

OAKDALE FACILITIES
Superintendent, William M. Spear, M.D.C.M.
Director, John C. MacQueen, B.D., M.D.

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STUDENT HEALTH
Director, Robert A. Wilcox, M.D.

STATE SERVICES FOR CHILDFORD CHILDREN
Director, John C. MacQueen, B.S., M.D.

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OFFICE OF RESEARCH AND ADMINISTRATION
Director, Margery E. Hoppin, M.A.

OFFICE OF AGENCY LIASON
Director, C. David Cornell, M.A.

OFFICE OF PROJECT DEVELOPMENT
Director, Tony H. Evans, Ph.D.

STUDENT SERVICES
Vice-Provost, Philip G. Hubbard, Ph.D.

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Dean, W. Alberi Cox, M.A.
Director of Admissions, Robert D. Leachy, M.A.
Registrar, John F. Demitrovich, M.A.

CAREER COUNSELING AND PLACEMENT
Director, Helen M. Barnes, M.A.

IOWA MEMORIAL UNION
Director, Loren V. Kottneer, M.A.

STUDENT AFFAIRS
Dean of Students and Director, Marion L. Ruff, M.A.

STUDENT FINANCIAL AIDS
Director, John E. Moore, M.A.

UNIVERSITY COUNSELING SERVICE
Director, John O. Critts, B.A., Ph.D.

UNIVERSITY EXAMINATION AND EVALUATION SERVICE
Director, Douglas R. Whitney, M.A.

BUSINESS AND FINANCE
Vice-President, Elwin T. Jolliffe, B.S.C.

BUSINESS OFFICE
Controller and Secretary, Leonard R. Breka, B.S.C.
Manager and Treasurer, Raymond R. Breka, B.S.C.
Purchasing Agent, Ainey Burke, B.S.

UNIVERSITY PERSONNEL SERVICE
Director, Fred H. Dederer, B.A.

DORMITORIES AND DINING SERVICES
Director, Theodore Martin Rohrer, B.S.C.

UNIVERSITY ARCHITECT
George Lewis Horner, B.S., R.A.
ADMINISTRATIVE OFFICERS

PHYSICAL PLANT
Superintendent, Duane A. Nollack, B.S.E.E.

GENERAL UNIVERSITY

ALUMNI RECORDS
Executive Director, Joseph W. Meyer, B.A., M.A.

FACILITIES PLANNING AND UTILIZATION
Director, Richard E. Gibson, B.E.C.

PUBLIC INFORMATION AND UNIVERSITY RELATIONS
Director, Gordon B. Strayer, B.A., M.A.
Director of Community Relations, Loren L. Hickerson, B.A.

INTERCOLLEGIATE ATHLETICS
Director, Chalmers W. Elliott, A.B.

UNIVERSITY OF IOWA FOUNDATION
Director, Darrell D. Wyrick, B.S.Ch.E., M.S.
Hamblin, Tatiana M., A.B. William and Mary, 1965; M.S. Instruvator, Russian, 1968

Assistant Professor, Oral Diagnosis and Oral Pathology, 1971


Bibliographer, University Libraries, 1955 (1966)

Hassan, Andrew M., B.A. Omaha, 1913; M.A.L.S. Minnesota, 1936

Instructor, Library Science, 1937

Hassen, Gary F., B.A. Iowa, 1957; M.A., Ph.D. 1964

Assistant Professor, Physical and Educational Psychology for Men, 1962 (1969)

Hart, Robert Calvin, B.S. Iowa, 1933; M.D. 1937

Vice-President and Dean for Medical Affairs, Professor, Internal Medicine, 1945 (1959)


Assistant Professor, Journalism, 1969

Hardy, James C., B.S. Northeast Missouri State Teachers College, 1931; M.A. Iowa, 1937; Ph.D. 1941

Professor, Speech Pathology and Audiology, 1965 (1965)


Professor, Business Administration, 1937 (1964)

Hayward, Donald J., B.A. Iowa State Teacher's College, 1940; M.A., M.S. Washington University, 1946; Ph.D. Iowa, 1949

Assistant Professor and Coordinator, Educational Information Center, 1959

Harvey, James L., B.S. Georgia Institute of Technology, 1961; B.Arch. Harvard, 1965; M.C.P. 1969

Assistant Professor and Head, Urban and Regional Planning, 1966

Haw, Frederick, B.S. Franklin and Marshall, 1955; M.D. Temple, 1959

Assistant Professor, Surgery, 1959 (1965)

Hackett, Peter J., B.S. Southern Illinois University, 1964

Business Administration Librarian, Business Administration, 1964 (1969)

Herbert, Bernard H., B.S. Maryand, 1950; M.S. American University, 1954; Ph.D. University of Chicago, 1959

Assistant Professor, Zoology (Entomology), 1967

Hecht, Richard, B.A. Buffalo, 1952; M.A., Ph.D. Chicago, 1960

Assistant Professor, Zoology (Entomology), 1963

Henderson, Robert, B.S. University of Illinois, 1949; M.S. University of Illinois, 1953

Professor and Coordinator, Hospital Pharmacy Education, 1959


Instructor, Medical Technology, 1965 (1970)

Hershkovitz, Ruth M., B.S. Union College (Schenectady), 1962; Ph.D. Johns Hopkins, 1969

Assistant Professor, History, 1969

Hes, Andrew, B.A. Colby, 1940; M.A. Iowa, 1941; Ph.D. Iowa, 1947

Assistant Professor, History, 1950

Hess, Charles E., B.S. Franklin and Marshall, 1955; M.D. Temple, 1959

Assistant Professor, Surgery, 1959 (1965)

Hershey, John A., A.B. Chicago, 1955; Ph.D. 1959

Professor, Microbiology, 1962 (1969)

Hershey, Kathryn L., B.M. Northwestern, 1943

Associate Professor, Music, 1968 (1965)

Hess, Donald H., B.S. Missouri School of Mines, 1949; M.S. Wisconsin, 1952; Ph.D. Illinois, 1956

Assistant Professor, Geology, 1960

Hess, Alan Curtis, M.D. Iowa, 1960

Assistant Professor, Radiology, 1969

Houser, William John, Jr., B.A. Kansas, 1951; M.A. 1962; Ph.D. 1969

Assistant Professor, Preventive Medicine and Environmental Health, Director and Principal Biostatistician, State Biostatistical Laboratory; Associate Professor, Dentistry, 1969 (1967)

Hawkins, Peter, A.S. Texas, 1968; M.A. Boston, 1970; Ph.D. 1971

Assistant Professor, Sociology and Anthropology, 1967 (1972)

Hawley, Ellis W., B.A. University of Wisconsin, 1925; Ph.D. Wisconsin, 1939

Professor, History, 1969

Hawley, Charles K., B.A. Grinnell College, 1927; M.D. Iowa, 1931

Assistant Professor, Urology, 1939

Hayden, John D.M.S. Oregon, 1947; M.S. Michigan, 1955; Ph.D. Iowa, Lincoln, 1963

Professor, Toch and Iowa, and Research Coordinator, Dentistry, 1965 (1967)

Hayman, David B., B.A. New York, 1948; Ph.D. Paris (France), 1955

Professor, English and Comparative Literature, 1965

Hayy, Alfred, B.S. Notre Dame, 1964; M.A. Iowa, 1957; M.D. 1962

Assistant Professor, Pediatrics, 1967

Hedden, Stephen T., B.S. Michigan, 1960; M.S. 1963

Assistant Professor, Computer Science, 1967 (1969)


Professor and Provost, 1969

Heflin, Joseph P., B.S. Illinois, 1963; M.S. 1966

Assistant Professor, Zoology (Entomology), 1968

Hicks, W.B., B.S. Iowa, 1960; M.S. Minnesota, 1965

Assistant Professor and Coordinator, Nursing, 1968

Hogan, John E., B.S. Chicago, 1941; A.M. 1949; Ph.D. 1958

Professor, Sociology and Anthropology, 1956 (1959)

Hove, Judith A., B.A. Iowa, 1957

Acting Director, Educational Placement, 1959

Huff, John B., Jr., B.A. Poynter University, 1967; M.A. Harvard University, 1967; Ph.D. 1968

Assistant Professor, History, 1969

Hulker, Charles D., B.S. Connecticut, 1960; M.S. Iowa, 1965

Instructor and Coordinator, Hospital Pharmacy Education, 1965


Instructor, Medical Technology, 1967 (1967)

Husnak, Robert, A.B. Union College (Schenectady), 1962; Ph.D. Johns Hopkins, 1969

Assistant Professor, Physics and Astronomy, 1967

Hurvitz, Richard B., A.A. Augusta, 1926; M.A. Iowa, 1941; Ph.D. 1945

Professor, Music, 1947 (1967)

Hutson, Ronald L., B.S. Oregon, 1955; M.D. 1961

Assistant Professor, Psychiatry, 1958

Hutchins, Howard R., Ph.D. University of Colorado, 1954; M.A. University of Michigan, 1952; Ph.D. 1958

Research Associate, Medicine, 1962

Huskinson, William I., B.S. Iowa, 1950; M.A. 1958

Instructor, Dentistry, 1964 (1966); L.L.D. Iowa, 1967

Hildreth, William A., B.M. New England Conservatory, 1920; M.M. 1929; Ph.D. 1935

Associate Professor, Music, 1948 (1970)

Hulker, Laver Leo, B.A. Iowa, 1940

Director and Editor, Community Relations, 1944 (1966)

Hulker, James Charles, B.A. Simpson, 1920; M.S. Iowa, 1923; Ph.D. Iowa, 1927

Professor, Statistics, 1921 (1926)

Hulman, Viola, B.A. Buena Vista, 1941; M.A. Denver, 1943

Curator Librarian, University Libraries, 1936

Humeau, Albert Nathan, B.Ed. Illinois State, 1920; M.A. Iowa, 1940

Professor, Philosophy, 1948 (1949)


Assistant Professor, Education and Library Science, 1965

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Hughes, Lowell R., B.A. Ohio Wesleyan, 1950; M.D. Ohio State, 1953

Associate Professor, Obstetrics and Gynecology and Preventive Medicine and Environmental Health, 1955 (1955)

Hult, Marion Lawrence, B.A. Ohio Wesleyan, 1952; M.A. 1953

Dean of Students; Director, Student Affairs, 1946 (1955)

Hulshoff, Robert Louis, B.A. Illinois, 1939; Ph.D. Colum-

bia, 1942

Professor and Chairman, Botany, 1946 (1955)

Hurt, Harold King, B.S. Utah, 1941; M.A. 1943

Assistant Professor, Business Administration and Journa-

lism.

Hunt, John Scott, B.A. Kentucky, 1925; M.D. Johns Hop-

kins, 1929

Clinical Associate Professor, Internal Medicine, 1958

Hunsley, John F., B.A. Chicago, 1948; B.A. Michigan, 1956; M.A. Communications, 1962; Ph.D. Chicago, 1965

Associate Professor, English, 1961 (1965)

Huntz, Paul Reyer, B.S. Purdue, 1928; M.A. Harvard, 1929; Ph.D. 1937; M.D. Yale, 1939

Professor and Head, Physiology; Director, Psychopathic Hospital, 1939 (1955)

Hutchins, Richard O., B.S. Brown University, 1948; A.M. Michigan, 1959; Ph.D. Columbia, 1960

Visiting Instructor in Psychiatry, 1953; Adjunct Professor, 1953

Hwang, Sung-Tak, B.Sc. Seoul National, 1958; M.S. Iowa, 1962; Ph.D. 1965

Associate Professor, Chemical Engineering, 1955 (1969)

Iknayan, Marguerite, B.A. Chicago, 1928; M.A. 1932; Ph.D. Columbia, 1935

Associate Professor, French and Italian, 1935 (1965)

Inglis, Charles Joseph, B.A. Coe, 1934; M.S. Iowa, 1940; Ph.D. 1951

Associate Professor, Physiology, 1955 (1958)

Ingram, F. Duane, B.S. Wisconsin State College, 1950; M.D. Iowa, 1956; Ph.D. 1958

Instructor, Physiology and Biophysics, 1958

Ingram, Walter Robinson, B.A. Grinnell, 1934; M.S. Iowa, 1939

Professor, Anatomy (Neurobiology), 1955 (1955)

Irons, Victor V., M.D. Harvard, 1921; Private Duties, 1921

Research Professor, Pediatrics, 1935


Assistant Professor, Political Science, 1963

Irwin, Robert, B.A. Grinnell, 1926; M.A. Columbia, 1937; Ph.D. 1943

Professor, English, 1947 (1962)

Isaacs, Glenn A., B.S. Coe College, 1944; M.S. Iowa, 1953

Assistant Instructor, Radiology, 1948

Jackson, Donald F., B.A. Wagner, 1925: M.A. Indiana, 1946; Ph.D. 1967

Assistant Professor, Chemistry, 1967 (1958)

Jackson, Herbert L., B.A. Kansas State Teachers College (Emporia), 1942; M.S. Wisconsin, 1950; Ph.D. 1952

Professor, Physical and Radiation Research Laboratory, 1950 (1952)

Jacob, H. Lee, B.A. Calver-Stockton, 1925; M.A. Chicago, 1929; Ph.D. Chicago Theological Seminary, 1932; Ph.D. Iowa, 1932

Assistant Professor, Gerontology, 1951 (1955)

Jabs, Richard M., D.D.S. New York, 1925; M.D. Califor-

nia (Berkeley), 1927; Ph.D. Medical College of Virginia, 1934; Ph.D. Indiana, 1939

Professor and Division Head, Oral Biology; Associate Professor, Division of Basic Science, 1966 (1955)

Jabs, Glenn D., B.A. Luther, 1920; M.A. North Dakota, 1925; Ph.D. Yale, 1928

Assistant Professor, Anatomy, 1926

JACOBs, Ada R., B.S. Teachers College Columbia Uni-

versity, 1920; M.S. Wayne State University, 1923; Ph.D. Case-Western Reserve University, 1929

Associate Professor, Nursing, 1969

Jacobsen, James F., B.S. Southwest Missouri State Col-

lege, 1955; M.A. Missouri, 1953; Ph.D. 1959

Associate Professor, Mathematics; Associate Dean, Gradu-

ate College, 1959 (1970)


Instructor, History, 1967

James, Sydney V., B.A. Harvard, 1900; A.M. 1901; Ph.D. 1908

Professor and Chairman, History, 1965 (1970)

January, Lewis Edward, B.A. Colorado College, 1923; M.D. Colorado, 1927

Professor, Internal Medicine, 1923 (1935)

Jeffers, Coleman R., B.A. Berea, 1949; M.A. Iowa, 1951; Ph.D. 1954

Associate Professor, Spanish and Portuguese, 1955

Jeffers, James R., B.B.A. Iowa, 1960; Ph.D. Tulane, 1966

Associate Professor, Economics, 1963 (1968)


Research Associate, Institute of Public Affairs, 1969

Jenkins, Richard L., B.A. Stanford, 1925; M.D. Chicago, 1929

Professor, Psychiatry, 1961

Jenns, Russell W., Captain, U.S. Military Academy, 1940

Assistant Professor, Military Science, 1958

Jenki, Donald M., B.M. DePaul, 1956; A.M. Chicago, 1959; D.M.A. Stanford, 1965

Associate Professor, Music, 1968

Jennings, Edward H., B.A. University of North Carolina, 1926; M.A. and 1929; Reserve University, 1929

Assistant Professor, Business Administration, 1939

Jensen, Robert L., B.A. North Dakota, 1959

Research Associate, Pediatrics, 1955

Johns, Richard P., B.B.A. State, 1941; M.A. 1955; Ph.D. 1961

Assistant Professor, Education, 1961

Johnson, Charles F., B.A. California (Santa Barbara), 1927; M.A. and Ph.D. California (Los Angeles), 1931

Assistant Professor and Assistant Director, Child De-

velopment Clinic, 1957

Johnson, Donald Bruce, B.A. Minnesota, 1943; M.A. 1946; Ph.D. Illinois, 1952

Professor, Political Science, 1953

Johnson, Eugene W., B.A. California (Santa Monica), 1920; M.A. 1920; Ph.D. 1922

Associate Professor, Mathematics, 1959 (1975)

Johnson, H. Wayne, B.S. North Dakota, 1925; M.A. Iowa, 1939; M.A. Illinois, 1965

Assistant Professor, Social Work, 1965 (1968)

Johnson, Louise C., B.A. Syracuse, 1959; M.S.W. Connecti-

cut, 1962

Assistant Professor, Social Work, 1964


Assistant Professor, Pedodontics, 1957 (1970)

Johnson, Wallace William, B.S. North Dakota State Col-

lege, 1922; D.D.S. Iowa, 1925; B.S. 1925

Professor and Head, Operative Dentistry, 1967 (1965)

Joffe, Irving W., B.S.C. Iowa, 1923

Vice-President for Business and Finance, 1968 (1968)

Jones, Howard R., B.S. Minnesota, 1925; M.A. 1927; Ph.D. Yale, 1928

Professor and Dean, College of Education, 1963
ADMINISTRATION AND INSTRUCTION

Instructor, Audiological Center, 1966.

Langmuir, Karl E., B.S. Wisconsin, 1960; M.S. 1962; Ph.D.

Associate Professor, Electro-Optical Engineering, 1965 (1967)

Leonard Bradley M., B.A., Iowa, 1960; M.A. 1961; Ph.D.

Professor, Division, University Elementary School, 1964 (1790)

Lorenc, Stanley A., B.S. Notre Dame, 1928; Ph.D. Chicago, 1938.

Assistant Professor, Psychophysics Hospital, 1967.

Lyon, Joseph, B.A., Troy, 1932; M.A. 1934; Ph.D. Houston,

Assistant Professor, Neurology and Physiology, 1967.

Lynch, William K., B.A. California (San Jose)

1954; M.A. University of California (Los An-

gales), 1961.

Assistant Professor Music, 1961.

Lewis, Wm B., Jr., B.S., Anheuser, 1960; M.A. Minneapolis,


Assistant Professor, German, 1968.

Liechty, Richard D., B.A. Yale, 1959; M.D. Northwestern,


Associate Professor, Operative Dentistry, 1963 (1969).

Lindenhoven, John M., B.S. Iowa State, 1959; M.S. North-

dwestern, 1961.

Professor, Industrial and Management Engineering, 1961 (1968).

Lilly, Donald B., B.A. RAND, 1954; M.A. 1967; Ph.D. Pitts-

burg, 1968.

Associate Professor, Speech Pathology and Audiology, 1964 (1968).

Lim, Bok-Joon, B.S. National Taiwan, 1956; M.S. Notre-


Assistant Professor, Mathematics, 1963 (1969).

Lindberg, James B., B.A. Denver, 1959; M.A. Michigan,

Associate Professor, Psychology, 1963 (1969).

Lindsey, Donald D., B.S. Wichita State, 1959; M.S. Min-

nesota, 1963; Ph.D. 1969.


Associate Professor, Psychoneurology and Missiological

Biology.

Lloyd-Smith, Richard A., New Mexico, 1955; M.A. North-


Locher, Frederick A., B.S. Michigan College of Mining

and Technology, 1958; M.S. Iowa, 1960; Ph.D. 1969.

Assistant Professor, Mechanisms and Hydraulics, 1969.

Lockley, Herbert S., B.A. Swarthmore, 1942; M.D. Harv-

ard, 1949.

Assistant Professor, Surgery (Neurosurgery), 1967 (1969).

Logan, Milton G., B.A. New York, 1960; M.A. 1962; Ph.D.

Michigan, 1964.

Associate Professor, Political Science, 1968 (1969).

Lundberg, Gerhard, B.A. Cornell University, 1944; A.M.

1948; Ph.D. 1954.

Assistant Professor, Political Science, 1955.

Luo, Yan K., B.S. National Taiwan, 1951; M.A. Wisconsin,

1957; Ph.D. 1963.

Assistant Professor, Electrical Engineering, 1958.


Assistant Professor, Psychology, 1963 (1967).


Professor and Acting Head, Pharmacology, 1963 (1967).

Long, William A., B.S. Arizona, 1951; M.A. 1962; Ph.D.

Iowa, 1965.


Lorenzen, James F., B.A. Wisconsin, 1954; M.S. 1955; Ph.D.

Assistant Professor, Engineering, Electrical, 1959 (1967).

Associate Professor, Electrical Engineering, 1958 (1968).

Lewis, John H., B.S. Iowa State, 1952; M.S. 1955; Ph.D.

Professor and Acting Head, Pharmacology, 1955 (1957).

Lewis, Donald M., B.S.E.E. Wisconsin, 1959; M.S.E.E. 1962.

Ph.D. 1965.

Assistant Professor, Educational Resources, 1960.

Lewis, Peter T., B.A. University of California (Santa Bar-

bara), 1954; M.A. University of California (Los An-

gales), 1960.

Assistant Professor Music, 1961.

Lewis, Wm. B., Jr., B.A. Anheuser, 1960; M.A. Minneapolis,


Assistant Professor, German, 1968.

Liechty, Richard D., B.A. Yale, 1959; M.D. Northwestern,


Associate Professor, Operative Dentistry, 1963 (1969).

Lindenhoven, John M., B.S. Iowa State, 1959; M.S. North-

dwestern, 1961.

Professor, Industrial and Management Engineering, 1961 (1968).

Lilly, David J., B.A. RAND, 1954; M.A. 1967; Ph.D. Pitts-

burg, 1968.

Associate Professor, Speech Pathology and Audiology, 1964 (1968).

Lim, Bok-Joon, B.S. National Taiwan, 1956; M.S. Notre-


Assistant Professor, Mathematics, 1963 (1969).

Lindberg, James B., B.A. Denver, 1959; M.A. Michigan,

Associate Professor, Psychology, 1963 (1969).

Lindley, Donald D., B.S. Wichita State, 1959; M.S. Min-

nesota, 1963; Ph.D. 1969.


Associate Professor, Psychoneurology and Missiological

Biology.

Lloyd-Smith, Richard A., New Mexico, 1955; M.A. North-


Locher, Frederick A., B.S. Michigan College of Mining

and Technology, 1958; M.S. Iowa, 1960; Ph.D. 1969.

Assistant Professor, Mechanisms and Hydraulics, 1969.

Lockley, Herbert S., B.A. Swarthmore, 1942; M.D. Harv-

ard, 1949.

Assistant Professor, Surgery (Neurosurgery), 1967 (1969).

Logan, Milton G., B.A. New York, 1960; M.A. 1962; Ph.D.

Michigan, 1964.

Associate Professor, Political Science, 1968 (1969).

Lundberg, Gerhard, B.A. Cornell University, 1944; A.M.

1948; Ph.D. 1954.

Assistant Professor, Political Science, 1955.

Luo, Yan K., B.S. National Taiwan, 1951; M.A. Wisconsin,

1957; Ph.D. 1963.

Assistant Professor, Electrical Engineering, 1958.


Assistant Professor, Psychology, 1963 (1967).


Professor and Acting Head, Pharmacology, 1955 (1957).

Long, William A., B.S. Arizona, 1951; M.A. 1962; Ph.D.

Iowa, 1965.

## Student Enrollment

For Year Ended June 30, 1969

<table>
<thead>
<tr>
<th>I. University Level</th>
<th>Summer Session 1968</th>
<th>Academic Year 1968-69 (September to June)</th>
<th>Total Excluding Duplicates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Total</td>
</tr>
<tr>
<td>Students in Residence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College of Business Administration</td>
<td>202</td>
<td>28</td>
<td>230</td>
</tr>
<tr>
<td>College of Dentistry</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>53</td>
<td>0</td>
<td>53</td>
</tr>
<tr>
<td>Graduate College</td>
<td>2,856</td>
<td>5,315</td>
<td>8,171</td>
</tr>
<tr>
<td>College of Law</td>
<td>106</td>
<td>5</td>
<td>111</td>
</tr>
<tr>
<td>College of Liberal Arts</td>
<td>1,931</td>
<td>1,540</td>
<td>3,471</td>
</tr>
<tr>
<td>College of Medicine</td>
<td>469</td>
<td>26</td>
<td>495</td>
</tr>
<tr>
<td>College of Nursing</td>
<td>0</td>
<td>74</td>
<td>74</td>
</tr>
<tr>
<td>College of Pharmacy</td>
<td>25</td>
<td>2</td>
<td>27</td>
</tr>
<tr>
<td>Total Excluding Duplicates</td>
<td>5,020</td>
<td>2,181</td>
<td>7,201</td>
</tr>
</tbody>
</table>

- Students Enrolled for Correspondence Study
  - Graduate Correspondence Study: 808
  - Undergraduate Correspondence Study: 1,879

- Total Excluding Duplicates: 2,657

- Total Different Students Enrolled for Study in Residence or for Correspondence Study:
  - 17,257

<table>
<thead>
<tr>
<th>II. Experimental Schools and Noncollegiates</th>
<th>Summer Session 1968</th>
<th>Academic Year 1968-69 (September to June)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary School</td>
<td>108</td>
<td>102</td>
<td>210</td>
</tr>
<tr>
<td>High School</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Private Music</td>
<td>216</td>
<td>251</td>
<td>467</td>
</tr>
<tr>
<td>Speech Clinic</td>
<td>38</td>
<td>33</td>
<td>71</td>
</tr>
<tr>
<td>Reading Clinic</td>
<td>26</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>356</td>
<td>388</td>
<td>744</td>
</tr>
</tbody>
</table>

*Enrollment Compiled on Annual Basis*
The University is guided by the precept that in no aspect of its programs shall there be differences in the treatment of persons because of race, creed, color, sex, or national origin, and that equal opportunity and access to facilities shall be available to all. This principle governs the admission, housing, and education of students. It is reflected in policies governing programs of extracurricular life and activities and in the employment of faculty and staff. The University cooperates with the Iowa City community in furthering this purpose. The University's Committee on Human Rights has adopted the following general policy:

Pervasive

(a) The Constitutions of the United States of America and of the State of Iowa call for political liberty and equality and afford the equal protection of the laws for all persons. Social, religious, and ethnic discriminatory practices betray the vision of the founding fathers and threaten the orderly procedures of democratic government.

(b) The General Assembly of the State of Iowa enacted the Iowa Civil Rights Act of 1965. The clear intent of this law is the assurance that the rights to equal treatment of the people of Iowa shall not be abridged.

(c) In recognition of Iowa's declared public policy and the obligations imposed on all units of state government by the Fourteenth Amendment to the United States Constitution, the Board of Regents declares the following to be its policy:

Statement of policy. The Board of Regents has a special obligation to have its operations serve as a model for business, industry, labor, and education. Neither the Board of Regents nor any official who is responsible to the Board of Regents nor any official who is responsible to the Board of Regents for the administration of the Board of Regents shall discriminate on the basis of race, color, religion, national origin, sex, or ancestry.

Appointment, assignment, and advancement of employees. The Board of Regents and all officials who are responsible to the Board of Regents shall appoint, assign, and advance employees solely on the basis of merit and fitness. Each institution under the Board of Regents shall promulgate clear and unambiguous written policies of nondiscrimination in employment. Each such institution shall also reserve the right to retain the right to establish, review, and procedures with a view to correcting any which may contribute to discrimination in employment, assignment, or advancement. In all programs of orientation and training, all institutions shall provide nondiscrimination training for employees. Each such institution shall also bar all from employment application forms any inquiry requesting any limitation or specification as to race, color, creed, religion, sex, national origin, unless it relates to a bona fide occupational qualification. The employment practices of the Board of Regents shall be in strict conformity to the provisions of the Iowa Civil Rights Act of 1965 and shall assess equal protection of the laws as promulgated by the Fourteenth Amendment to the Constitution of the United States.

State employment services. All officials responsible to the Board of Regents who provide placement or referral services for public or private employers shall refer to all job openings which comply with the Iowa Civil Rights Act of 1965 because it specifies race, color, religion, national origin, sex, or ancestry as a condition of employment, assignment, or advancement. They shall, moreover, refer such positions to all qualified persons as the Iowa Civil Rights Commission for investigation, conciliation, and other appropriate action.

State educational, counseling, and training programs. All educational, counseling, and training programs shall be uniformly administered in accordance with their essential components, and all counseling and testing programs, whether educational, counseling, or training, shall be administered in accordance with the provisions of the Iowa Civil Rights Act of 1965. Every official responsible for the implementation of such programs shall be charged with the duty of seeing to providing equal opportunity for all, regardless of race, color, religion, sex, or national origin.

State services and facilities. Pursuant to the provisions of the Fourteenth Amendment to the Constitution of the United States and the Iowa Civil Rights Act of 1965, equal treatment shall be accorded by all institutions of the Board of Regents in performing their services to the public, and equal treatment shall be accorded in the use of their facilities. Those in charge of the various institutions shall be assured that the institutional facility is used in the forbearance of any illegal discriminatory practices.

State contracts and subcontracts. To insure compliance with the provisions of the Iowa Civil Rights Act of 1965, every official responsible to the Board of Regents who is authorized to execute contracts or subcontracts for public works or for goods or services shall be caused to include in every such contract or subcontract a clause in which the contractor or subcontractor is prohibited from engaging in discriminatory employment practices in the performance of the contract or subcontract. Such contractual provisions shall be fully policed and enforced; any breach of them shall be regarded as a material breach of contract.

Compliance and reporting. All officials responsible to the Board of Regents shall cooperate fully with the Iowa Civil Rights Commission and such other state officials as may be involved in the effectuation of the nondiscriminatory policies of this state.

IOWA DEPARTMENTAL POLICIES

STATE BOARD OF REGENTS

Residence

SECTION D. CLASSIFICATION OF RESIDENTS AND NONRESIDENTS FOR ADMISSION AND POLYTECHNIC PURPOSES

1. General.

a. Students enrolling at one of the three state universities as resident or nonresident for admission, fee, and tuition purposes by the registrar and the academic dean and for residence classification by the student and all other relevant information. The ultimate decision is the responsibility of the registrar and the academic dean of the campus that is the student's home campus.

b. The registrar and academic dean shall determine proof of residence, adoption, award of custody, or adoption of a minor in accordance with this section and shall require information that will enable them to make determinations.

c. Students' home campus shall be the one attended; if the student is a minor, the student's home campus shall be the one attended by the student's parents at the time the parent's last full permanent home involves personal presence within the state, the student's home campus shall be the one attended by the student's parents at the time of the student's birth, or the student's home campus shall be the one attended by the student's parents at the time the student's parents enter the state with the student's minor children.

2. Residency.

a. In determining whether a student is a resident or nonresident for admission, fee, and tuition purposes, the registrar and academic dean shall determine proof of residence, adoption, award of custody, or adoption of a minor in accordance with this section and shall require information that will enable them to make determinations.

b. Students whose parents have lived in the state for more than twenty years and whose parents are both deceased shall be considered residents of Iowa.

3. Students who are minors.

a. The residence of a minor shall follow that of the parents at all times, except in extremely rare cases where emancipation can be proved beyond question. The residence of the father during his life, and after his death, the residence of the mother, is the residence of the emancipated minor; but if the father and the mother have separate places of residence, the minor takes the residence of the parent with whom he or to whom he has been assigned by court order. The parents of a minor applying for admission will be considered residents of Iowa if they have a domicile within the state at the time of the beginning of the semester, quarter or session in which the minor is first
A student who willingly gives incorrect or misleading information to avoid payment of the nonresident fee and tuition shall be subject to serious disciplinary actions and must also pay the nonresident fee for each semester.

A student who has entered the United States on an "im immediate" visa and who has established a domicile in Iowa by living in the state for at least twelve consecutive months immediately preceding the fall semester, quarter or session may be eligible for resident classification and be required to pay resident fees and tuition and be classified as residents unless their parents moved from the state while the individual was still a minor.

Change of classification from nonresident to resident will not be made retroactive beyond the semester, quarter or session in which application for resident classification is made.

6. Review committee. The decision of the registrar on the residence of, or eligibility for admission, fee and tuition purposes may be appealed to a review committee. The finding of the review committee may be appealed to the board of regents.

IOWA DEPARTMENTAL RULES
STATE BOARD OF REGENTS
Liberal Arts
I. REGULATIONS COMMON TO THE THREE INSTITUTIONS

A. ADMISSION OF FRESHMAN STUDENTS

A student desiring admission must meet the requirements for admission for the curriculum, school, or college of his choice. The student must submit a formal application for admission and must have the secondary school provide a certificate of high school attendance. The student must take the SAT or ACT and must submit a copy of his high school report card as part of the application. The student must meet the minimum requirements for admission to the school of his choice.

Dependants of persons whose legal residence is in the state of Iowa, who have been classified as residents, may continue to be eligible for resident status even though circumstances may change. The dependant's legal residence must be in Iowa, and the dependant must have been a resident of Iowa for at least twelve months immediately preceding the semester, quarter or session in which the student is enrolled. The dependant must also be a legal ward of the student.

Changes of classification from nonresident to resident will not be made retroactive beyond the semester, quarter or session in which the student was enrolled. The student must be a legal ward of the student.

A student who has entered the United States on an immediate visa and who has established a domicile in Iowa by living in the state for at least twelve consecutive months immediately preceding the fall semester, quarter or session may be eligible for resident classification and be required to pay resident fees and tuition and be classified as residents unless their parents moved from the state while the individual was still a minor.

Change of classification from nonresident to resident will not be made retroactive beyond the semester, quarter or session in which application for resident classification is made.

6. Review committee. The decision of the registrar on the residence of, or eligibility for admission, fee and tuition purposes may be appealed to a review committee. The finding of the review committee may be appealed to the board of regents.

IOWA DEPARTMENTAL RULES
STATE BOARD OF REGENTS
Liberal Arts
I. REGULATIONS COMMON TO THE THREE INSTITUTIONS

A. ADMISSION OF FRESHMAN STUDENTS

A student desiring admission must meet the requirements for admission for the curriculum, school, or college of his choice. The student must submit a formal application for admission and must have the secondary school provide a certificate of high school attendance. The student must take the SAT or ACT and must submit a copy of his high school report card as part of the application. The student must meet the minimum requirements for admission to the school of his choice.

Dependants of persons whose legal residence is in the state of Iowa, who have been classified as residents, may continue to be eligible for resident status even though circumstances may change. The dependant's legal residence must be in Iowa, and the dependant must have been a resident of Iowa for at least twelve months immediately preceding the semester, quarter or session in which the student is enrolled. The dependant must also be a legal ward of the student.

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Committee on Educational Relations and are comparable for all three institutions. Competence established at one is acceptable at all three, but due to different specific curricular requirements, the above procedure does not guarantee admission to either of the other two.

B. ADMISSION OF UNDERGRADUATE STUDENTS BY TRANSFER FROM OTHER COLLEGES

1. Students from accredited colleges and universities. Transcripts of record are given full value if coming from colleges or universities accredited by the North Central Association of Colleges and Secondary Schools or similar regional agencies. Transcripts from unaccredited schools not regionally accredited may be accepted if they meet the recommendations contained in the current issue of the Report of Credit Given by Educational Institutions published by the American Association of Collegiate Registrars and Admissions Officers. All applicants shall submit an official transcript bearing the original seal and signature of the official in charge of records from each college or university which the student has attended previously. The student will also submit any other records or letters which the college may require to support his application for admission.

b. A transfer applicant shall be expected to have maintained a "C" average (2.00 based on an "A" grade being 4 points) for all college work previously attempted and not on suspension from the last college attended. Students who are not residents of Iowa may be expected to have maintained a 2.00 grade index.

c. A student who is below the above standard may be permitted to take entrance examinations. If the applicant successfully completes the examinations he may be admitted on probation.

d. A transfer applicant under academic suspension from the last college attended will not be considered for admission during the period of suspension or if for an indefinite period, until six months have passed since the last date of attendance. When eligible for consideration the applicant will be considered as in "c" above.

e. A transfer applicant under disciplinary suspension will not be considered for admission until a clearance and a statement of the reason for suspension is 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 in consideration of the application. An applicant granted admission under these circumstances will always be on probation and his admission subject to cancellation.

f. Applicants for admission by transfer who do not meet the standards may be denied.

g. Transfer credit from a junior college will not be accepted. Credit is earned after the total number of hours of credit accumulated by this student at all institutions attended exceeds one-half of the number of hours needed for the earning of the baccalaureate degree.

2. Students from nonaccredited colleges. Students from nonaccredited colleges may be granted credit from a nonaccredited college or may admit the applicant on a provisional basis and provide a means for the validation of some or all of the credit. The validation period shall not be less than one semester and will ordinarily be a full academic year. The college will specify to the student the terms of the validation process at the time of provisional admission. Each student from a nonaccredited college will be considered on the merit of his application for admission or rejection is at the discretion of the admissions officer.

C. APPLICATION DEADLINES

Applications for admission must submit the required applications for admission and the necessary official transcripts and other required documents to the admissions officer of the appropriate college at least ten days prior to the beginning of orientation for the session for which the student is applying. Applications for admission from students who are required to take entrance examinations will not be considered unless the examinations can be completed at least five days before the beginning of orientation. Validation may be waived by the admissions officer only for adequate reasons.

This regulation does not apply to the colleges of medicine and dentistry at the university. Regulations applying to these are given in the following sections: IIAZ, IAII.

APPENDIX

All new undergraduate students must complete the American College Testing Program tests, the Scholastic Aptitude Test (CEEB), or the equivalent as determined by the admissions officer before the beginning of orientation for the session in which the student first registers.

I. 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 the University of Iowa must submit a formal application for admission with the required official transcripts and other supporting material as required to the Director of Admissions. Students may not be registered until they have been officially admitted by the Director of Admissions.

1. College of Business Administration

Applications for admission to the college of business administration should be submitted to the Director of Admissions.

Applicants are urged to apply as early as possible, since this will give the admissions committee more time to devote to each application. Closing dates for receiving applications will be announced well in advance of the opening date of any session.

For admission to the college of business administration an applicant must have—

a. Completed specific coursework as prescribed by the faculty of the college.

b. Attained satisfactory scores on the university's required admission examinations.

c. Maintained a satisfactory grade-point average on all courses undertaken, and on all courses undertaken at The University of Iowa, and on all courses undertaken in business and economics.

Applications from students who have minor deficiencies in meeting grade-point requirements specified above will be reviewed by the admissions committee of the college, and upon favorable recommendation of the committee, such students may be granted conditional or probationary admissions.

Fulfillment of the minimum requirements listed above, however, does not assure admission to the college of business administration. From those applicants who meet the minimum requirements, the admissions committee will select the applicants who, in their judgment, appear to be best qualified.

2. College of Dentistry

Address all inquiries regarding admission to the Director of Admissions, The University of Iowa.

Applicants are urged to apply as early as possible, since this will give the admissions committee more time to devote to each application. Closing dates for receiving applications will be announced well in advance of the opening date of any session.

Applicants for admission to dentistry are encouraged to complete a program leading to a baccalaureate degree before entering dentistry. Applicants should consider a combined program of liberal arts and dentistry which would qualify them for a baccalaureate degree upon the completion of the freshman year in dentistry. Preference will be given to students who have the baccalaureate degree or who have completed the requirements for the degree in a combined program.

Fulfillment of the specific requirements for admission listed does not insure admission to the college of dentistry. From the applicants meeting the minimum requirements, the admissions committee will select the applicants who in their judgment appear to be best qualified for the study and practice of dentistry.

Applicants must submit written evidence of acceptance to the college of dentistry in the form of a completed application form and an official transcript from each college attended.

The college work outlined below will suffice to meet the minimal academic requirements for admission to the college of dentistry.

The college curriculum should include at least three academic years of accredited work comprising not less than ninety-six semester hours and including specific re-
required courses as prescribed by the faculty of the college. Electives should be chosen so as to give the applicant a well-rounded educational background.

In order to meet minimum scholarship requirements the applicant must attain a cumulative grade-point average of 2.5. Since the quality of coursework in preclinical science is basic to success in dentistry, special consideration to such college work is given by the admissions committee. The grade-point average is based upon The University of Iowa's marking system in which a grade of "A" is equivalent to four points. Other marking systems will be evaluated by the office of admissions and the committee on admission of the college of 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 his potential for the dental profession are deemed to be outstanding. These candidates will be required to take the Graduate Record Examination as well as the Dental Aptitude 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 into the college of dentistry.

Applicants who have completed the requirements for admission to dentistry five or more years prior to seeking admission to this college of dentistry will be considered by the admissions committee only under exceptional conditions. Applicants from those who are more than thirty years of age will be considered for acceptance only in exceptional cases.

Preference will be given to applicants who are residents of Iowa, but consideration will also be given to outstanding nonresidents.

Personal interviews will be required of applicants for admission to the college of dentistry. Applicants will be notified when they should appear for the required interviews with the admissions committee.

All applicants must complete the Dental Aptitude Test sponsored by the council on dental education of the American Dental Association. Tests are given three times annually. The University of Iowa is a testing center.

To facilitate early student enrollment and to accept the college of dentistry are urged to complete the aptitude test no later than October to enable the admissions committee to begin its selection in December.

Accepted applicants are required to submit the required deposit within two weeks after notification of favorable action on their applications or as established by the American Dental Association, if later than two weeks. This deposit is not refundable except under circumstances which arise beyond the control of the student, but is credited toward the first fee payment. The applicant who fails to make the deposit within the time specified forfeits his place in the class.

Applicants accepted for admission are required to submit a satisfactory physical examination report to the University student health service within two weeks following notification of acceptance.

All applicants must complete, through student health service, an X-ray film of the chest and a successful vaccination against smallpox prior to registration.

Advanced Standing

Applications for admission with advanced standing are handled as individual cases.

3. College of Engineering

Address all inquiries regarding admission to the Director of Admissions, The University of Iowa, Iowa City, Iowa.

Closing dates for receiving applications will be announced well in advance of the opening date of any session.

Admission of Freshman Students

The applicant must submit a formal application for admission and must have the secondary school provide a certificate of high school credits, including a complete statement of the applicant's high school record, rank in class, scores on standardized tests, and certification of high school graduation. The applicant must also submit any other evidence such as a certificate of health that may be required by this university.

Each applicant must have attained satisfactory scores on the university's required admission examinations, maintained a satisfactory cumulative grade-point average, achieved satisfactory rank in graduating class, and successfully completed all prerequisite courses. The university's board of regents shall establish and periodically review specific minimum requirements for admission to the college of engineering. Among the items to be so determined are test score, grade-point average, class rank and prerequisite courses. These specific determinations will be published in the university catalog.

From applicants who do not meet minimum admission requirements, the director of admissions may after a review of the applicant's record: (1) admit unconditionally, (2) admit on probation, (3) require enrollment for a try-out period during a preceding summer session, or (4) deny admission.

Admission of Undergraduate Students by Transfer

The applicant must submit a formal application and official transcript of college work. Each applicant should have completed their work.

a. Maintained satisfactory progress in mathematics.

b. Maintained satisfactory scores on the university's required admission examinations.

c. Maintained a satisfactory cumulative grade-point average on all college work undertaken.

From applicants who do not meet recommended requirements, the director of admissions will review individual records and may offer probationary admission.

4. Graduate College

Graduates of any college or university accredited by regional accrediting associations may if the academic record is satisfactory be admitted to the Graduate College. Admission to the Graduate College is not the equivalent of acceptance as a candidate for an advanced degree. Such acceptance is given usually after the completion in residence of work at the University and upon recommendation of the major department and approval by the Dean of the Graduate College. The acceptance of a student as a degree candidate is determined upon the merits of each individual case.

A student who is within four semester hours of having satisfied all the requirements for the bachelor's degree in The University of Iowa may be given a tentative admission to the Graduate College.

5. College of Law

Address all inquiries concerning admission to the Director of Admissions, The University of Iowa, Iowa City, Iowa. Beginning students may enter the College of Law only during the fall semester. Except for good cause shown, applications for admission must be filed not later than the first day of the preceding semester in which the applicant wishes to enter.

To be considered for admission, an applicant should have obtained a cumulative grade-point average of at least 2.3 in all college work undertaken. The grade-point average is based upon The University of Iowa's marking system in which a grade of "A" is equivalent to four points. Other marking systems will be evaluated by the Office of Admissions.

Applicants for admission must present a baccalaureate degree from an accredited college or university prior to commencing work in the College of Law. The test is given several times per year and may be taken at numerous locations in the United States and throughout the world. Applicants are urged to take the test in the fall or winter preceding the fall semester for which they are applying. Except upon a showing of academic ability, the Admissions Committee will not consider applications from students who fail to take the test prior to the June preceding the fall semester in which they wish to enter.
APPENDIX

Admission With Advanced Standing
A transfer student may be eligible for admission if he (1) has attended a school approved by the Association of American Medical Schools; (2) is in good standing at the time of his withdrawal (evidenced by a letter from the dean certifying the same); and (3) has met the admission requirements for beginning students. To be considered, the applicant must submit the following:

1. A complete annotated application.
2. A letter from the dean certifying the applicant's good standing at the time of withdrawal from the school.
3. An official transcript from the school.

The college will consider an applicant for admission with advanced standing only if he meets all the above requirements. Applicants who are eligible will be notified of the college's decision immediately. The applicant will be required to complete the six-year curriculum in three years.

Admission Undergraduate Students
Applicants for admission as undergraduates must submit the following:

1. A completed application for admission.
2. Official transcripts from all schools attended.
3. A letter of recommendation from a high school principal or college dean.
4. A statement of personal and professional objectives.

All applicants must also complete the Undergraduate Application Form and the Medical College Admission Test (MCAT). Applicants who meet the above criteria and are interviewed by the Admissions Committee will be considered for admission.

Graduate Students
Applicants for admission as graduate students must submit the following:

1. A completed application for admission.
2. Official transcripts from all schools attended.
3. A statement of personal and professional objectives.
4. A letter of recommendation from a high school principal or college dean.

All applicants must also complete the Undergraduate Application Form and the Graduate Record Exam (GRE). Applicants who meet the above criteria and are interviewed by the Admissions Committee will be considered for admission.

Visiting Students
Students from other accredited programs who wish to take courses at the university must submit the following:

1. A completed application for visiting student status.
2. Official transcripts from all schools attended.
3. A letter of recommendation from a high school principal or college dean.

All applicants must also complete the Undergraduate Application Form. Students who meet the above criteria and are interviewed by the Admissions Committee will be considered for admission.
APPENDIX

transferred from other accredited colleges may, if necessary, carry the course in compliance with the graduation requirements of the college of nursing.

All applicants are required to complete the American College Tests. Applicants who are graduates of associate degree or diploma programs of nursing must have successfully passed the examination for registered nurse licensure before admission to nursing courses.

To be considered for admission, an applicant should have attained a cumulative grade-point average of at least 3.0 on all college work undertaken. The grade-point average is based upon the mark system of the University of Iowa in which a grade of "A" is equivalent to four points. Other marking systems will be evaluated by the office of admissions.

 Fulfillment of the specific requirements for admission listed above does not ensure admission to the college of nursing. From the applicants meeting the minimum requirements, the admissions committee of the college of nursing will select those applicants who, in their judgment, appear to be best qualified. The nursing admissions committee may require personal interviews of applicants.

Address all inquiries regarding admission to the Director of Admissions, The University of Iowa, Iowa City, Iowa. Applicants who have previous preparation in nursing may apply for admission to the college of nursing beginning July 1 of the year preceding their expected enrollment. Applicants with previous preparation in nursing will follow the same procedure except that they may be admitted either the first or second semester. The closing date for receiving applications shall be April 15 for first semester and November 15 for second semester.

6 College of Pharmacy

General Basis for Admission

 Fulfillment of the specific requirements for admission does not ensure admission to the College of Pharmacy. From the applicants meeting the specific requirements, the Admissions Committee will select those applicants who, in their judgment, appear to be best qualified.

Applicants for admission to pharmacy should have graduated from an approved high school or have an equivalent amount of training.

College Work

The college work as outlined below will meet the minimum academic requirements for admission to the College of Pharmacy. The minimum should include 28-35 semester hours of college-level work, including credit in Biology and Chemistry.

The second semester requirement must include 15-20 semester hours of college-level work, including credit in Biology and Chemistry.

Applicants from other institutions may meet this requirement by presenting six semester hours in Biology and three semester hours in Chemistry. Three semester hours of college-level work in English are also required. The six semester hours of credit in English Composition and Rhetoric and the three semester hours of credit in Speech or an eight-hour summer course in rhetoric. Inorganic Chemistry and Qualitative Analysis—two semester hours.

College Mathematics—eight semester hours.

Physical or Sciences—eight semester hours.

Students from other institutions may fulfill the two semester hours of college-level work in Biology in lieu of the College.

Military or Air Science (if available)—0-2 semester hours.

Students who present minor deficiencies in meeting the above requirements may be admitted to the College of Pharmacy upon the recommendation of the Dean of Admissions and the College of Pharmacy.

Scholarship and Application Deadlines

To be considered for admission to the College of Pharmacy, students must have earned a 3.0 or C average on all college work undertaken. The minimum grade-point average of 3.0 is based on the University of Iowa's mark system.

The closing date for receiving applications shall be March 1 for the fall semester. Applications for admissions and the required official transcripts should be filed before March 1 for the class to enter Pharmacy in September.

Required Tests

Applicants for admission are required to take the American College Testing Program Test.

Current Requirements

Applicants for admission must have completed work in a college of pharmacy accredited by the American Council on Pharmacy Education. Applicants for admission must have completed at least one year of college work.
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