1970-1972
Catalog of

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.

General information telephone number:
319-353-2121

New Series No. 2047
August 1, 1970

Published by The University of Iowa, Iowa City, Iowa 52240. Issued monthly during the year except December. Entered at the post office at Iowa City, Iowa 52240, as second-class matter under the Act of August 24, 1912.
### 1970

<table>
<thead>
<tr>
<th>JANUARY</th>
<th>FEBRUARY</th>
<th>MARCH</th>
<th>APRIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
</tr>
<tr>
<td>1 2 3</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>4 5 6 7 8 9 10</td>
<td>8 9 10 11 12 13 14</td>
<td>8 9 10 11 12 13 14</td>
<td>5 6 7 8 9 10 11</td>
</tr>
<tr>
<td>11 12 13 14 15 16 17</td>
<td>15 16 17 18 19 20 21</td>
<td>15 16 17 18 19 20 21</td>
<td>12 13 14 15 16 17 18</td>
</tr>
<tr>
<td>25 26 27 28 29 30 31</td>
<td></td>
<td>29 30 31</td>
<td>26 27 28 29 30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MAY</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUGUST</th>
</tr>
</thead>
<tbody>
<tr>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
</tr>
<tr>
<td>1 2</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3 4</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>3 4 5 6 7 8 9</td>
<td>7 8 9 10 11 12 13</td>
<td>5 6 7 8 9 10 11</td>
<td>2 3 4 5 6 7 8</td>
</tr>
<tr>
<td>10 11 12 13 14 15 16</td>
<td>14 15 16 17 18 19 20</td>
<td>12 13 14 15 16 17 18</td>
<td>9 10 11 12 13 14 15</td>
</tr>
<tr>
<td>17 18 19 20 21 22 23</td>
<td>21 22 23 24 25 26 27</td>
<td>19 20 21 22 23 24 25</td>
<td>16 17 18 19 20 21 22</td>
</tr>
<tr>
<td>24 25 26 27 28 29 30</td>
<td>28 29 30</td>
<td>26 27 28 29 30 31</td>
<td>23 24 25 26 27 28 29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEPTEMBER</th>
<th>OCTOBER</th>
<th>NOVEMBER</th>
<th>DECEMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
</tr>
<tr>
<td>1 2 3 4 5</td>
<td>1 2 3</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>6 7 8 9 10 11 12</td>
<td>4 5 6 7 8 9 10</td>
<td>8 9 10 11 12 13 14</td>
<td>5 6 7 8 9 10 11</td>
</tr>
<tr>
<td>13 14 15 16 17 18 19</td>
<td>11 12 13 14 15 16 17</td>
<td>12 13 14 15 16 17 18</td>
<td>12 13 14 15 16 17 18</td>
</tr>
</tbody>
</table>

### 1971

<table>
<thead>
<tr>
<th>JANUARY</th>
<th>FEBRUARY</th>
<th>MARCH</th>
<th>APRIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
</tr>
<tr>
<td>1 2</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3</td>
</tr>
<tr>
<td>3 4 5 6 7 8 9</td>
<td>7 8 9 10 11 12 13</td>
<td>7 8 9 10 11 12 13</td>
<td>4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>10 11 12 13 14 15 16</td>
<td>14 15 16 17 18 19 20</td>
<td>14 15 16 17 18 19 20</td>
<td>11 12 13 14 15 16 17</td>
</tr>
<tr>
<td>17 18 19 20 21 22 23</td>
<td>21 22 23 24 25 26 27</td>
<td>21 22 23 24 25 26 27</td>
<td>18 19 20 21 22 23 24</td>
</tr>
<tr>
<td>24 25 26 27 28 29 30</td>
<td>28</td>
<td>28 29 30 31</td>
<td>25 26 27 28 29 30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MAY</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUGUST</th>
</tr>
</thead>
<tbody>
<tr>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3</td>
<td>1 2 3</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>2 3 4 5 6 7 8</td>
<td>6 7 8 9 10 11 12</td>
<td>4 5 6 7 8 9 10</td>
<td>8 9 10 11 12 13 14</td>
</tr>
<tr>
<td>9 10 11 12 13 14 15</td>
<td>13 14 15 16 17 18 19</td>
<td>11 12 13 14 15 16 17</td>
<td>15 16 17 18 19 20 21</td>
</tr>
<tr>
<td>16 17 18 19 20 21 22</td>
<td>20 21 22 23 24 25 26</td>
<td>18 19 20 21 22 23 24</td>
<td>22 23 24 25 26 27 28</td>
</tr>
<tr>
<td>23 24 25 26 27 28 29</td>
<td>27 28 29 30</td>
<td>25 26 27 28 29 30 31</td>
<td>29 30 31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEPTEMBER</th>
<th>OCTOBER</th>
<th>NOVEMBER</th>
<th>DECEMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
</tr>
<tr>
<td>1 2 3 4</td>
<td>1 2</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>5 6 7 8 9 10 11</td>
<td>3 4 5 6 7 8 9</td>
<td>7 8 9 10 11 12 13</td>
<td>5 6 7 8 9 10 11</td>
</tr>
<tr>
<td>12 13 14 15 16 17 18</td>
<td>10 11 12 13 14 15 16</td>
<td>14 15 16 17 18 19 20</td>
<td>12 13 14 15 16 17 18</td>
</tr>
<tr>
<td>26 27 28 29 30</td>
<td>24 25 26 27 28 29 30</td>
<td>28 29 30</td>
<td>26 27 28 29 30 31</td>
</tr>
<tr>
<td>JANUARY</td>
<td>FEBRUARY</td>
<td>MARCH</td>
<td>APRIL</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
</tr>
<tr>
<td>1</td>
<td>2 3 4 5 6 7 8</td>
<td>1 2 3 4 5 6 7 8</td>
<td>1 2 3 4 5 6 7 8</td>
</tr>
<tr>
<td>9 10 11 12 13 14 15</td>
<td>16 17 18 19 20 21 22</td>
<td>13 14 15 16 17 18 19</td>
<td>12 13 14 15 16 17 18 19</td>
</tr>
<tr>
<td>23 24 25 26 27 28 29</td>
<td>30 31</td>
<td>20 21 22 23 24 25 26</td>
<td>26 27 28 29 30 31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MAY</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUGUST</th>
</tr>
</thead>
<tbody>
<tr>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
</tr>
<tr>
<td>1 2 3 4 5 6</td>
<td>4 5 6 7 8 9 10</td>
<td>2 3 4 5 6 7 8</td>
<td>1 2 3 4 5 6 7 8</td>
</tr>
<tr>
<td>7 8 9 10 11 12 13</td>
<td>11 12 13 14 15 16 17</td>
<td>9 10 11 12 13 14 15</td>
<td>6 7 8 9 10 11 12</td>
</tr>
<tr>
<td>14 15 16 17 18 19 20</td>
<td>18 19 20 21 22 23 24</td>
<td>16 17 18 19 20 21 22</td>
<td>13 14 15 16 17 18 19</td>
</tr>
<tr>
<td>28 29 30 31</td>
<td></td>
<td>30 31</td>
<td>27 28 29 30 31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEPTEMBER</th>
<th>OCTOBER</th>
<th>NOVEMBER</th>
<th>DECEMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
<td>5 6 7 8 9 10 11</td>
<td>1 2 3 4 5 6 7 8</td>
</tr>
<tr>
<td>3 4 5 6 7 8 9</td>
<td>8 9 10 11 12 13 14</td>
<td>12 13 14 15 16 17 18</td>
<td>3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>17 18 19 20 21 22 23</td>
<td>22 23 24 25 26 27 28</td>
<td>26 27 28 29 30</td>
<td>17 18 19 20 21 22 23</td>
</tr>
<tr>
<td>24 25 26 27 28 29 30</td>
<td>29 30 31</td>
<td></td>
<td>24 25 26 27 28 29 30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>31</td>
</tr>
</tbody>
</table>
### 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

<table>
<thead>
<tr>
<th>1970</th>
<th>1971</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 15, Monday</td>
<td>June 14, Monday</td>
</tr>
<tr>
<td>June 16, Tuesday</td>
<td>June 15, Tuesday</td>
</tr>
<tr>
<td>July 3, Friday</td>
<td>July 5, Monday</td>
</tr>
<tr>
<td>August 7, Friday</td>
<td>August 6, Friday</td>
</tr>
<tr>
<td>August 10, Monday</td>
<td>August 9, Monday</td>
</tr>
<tr>
<td>September 4, Friday</td>
<td>September 3, Friday</td>
</tr>
<tr>
<td>September 7, Monday</td>
<td>September 6, Monday</td>
</tr>
</tbody>
</table>

### 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  

<table>
<thead>
<tr>
<th>1970-71</th>
<th>1971-72</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 9, Wednesday</td>
<td>September 8, Wednesday</td>
</tr>
<tr>
<td>September 14, Monday</td>
<td>September 13, Monday</td>
</tr>
<tr>
<td>October 17, Saturday</td>
<td>October 30, Saturday</td>
</tr>
<tr>
<td>November 24, Tuesday</td>
<td>November 23, Tuesday</td>
</tr>
<tr>
<td>November 26, 27</td>
<td>November 25, 26</td>
</tr>
<tr>
<td>Thursday, Friday</td>
<td>Thursday, Friday</td>
</tr>
<tr>
<td>November 30, Monday</td>
<td>November 29, Monday</td>
</tr>
<tr>
<td>December 19, Saturday</td>
<td>December 18, Saturday</td>
</tr>
<tr>
<td>December 24, 25</td>
<td>December 23, 24</td>
</tr>
<tr>
<td>Thursday, Friday</td>
<td>Thursday, Friday</td>
</tr>
<tr>
<td>January 1, Friday</td>
<td>December 31, Friday</td>
</tr>
<tr>
<td>January 4, Monday</td>
<td>January 3, Monday</td>
</tr>
<tr>
<td>January 13, Wednesday</td>
<td>January 12, Wednesday</td>
</tr>
<tr>
<td>January 15, Friday</td>
<td>January 14, Friday</td>
</tr>
<tr>
<td>January 22, Friday</td>
<td>January 21, Friday</td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>1970-71</th>
<th>1971-72</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 25, Monday</td>
<td>January 24, Monday</td>
</tr>
<tr>
<td>January 27, Wednesday</td>
<td>January 26, Wednesday</td>
</tr>
<tr>
<td>February 25, Thursday</td>
<td>February 25, Friday</td>
</tr>
<tr>
<td>March 26, Friday</td>
<td>March 24, Friday</td>
</tr>
<tr>
<td>March 27, Saturday</td>
<td>March 25, Saturday</td>
</tr>
<tr>
<td>April 5, Monday</td>
<td>April 3, Monday</td>
</tr>
<tr>
<td>May 17, Monday</td>
<td>May 15, Monday</td>
</tr>
<tr>
<td>May 19, Wednesday</td>
<td>May 17, Wednesday</td>
</tr>
<tr>
<td>May 26, Wednesday</td>
<td>May 24, Wednesday</td>
</tr>
<tr>
<td>May 28, Friday</td>
<td>May 26, Friday</td>
</tr>
<tr>
<td>May 31, Monday</td>
<td>May 29, Monday</td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>1972</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 12, Monday</td>
</tr>
<tr>
<td>June 13, Tuesday</td>
</tr>
<tr>
<td>July 4, Tuesday</td>
</tr>
<tr>
<td>August 4, Friday</td>
</tr>
<tr>
<td>August 7, Monday</td>
</tr>
<tr>
<td>September 1, Friday</td>
</tr>
<tr>
<td>September 4, Friday</td>
</tr>
</tbody>
</table>
Contents

Calendars 4
The Presidential Message 6
General Information 7
Housing 14
Student Personnel Services 16
College of Liberal Arts 19
College of Business Administration 201
College of Dentistry 217
College of Education 231
College of Engineering 257
Graduate College 279
College of Law 291
College of Medicine 300
College of Nursing 324
College of Pharmacy 330
Interdisciplinary Programs 337
Libraries 348
Scholarships and Loans 350
Awards—Prizes—Honors 357
Institutional Research 362
Extension and University Services 364
Related Services 369
Administrative Officers 374
Administration and Instruction 377
Campus Guide 410
Student Enrollment 412
Appendix 413
Index 419
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 academic person 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 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 human 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 24, 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 20,500 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 actuarial science as an essential tool of business administration. As a pioneering participant in space exploration it has become a center for education and research in astrophysical science.

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

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 tested 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 been found to be 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' extracurricular 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 excellently 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 to Foreign Students in the Office of Student Affairs.

In order to register, a foreign student must be officially admitted by the Examiner and has 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 23—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 Semester only

College of Engineering
June 1—Summer Session
August 23—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 23—First 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.

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

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 admission. 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 Services 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 freshman and sophomore students under the age of 21.
(b) High school principal 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 1976-71 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>$219</td>
<td>$285</td>
</tr>
<tr>
<td>Law</td>
<td>$355</td>
<td>$335</td>
</tr>
<tr>
<td>Medicine and Dentistry</td>
<td>$435</td>
<td>$500</td>
</tr>
<tr>
<td>Graduate</td>
<td>$355</td>
<td>$500</td>
</tr>
</tbody>
</table>

This schedule includes surcharges established with a view toward possible future reduction. The surcharges are $94 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,
GENERAL INFORMATION

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-secrecy 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
6E Economics
6S Office Management and Business Education

COLLEGE OF DENTISTRY

81 Crown and Bridge Prosthesis
82 Operative Dentistry and Endodontics

83 Dental Technology
84 Dental Prosthesis
85 Oral Pathology
86 Oral Surgery
87 Dental Hygiene
88 Dentistry
89 Dental Public Health
92 Periodontology
93 Oral Biology
111 Community Dentistry

COLLEGE OF EDUCATION

7A Adult Education
7C Counselling and Guidance
7D Educational Administration
7F Elementary Education
7F Social Foundations and Comparative Education
7F Higher Education
7P Educational Psychology, Measurement, and Statistics
7Q Secondary Education
7S Special Education
7V Educational Media

COLLEGE OF ENGINEERING

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

91 COLLEGE OF LAW

COLLEGE OF LIBERAL ARTS

2 Nondepartmental Courses
15 Art Education
16 Art History
18 Art Studio
22 Botany
23 Speech, Pathology and Audiology
25 Child Behavior and Development
26 Chinese
27 French
28 Health Skills Courses
29 Core Courses
30 Geology
31 German
32 Greek
33 History
34 Home Economics
35 Latin
36 Journalism
37 Library Science
38 Computer Science
25M Mathematics
25S Statistics
25M Military Science and Aerospace Military Studies
24 Music Training
25 Music
27 Physical Education for Men
28 Physical Education for Women
29 Physics and Astronomy
30 Political Sciences
31 Psychology
32 Religion
33 European Literature and Thought
34 Sociology
35 Spanish
36 Speech and Dramatic Art
37 Sociology
38 Spanish and Oriental Studies
39 Japanese
41 Hebrew
42 Social Work
44 Geography
44 American Civilization
48 Comparative Literature
50 Hospital and Health Administration
57 Natural Sciences
58 Social Studies
GENERAL INFORMATION

COLLEGE OF MEDICINE
- Nondepartmental Courses
- Anatomy
- Microbiology
- Dermatology and Syphilology
- Preventive Medicine and Environmental Health
- Nutrition
- Urology and Gynecology
- Otolaryngology
- Ophthalmology and Maxillofacial Surgery
- Pathology
- Pediatrics
- Pharmacology
- Physiology
- Psychiatry
- Radiology
- General Surgery or Anesthesiology
- Orthopaedic Surgery
- Radiation Research Laboratory
- Internal Medicine
- Urology
- Medical History
- Oral Surgery
- Medical Jurisprudence
- Biochemistry
- Physical Therapy
- COLLEGE OF NURSING
- COLLEGE OF PHARMACY
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 Human Relations Commission is responsible for the observance of this ordinance, and for the initiation of redress for violations of it.

UNIVERSITY RESIDENCE HALLS

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

Single, double, and triple rooms with full or partial board are available in the Grand Avenue Residence Halls (west campus) which include Hillcrest, Quadrangle, South Quadrangle, and Bierce Hall I and II, 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 advisor 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 students 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 Assignments. Prospective students receive University residence hall application forms with their admission application forms. A prospective student who wants residence hall housing should read the statement carefully, supply all information requested, and return the completed form to the Office of Admissions with the completed application admission.

Applications for residence hall housing are held in abeyance until the applicant has been admitted to the University. The applicant cannot be assured of his choice 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, nationality, or religion.

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

A University residence hall contract binding 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 session 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 1976-77 academic year is $1,040 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. Units 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.

Parkerne 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 $68 unfurnished, $74 furnished. Rent includes all utilities but telephone.

Prospective students can apply for married student housing before they complete admission, but 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, 165 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. House accommodates 33 to 45 men. Undergraduate college fraternities are Achen, 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 Kappa Psi, Phi Kappa Sigma, Pi 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 (medicine), Phi Rho Sigma (medicine), and Psi Omega (dentistry).

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

SOURCES

Each sorority at The University of Iowa maintains a chapter house which provides an atmosphere for sharing in 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 Pi, Alpha Epsilon Pi, Alpha Gamma Delta, Alpha Kappa Delta, Alpha Xi Delta, Chi Omega, Delta Delta Delta, Delta Gamma, Delta Zeta, Gamma Phi Beta, Kappa Alpha Theta, Kappa Kappa Gamma, Pi Beta Phi, Sigma Delta Tau, and Zeta Tau Alpha.

The Panhelietic Office, 165 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 projections 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, evaluation 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 Aids 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 adviser to assist with registration, educational planning, and academic counseling.

Students planning to complete preprofessional courses are assigned academic advisers 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, advisers 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, 165 Jesseup Hall, Iowa City 52240.
EVALUATION AND EXAMINATION SERVICES

Evaluation and Examination Services administers many of the University of Iowa required and elective tests to entering students. The university is also a test center for many national testing programs, including the American College Test, SAT, ACT, Graduate Record Examination, Admission Test for Graduate Study in Business, Graduate School Foreign Language Exams, 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 curricular 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 who 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 dental students in dental care. 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 Services, and as such does not render services 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 workshop groups, 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.
**STUDENT PERSONNEL SERVICES**

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 advisors 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
for Men
Physical Education
for Women
Physics
Political Science
Portuguese*
Psychology

Recreation Leadership
Religion
Russian
Social Studies
Social Work
Sociology
Spanish
Speech and Drama
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
Hospital and Health Administration
Law Enforcement and Correction

Library Science
Museum Science
Nuclear Science
Science Education
Speech Pathology and Audiology
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 auditoria, 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 exhibitions as well as 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 classroom 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 KXSU; Hearken, 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 Languages, 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 nonmajors. 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

21
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.

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

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.

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 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 make 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

22
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 year's 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 year's 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 not 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.

College of Liberal Arts

A maximum of 30 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>F</td>
<td>Incomplete</td>
</tr>
<tr>
<td>P</td>
<td>Complete</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawal</td>
</tr>
</tbody>
</table>

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 passing 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 55 semester hours
Junior: 56 to 89 semester hours
Senior: 90 or more semester hours

Quality of Work

1. Scholarship Requirements for Graduation

   a. Students satisfy 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, earn all college work attempted, all college 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.

23
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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhetoric 10:1</td>
<td>4 hours</td>
</tr>
<tr>
<td>Physical Education</td>
<td></td>
</tr>
<tr>
<td>Skills 10:21</td>
<td>2 hours</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>Physical Education</td>
<td></td>
</tr>
<tr>
<td>Skills 10:31</td>
<td>2 hours</td>
</tr>
<tr>
<td>German 12:11</td>
<td>3 hours</td>
</tr>
<tr>
<td>or any language of his choice</td>
<td></td>
</tr>
<tr>
<td>Western Civilization 11:31</td>
<td>4 hours</td>
</tr>
<tr>
<td>or any core courses of his choice other than literature</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3 hours</td>
</tr>
<tr>
<td>Total</td>
<td>16 hours</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>French 9:1</td>
<td>4 hours</td>
</tr>
<tr>
<td>Literature Core 11:5</td>
<td>4 hours</td>
</tr>
<tr>
<td>or 11:7</td>
<td></td>
</tr>
<tr>
<td>Life Science 12:21</td>
<td>4 hours</td>
</tr>
<tr>
<td>Religion 11:32</td>
<td>4 hours</td>
</tr>
<tr>
<td>Total</td>
<td>16 hours</td>
</tr>
</tbody>
</table>

Graduation Requirements

A total of 124 semester hours of credit is required for students entering as freshmen, a minimum of 93 for students transferring at the close of the freshman year, a minimum of 60 for students transferring at the close of the sophomore year, and a minimum of 30 for students transferring at the close of the junior year. A year's work is considered to be a minimum of 30 semester hours. The minimum requirement of credits earned in residence is either the final 30 consecutive semester hours, or 45 of the last 60 semester hours.

Met 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 dicto and speech tests before taking the course, but must enroll for 10:3 until they learn the nature 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 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 trans- ferring 8 semester hours in English Composition and either completing 2 semester hours of credit in speech (36:25) at this University or satis- factorily passing the speech test for transfer stu- dents. 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 dur- ing the freshman year 4 semester hours of phys- ical 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. Stu- dents who have not passed the test or met the re- quirements 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 equiva- lent) of college physical education.

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

**COLLEGE OF LIBERAL ARTS**

_education skills will be counted toward the bachelor's degree. Students who have passed their twenty-third birthdays prior to admission are exempted 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 Depart- ment 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 courses offered in the area, except that stu- dents may, with the approval of the department, be exempted from the core requirement in the area of the major, or 8 or more semester hours of ap- proved 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 office.

Additional options for transfer students. His- torical-cultural, natural science, and social science courses: by submitting at the time of entrance another institution an 8 semester hour 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, reli- gion, and history and appreciation of art, music, or drama.

Natural Sciences — astronomy, microbiology, botany, chemistry, geology, mathematics, phys- ics, physiology, and ecology.

Social Sciences—economics, geography, political science, psychology, sociology, and anthro- pology.

Literature—by submitting at the time of entrance

*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 the college. 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 graduation requirements.

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

Candidates for the Bachelor of Fine Arts, Bachelor of Music, and Bachelor of Science degrees must complete a minimum of 8 semester hours of approved college-level study in a foreign language. Their requirements may be satisfied by:

Completion of 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.

Satisfactory performance in an achievement test measuring proficiency equivalent to that usually attained after one year of college study of a foreign 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 connection 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 courses normally will not be permitted to register as prebusiness students and may do so only with approval of the Dean of the College of Business Administration.

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

Maximum student load. Eight semesters or four academic years is the time normally required for the completion of a program leading to the bachelor's degree from the College of Liberal Arts. The normal schedule for the semester is 16 semester hours. When special circum- stances 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 Advisory 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 achievement is recognized at graduation in two ways:

a. With Highest Distinction

b. With Distinction

The grade-point average upon which graduation with distinction is determined includes all work undertaken prior to the opening of the final session. Transfer students must also have attained the required grade average on all work undertaken in the College of Liberal Arts at The University of Iowa. Students who enroll in a professional college at 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 at least 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.
The appropriate designation, or designations, are placed upon the student’s permanent record in the Office of the Registrar and upon the student’s official transcript.

ADMINISTRATIVE STAFF
Dean: Dewey Bernard Stitt
Associate Dean and Director, Advising Office: Hugh S. Van Vlasselaer
Assistant Dean: James P. Sandrock
Director of Honors: Rhodes Dunlap
Associate Director of Honors: J. Richard Wilneth

BASIC SKILLS
The Rhetoric Program
Coordinator, Richard Braddock
Office, English-Philosophy Building
Speech Supervisor, Donald J. Ochs

STAFF
Professor: Richard Braddock
Associate Professor: William G. Clark
Adjunct Professor: James J. Bradley, Margaret B. 
Instructor: Donald J. Ochs
Instructors: Richard S. Hootman, Louise R. Kelly, 
Martin, Lois L. Munn

10:1 Rhetoric: Main Course
Instruction in reading, writing, and speaking. 4.0 h.

10:5 Rhetoric: Basic Course
Continuation of 10:1. 4.0 h.

10:3 Rhetoric: Accelerated Course
An intensive, one-semester course in reading, writing, and speaking. 4.0 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 credit, satisfy the rhetoric requirement in speaking but not in writing. 2.0 h.

10:9 Rhetoric: Special Instruction in Writing
For students who are requested by the Rhetoric Program to obtain special aid 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. 2.0 h.

Physical Education Skills
Course Chairman, Donald R. Casyd
Office, 123 Fieldhouse

10:21 Physical Education Skills for Men 1 to 2.0 h.

10:22 Physical Education Skills for Men 1 to 2.0 h.

10:23 Physical Education Skills for Men 0 to 2.0 h.

10:24 Physical Education Skills for Women 0 to 2.0 h.

10:25 Physical Education Skills for Men 1.0 h.

10:26 Physical Education Skills for Women 1.0 h.

10:27 Physical Education Skills for Women 1.0 h.

10:28 Physical Education Skills for Women 1.0 h.

10:29 Physical Education Skills for Women 1.0 h.

10:30 Physical Education Skills for Women 1.0 h.

10:31 Physical Education Skills for Women 1.0 h.

10:32 Physical Education Skills for Women 1.0 h.

10:33 Physical Education Skills for Women 1.0 h.

10:34 Physical Education Skills for Women 1.0 h.

10:35 Physical Education Skills for Women 1.0 h.

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 need only a one-semester course to fulfill a requirement. Students who have completed requirements for majors or minors may take these courses as elective credits.

Literature
Course Chairman, John Huntley
Office, 308 English-Philosophy Building

The core requirement in literature may be satisfied by taking 10:1, 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 wishful to fulfill the requirement by examination should consult the Liberal Arts Advisory Office. Core courses in literature may also be taken for elective credits.

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

11:1 The Interpretation of Literature

11:2 The Interpretative Strategies Available to Readers of Poetry, Novels, and Drama, with Special Consideration of Him as a Literary Medium.

11:3 Biblical and Classical Literature

11:4 The Epic Experience

11:5 Medieval and Renaissance Literature

11:6 Selections from Old and New Testament Literature

11:7 The Romantic Experience

11:8 Major representations of the tragic vision of man's experience in narrative prose and drama from classical times to the present.

27
11:5: The Idea of Comedy 4 a.h.

Varieties of the comic ideal past and present, including satire, burlesque, farce, romance, in prose and verse.

11:6 Narrative Literature 4 a.h.

Selected masterpieces as well as recent developments in both prose and verse.

11:7 Lyric Poetry 4 a.h.

Poetry from major periods of development as well as contemporary poets, with emphasis on the distinctive language and major formal patterns of poetry.

11:8 Dramatic Literature 4 a.h.

Selected plays from Shakespeare's time to the present with some consideration of the dramatic novice and tone 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. Bjeloum (fall)

Office, 222 Chemistry-Botany Building

Robert W. Cruden (spring)

Office, 506 Chemistry-Botany Building

Course Chairman, 11:22

Barbara A. Stay (fall)

Office, 217 Zoology-Annex Building

Richard V. Bovbjerg (spring)

Office, 224 Zoology Building

11:21 Life Science (first half) 4 a.h.

General principles of structure, function, and evolution of living organisms from molecular to population levels. Stress on those principles common to all living things, including Man. Primarily for nonmajors. Lecture, laboratory, and discussion. The two-semester sequence may be started in fall or in spring.

Earth History and Resources

Course Chairman, Holms A. Senken

Office, 1005 Calvin Hall

11:23 Earth History and Resources 4 a.h.

(Second half) 4 a.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 Schaefer Hall

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

11:32 Western Civilization: 1815 to Present 4 a.h.

The evolution of Western civilization with emphasis on the 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 a.h.

Some major philosophical theories of man and society from Plato to the present.

11:34 Philosophies of Man (second semester) 4 a.h.

A philosophical consideration of the impact of key developments in scientific thought on man's conception of himself.

Course Chairman, George W. Forell (11:35, 11:36)

Office, 207 Gilmore Hall

11:35 Religion in Human Culture (first semester) 4 a.h.

Religions in human culture, illustrated by examples from prehistoric- 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 a.h.

Interrelations between religion and culture; relationship of religion to nationalism, science, politics, and philosophy; the arts 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, W104 Art Building

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

11:38 History and Appreciation of Art 4 a.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, Elidon Obrecht (11:39, 11:40)

Office, 10 Music Studio Building

11:39 Masterpieces of Music 4 a.h.

11:40 Masterpieces of Music 4 a.h.

Representative music from the classical repertory of the 18th, 19th, and 20th centuries, as interpreted through recordings and in programs by faculty, students, and groups, supplemented by lecture-commentary on the nature of music as described outside readings and reports. Either half may be taken first.

Course Chairman, Paul Gillis (11:51, 11:52)

Office, 234 Jessup Hall

11:51 Drama in Western Culture 4 a.h.

The influence on society, plays and productions of the 18th, 19th, and 20th centuries, as interpreted through the study of plays and the presentation of plays. Performance in painting, sculpture, and architecture. Same as Speech and Dramatic Art 26:31.
AMERICAN CIVILIZATION

Course work and independent study. Through a balanced and integrated program of courses and readings, the Ph.D. candidate will show broad scholarly knowledge at the master's level in a depth of understanding of the literature, history, culture, fine arts, and philosophy of the United States (together with their European background, especially English literature). The student will also be responsible for knowledge of any subject list committee theme valuable for the completion of his dissertation.

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

Comprehensive Examination. 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 at least one of the following major categories:

Geography, History, Literature, Politics, Religion, or Science.

The examination will consist of two parts: a written examination covering the broad survey of the student's field of study, and a seminar on a more specialized topic. The seminar will be open to all students in the program, and the student will be responsible for the candidate's work.

The student is required to pass the examination in two of the three areas.

The student must present a satisfactory thesis which will cover more than one of the above fields. Before the student is approved, the student must explain his project to a committee and convince them that the topic is of such a breadth that the student can successfully complete the project.

The oral examination is conducted in the presence of the thesis committee, and the student is required to attend all student seminars and courses.

Staff

A among the faculty members participating in the American Civilization Program are Professors Brecher, Carsten, Dyer, Giddings, Giddings, Giddings, Giddings, Giddings, Giddings, Giddings, Giddings, and Giddings.

No courses are offered in American Civilization.

The school's Bulletin lists the works important for an understanding of American civilization.

An examination with these works above.

COMMENTS

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

In summary, the Department of History at the University of California at Berkeley is a major center for American Civilization studies.

STAFF

The following staff members are participating in the American Civilization Program:

Brecher, Carsten, Dyer, Giddings, Giddings, Giddings, Giddings, Giddings, Giddings, and Giddings.

No courses are offered in American Civilization.

The school's Bulletin lists the works important for an understanding of American civilization.

An examination with these works above.

COMMENTS

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

In summary, the Department of History at the University of California at Berkeley is a major center for American Civilization studies.

STAFF

The following staff members are participating in the American Civilization Program:

Brecher, Carsten, Dyer, Giddings, Giddings, Giddings, Giddings, Giddings, Giddings, and Giddings.

No courses are offered in American Civilization.

The school's Bulletin lists the works important for an understanding of American civilization.

An examination with these works above.

COMMENTS

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

In summary, the Department of History at the University of California at Berkeley is a major center for American Civilization studies.
ANTHROPOLOGY

45:209 Seminar: Problems in American Civilization cr.arr.
45:210 Culture of Black America: An Interdisciplinary Approach 4 s.h.
45:211 Research in Afro-American Culture cr.arr.
45:212 Africans in the New World 3 s.h.
45:281 Human Rights and World Order 3 or 4 s.h.
45:286 American Criticism and Culture 3 s.h.
45:456 Seminar: American Criticism and Culture cr.arr.
45:457 Social Factors in American Literature cr.arr.
45:505 Special Project: Graduate cr.arr.
45:595 Ph.D. Thesis cr.arr.

ANTHROPOLOGY
Chairman of Department, Nancie L. Gonzalez
Office, 130 Machiibide Hall

Students majoring in anthropology must take a minimum of 20 semester hours of courses. The following courses are required of all majors:

113:5 Introduction to the Study of Culture and Society 4 s.h.
113:10 Introduction to Archaeology and Physical Anthropology 4 s.h.

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

Honors in Anthropology

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

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

113:50 Honors Seminar in Anthropology 2 s.h.
113:07 Honors Research 4 s.h.

Three 6 semester hours are in addition to the 20 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 3.5 is required. Also, access to the Graduate Record Examination is required. Those who fail to meet the qualifications for admission to this program, or who fail to maintain the advanced GPA required in anthropology, are not recommended for admission. The advanced GRE test in anthropology is not required or 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 registration Fall 1970, pending family and Board of Regents approval.

Applicants may enter the anthropology graduate program with either a Bachelor of Arts degree or with a Bachelor of Science degree. Those who lack the necessary qualifications (see below) with distinction may bypass the master's degree and proceed directly to the Ph.D. in anthropology when that program has been approved. The qualifying examination is typically taken at the end of the second semester in residence.

The M.A. degree covers either one of two primary purposes. The first, with master's thesis, is preparatory to the Ph.D. in anthropology, at home or elsewhere. The second, without thesis, is a limited professional degree (which the student may choose one of the traditional subjects of anthropology for special emphasis or concentration). Further specialization is either expected or encouraged for the M.A.
Master of Arts Degree

There are two programs which lead to the Master of Arts degree in anthropology: a 22 to 29 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 20 to 25 semester hours just specified, and a 20 to 28 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 30 semester hours of coursework or 30 semester hours in anthropology according to which M.A. program he elects. For the candidates who enter with a B.A. in anthropology or other substantial background to the field; the exact number of required semester hours of coursework (no less than 22 semester hours or 25 semester hours, respectively) will be set by the students advisor in consultation with the student and chair. In no case, however, will the student be required to take more than 30 semester hours.

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 project in statistics or in methods and two courses in linguistics, one of which may be 324-364 Languages and Culture. A student without a B.A. degree in anthropology also must take a minimum of two courses in social anthropology, two courses in ethnology, and two courses in archaeology.

Doctor of Philosophy Degree in Cultural Anthropology and Linguistics

Program Advisers
Jane Helm and Edward L. Koskowsky
Office, 101 Old Carriage Hall
Robert Howren
Office, 574 English-Philosophy Building

The Ph.D. program in cultural anthropology and linguistics is designed to provide professional training in anthropology and research in the linguistic and nonlinguistic aspects of human behavior. The purpose of the program is to prepare students for research and teaching careers, and in most cases, a period of field work.

The Ph.D. program requires a demonstrable proficiency in a language other than his native language. The program consists of a minimum of 30 semester hours of coursework and a period of field work which must be determined by the student in consultation with the student's advisor. In addition to the above, the student must pass an oral comprehensive examination in cultural anthropology, linguistics, and ethnological theory and methodology, and complete a dissertation. Courses in linguistics required in the program are 324-325, General Phonology; 412-411 Phonology; 412-413 Morphology and Syntax; 115-300 Survey of Current Research in Linguistics, a course in comparative linguistics or historical linguistics. Basic courses required in anthropology are three semester hours in the field of cultural anthropology, two courses in historical anthropology, three semester hours of an additional course in cultural anthropology dealing in specific subfields, and three semester hours of an ethnographic area course. 115-340 Language and Culture/Linguistics 115-311, 115-270 Field Methods in Ethnolinguistics/Linguistics 115-320, and 115-271 Ethnolinguistic Theory/Linguistics 180-220, are required interdisciplinary courses. By student option or to meet the requirements set by staff evaluation and counsel, the student shall take additional semester hours in linguistics and/or cultural anthropology to complete a minimum of three years of graduate academic work. A student who has not taken an undergraduate major in either anthropology or linguistics. Unless a student has taken the undergraduate equivalents, 115-290 Introduction to Graduate Study in Linguistics and 115-249 General Anthropology 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. Previous work in one of the departments and the M.A. level may be applied toward fulfilling the course requirements in the joint Ph.D. program.

STAFF

COURSE DESCRIPTIONS

Anthropology

For Undergraduates Only

115:3 Introduction to the Study of Culture and Society 4 s.h.

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

115:30 The World's Peoples: An Ethnographic Survey 4 s.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.

115:31 Introduction to Archaeology and Physical Anthropology 4 s.h.

Origins and development of man and society from the earliest known of archaeological excavations. Introduction to past and present archaeological methods.

115:35 Individual Study 1 to 3 s.h.

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

115:90 Honors Seminar: Anthropology 2 s.h.

A seminar for the upper-division junior or senior academic records. Selected theoretical and methodological issues. Prerequisites, senior standing and consent of instructor.

115:97 Honors Research 2 to 4 s.h.

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

Advanced Courses

General Anthropology

115:101 General Anthropology 3 s.h.

Human evolution, prehistory, and race. The major institutions and arts of man as evidenced in prehistoric societies. Primarily for nonmajors with advanced standing. Not open to students having 115:100.

115:146 History of Anthropology 2 or 3 s.h.

Lectures and seminar on the development of anthropology as a discipline and its place in the history of thought. This and theories in archaeology, physical and biological anthropology. Prerequisites, 115:3 or consent of instructor.

anthropology or linguistics. Unless a student has taken the undergraduate equivalents, 115:290 Introduction to Graduate Study in Linguistics and 115:249 General Anthropology 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. Previous work in one of the departments and the M.A. level may be applied toward fulfilling the course requirements in the joint Ph.D. program.

STAFF

COURSE DESCRIPTIONS

Anthropology

For Undergraduates Only

115:3 Introduction to the Study of Culture and Society 4 s.h.

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

115:30 The World's Peoples: An Ethnographic Survey 4 s.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.

115:31 Introduction to Archaeology and Physical Anthropology 4 s.h.

Origins and development of man and society from the earliest known of archaeological excavations. Introduction to past and present archaeological methods.

115:35 Individual Study 1 to 3 s.h.

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

115:90 Honors Seminar: Anthropology 2 s.h.

A seminar for the upper-division junior or senior academic records. Selected theoretical and methodological issues. Prerequisites, senior standing and consent of instructor.

115:97 Honors Research 2 to 4 s.h.

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

Advanced Courses

General Anthropology

115:101 General Anthropology 3 s.h.

Human evolution, prehistory, and race. The major institutions and arts of man as evidenced in prehistoric societies. Primarily for nonmajors with advanced standing. Not open to students having 115:100.

115:146 History of Anthropology 2 or 3 s.h.

Lectures and seminar on the development of anthropology as a discipline and its place in the history of thought. This and theories in archaeology, physical and biological anthropology. Prerequisites, 115:3 or consent of instructor.

21
ANTHROPOLOGY

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

Social Anthropology

113:140 Social Anthropology 2 or 3 s.h.

Processes of culture and social phenomena as known through comparative study of primitive societies and cultures. Prerequisites: 113:210 or 113:118.

113:241 Economic Anthropology 2 s.h.

An economic pattern, i.e., the ways in which people relate to one another in the processes of production, distribution, and consumption, their significance and development among primitive peoples and rural populations in contemporary society.

113:142 Anthropology of Religion 2 s.h.

Religious activity in folk and tribal societies. Focus upon religious thought, myth, ritual, and symbol systems; and upon the application of theories of the origin and functions of religion in human affairs. Prerequisites, 113:133 or 113:241, or consent of instructor.

113:143 Cultural Change 2 or 3 s.h.

Historical development of this aspect of cultural anthropology; emphasis on an examination of conceptual schemes currently used to describe and evaluate culture change. Case studies from non-Western peoples. Prerequisite, 113:3 or 113:101 or consent of instructor.

113:146 Language and Culture 2 s.h.

Human behavior in its communicative aspects. Language and thought, speech as an e-act, communication networks, language classification, and nonverbal communication. Prerequisite, consent of instructor.

113:147, 148 147:100 and 148:100 2 or 3 s.h.

Seminar. Problems and concepts involved in comparing and contrasting behavior, institutions, and ideas of different cultures for advanced students. Consent required. This course will be open to the public, but consent of the instructor is required of all students. The student may attend any or all of the 15 sessions, completing course credit successfully for 113:147, 148:149, and 113:149.

113:150 Culture and Personality 2 s.h.

Racial, geographical, and cultural-historical factors and psychological variables in understanding behavior. Cross-cultural differences and similarities in biology, personality and in socialization. Same as Sociology 34:30. Prerequisites, 113:3 or 113:101 or Sociology 34:1.

113:151 Social Problems of Underdeveloped Areas 3 s.h.

Economic development as a sociological problem. Social institutions and social organization of underdeveloped areas; development and the mechanics of change and the consequences of industrialization and modernization. Same as Sociology 34:151. Prerequisite, an introductory course in sociology, anthropology, or sociology and anthropology and junior standing.

113:153 Primitive Art 2 s.h.

Theories and interpretations of primitive art are presented against the historical and cultural contexts of the societies from which they are derived. Course is restricted to current problems of interpretation in archaeology and ethnology.

113:201 Seminar: Anthropological Theory 3 s.h.

An examination of the development of modern cultural anthropology and an attempt to trace the major orientations in the field, as guides to the behavior of man in pre-modern society. Students are required to read the current literature in the field and to prepare a report on one of the problems studied in class. Consent of instructor required.

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

Principles of conducting research and analyzing data in the field.

113:204 Methods and Procedures in Anthropological Data Analysis 3 s.h.

Procedures for analyzing field data and literary materials, including computer files.

113:205 Seminar: Political Anthropology 2 to 4 s.h.

Perspectives on conflict and political systems: Western societies, the developmental process in political systems: the consequences of political conflict, party political movements: problems of authority and legitimacy.

113:308, 399 Seminar: Complex Societies 3 s.h.

May be taken twice with different instructors.

ETHNOLOGY

113:110 The American Indian 3 s.h.


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

Description under Archeology.

113:114 Spanish-Speaking Peoples of the U.S. 3 s.h.

Social and cultural history of Spanish-Americans, Mexican-Americans, Puerto Ricans, and Cuban populations now living in the U.S. Emphasis will be on contemporary problems of plural society.

113:115 Native Peoples of South America 3 s.h.

Indigenous peoples of South America and Caribbean area; pre-Colombian cultures. Recent tribal, urban, and agrarian societies will be considered from the time of earliest contact up to their point of extinction or present condition. Prerequisites, 113:3 or 113:101.

113:116 Native Peoples of Middle America 3 s.h.

Indigenous people of Middle America; pre-Colombian culture. Recent tribal, urban, and agrarian societies will be considered from the time of earliest contact up to their point of extinction or present condition. Prerequisites, 113:3 or 113:101.

113:117 Social Structure of Latin America 3 s.h.

Features which distinguish the anthropological studies of Latin America from other areas of the world. These factors relate to problems of theory, international relations, and development processes. Prerequisites, 113:3 or 113:101.

113:118 Social Anthropology of the Caribbean 3 s.h.

Historical background and the major factors tending to contemporary social and cultural situation in the islands and along the Caribbean rim. Emphasis on Afro-American population and cultural components.

113:119 Urban Anthropology 3 s.h.

The development and role of the city in pre-industrial society, processes of urbanization with particular attention to the behavior of individuals and small groups in urban environments. Recent emphasis will depend upon instructor.

113:120 Peoples of Africa 3 s.h.

Analysis and comparison of traditional African cultures and the factors that have shaped their development, and the forces which underlie the direction and rate of this development. Same as Sociology 30:120. Prerequisites, 113:3 or 113:101.

113:121 African Social Structure and Social Change 3 s.h.

Same as Sociology 34:178.
111:124 Peoples of North Africa and the Middle East 3 a.h.
Traditional and emerging societies and cultural patterns from North Africa through the Middle East. Prerequisite, 111:130 or 111:131.

111:135 Ethnology of Japan 3 a.h.
Human behavior in the mental and cultural settings of Japan. Discussion of early social institutions, but focus upon developments in the early modern and modern periods. Prerequisite, 111:241 or 111:242 or consent of instructor. Same as Oriental Studies 235/236.

Same as Urban and Regional Planning 100:240.

111:241 Process and Problems of Development: Latin America I 3 a.h.
Same as Urban and Regional Planning 100:241.

111:242 Process and Problems of Development: Latin America II 3 a.h.
Continuation of 111:241. Same as Urban and Regional Planning 100:242.

Coordinated research on culture-related 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.

111:380 Seminar: Personality and Cultural Systems 3 a.h.
Personality in relation to expressive activities and products such as ritual, games and art; and instrumental roles in economic and political functions. Consent of instructor.

Archaeology

111:111 Indians of the Woodlands and Plains 3 a.h.
Prehistoric and historic Indians of the Midwestern area of North America. Ecological adjustments, subsistence bases, and the development of the various groups. Prerequisite, 111:130 or 111:131.

111:159 Primitive Art and Problems of Social Anthropology 3 a.h.
Description under Social Anthropology.

111:160 Old World Prehistory 2 or 3 a.h.
Prehistoric races and cultures of Europe, Asia, and Africa. Rise of civilization as reflected by archaeology. Prerequisite, 111:130 or 111:131.

111:161 New World Archaeology 3 a.h.
Physical and cultural history of Native Americans. Prerequisites:普通, and for the Ph.D. degree, a thesis of 12 to 18 credit hours. Prerequisites:普通, consent of instructor.

111:162 Laboratory Methods in Archaeology 2 a.h.
Study of archaeological materials recovered by excavation and survey training in all aspects of laboratory research. Prerequisites:普通, consent of instructor.

111:163 High Civilizations of Mesoamerica and the Central Andes 3 a.h.
Archaeological information related to the development of civilization in the New World. The entire archaeological sequence is examined, but emphasis is placed on the complex civilizations. Excursions to actual sites are incorporated wherever possible. Although not required, Spanish will be of benefit. Prerequisite, 111:130 or 111:131 or 111:135.

111:164 Comparative Prehistory 3 a.h.
Cultural development in the Old World and the New World. Emphasis on developments from pre-agricultural cultures to the appearance of civilizations in both areas. Areas of primary concern are Mesoamerica, the Central Andes, the Near East, Egypt, the Indus Valley, and China.

111:165 The Greater Southwest 3 a.h.
Presentation and discussion of the archaeology and ethnohistory of native cultures in the area northwest of Mexico. This is an introductory course and attempts to demonstrate probable routes of diffusion and migration from Mesoamerica to the Southwest. Prerequisites:普通, 111:130, 111:131, or 111:135 or 111:136.

111:184 Quaternary Geology and Anthropology 3 a.h.
Pleistocene stratigraphy, evolution, paleoecology, and problems of the classification of man from geological and anthropological perspectives. Selected readings from site reports. Same as Geology 137A. Prerequisite, consent of instructor.

111:199, 299 Field Research in Archaeology c/arr.

111:320 Seminar: History of Archaeology 3 a.h.
Historical development of archaeology in the 19th and 20th centuries. Illustrating shifts in concepts, problems, and methodology.

111:321 Seminar: Archaeological Method and Theory 3 a.h.
Presentation of techniques for the recovery of archaeological data and theories for their interpretation. Field trips and laboratory analysis required.

Linguistics

111:145 Language and Culture 3 a.h.
Description under Social Anthropology.

111:270 Field Methods in Ethnolinguistics 3 to 5 a.h.
Research methods in ethnolinguistics. Emphasis upon techniques of collecting field data, collation and analysis of data, and research design. Same as Linguistics 270. Prerequisite, consent of instructor.

111:271 Ethnolinguistic Theory 3 to 5 a.h.
Cultural and linguistic dimensions of human communication. Same as Linguistics 271. Prerequisite, consent of instructor.

Individual Reading and Research Projects

111:383 Independent Study: Anthropology c/arr.

111:384 Research: Anthropology c/arr.

111:385 Thesis c/arr.

ART

Director of School, Frank A. Seiberling
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 specialization 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 33
added professional preparation, the B.F.A. With appropri-
ate course additions, the B.A. and B.F.A. may be taken with a major in art education to provide certification for teach-
ing art in elementary or high schools.

The program most commonly entered by graduates in art are college teaching of art history, art education, or studio art; elementary and high school teaching; and the museum field in its administrative, curatorial, or educational aspects. Many professional painters and sculptors of today began 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 excel-

tent physical resources for graduate and undergraduate

work in art. The space encompasses classroom studios, three students, seminar rooms, and workshops. One of the nation's largest collections of slides, photographs, and facsimile color reproductions supplements study, as
does an art library of over 15,000 volumes housed in the
building. Equipment includes large presses for print-

making, kilns to take life-sized ceramic sculpture, a

smelting furnace 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 1968 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 forms are made directly to the director of the School of Art. Applications for financial aid to begin in October or early February of each year and again in May. For the fall term contact the 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 Writing: The Basic Writing Program (writing, reading, speaking)

Basic Skills—Physical Education (games and general physical competence) 4 s.h.

Basic Skills—Computer Science 2 s.h.

Core Course—Literature 8 s.h.

Core Course—Social Science 2 s.h.

Core Course—Natural Science 4 s.h.

Core Course—Historical—Cultural Studies 6 s.h. or

The core course in History and Appreciation of Art does not satisfy Historical—Cultural Studies requirement for art majors.

Foreign Language requirement minimum 12 s.h.

Most complete fourth semester in one language.

2. Non-art electives totaling the number of non-art courses to a minimum of 36 semester hours.

3. School of Art requirements:

A. For degree with studio emphasis:

Basic studio 12 s.h.

Intermediate studio 8-10 s.h.

Advanced studio 12-16 s.h.

11-27-28 History and Appreciation of Art 4 s.h.

Intermediate or advanced art history minimum 3 s.h.

B. For degree with art history emphasis: 8 s.h.

11-27-28 History and Appreciation of Art 8 s.h.

Additional intermediate and advanced art history 20-28 s.h.

or more seminars of a second foreign language (one of the foreign languages of the School of Fine and Industrial Arts) 6 s.h.

A minimum of 36 semester hours in course-

work outside of the School of Art, to be taken in related areas. This minimum requirement will normally be met by taking courses in at least three of the following areas: Classics, dance, history, language, literature, music, philosophy, religion, sociology, and anthro-

pology. This program may be completed by the hours in (B) above.

4. Additional electives to complete the total of 128 semester hours required for graduation. Art elec-

tives must take the total of art courses to a mini-

mum of 38 semester hours and may raise the total to a maximum of 52 semester hours. Art courses may be taken beyond this total but do not count toward the major.

Review and Placement of Transfer Students. Under
graduate transfer students' programs will be de-

dealt by a committee on which both studio and history faculty will be represented.

All transfer students planning to major in studio must submit a portfolio of drawings, and other appro-

priate work, for review by a faculty committee. Instructions concerning the review procedure and the contents of the portfolio will be sent upon request.

The transfer student is urged to send a portfolio well in advance of registration since the review will de-

termine whether there will be any exemptions from the basic studio courses.

Students transferring with the maximum, or excess, hours in art will be required to satisfy the School's basic course requirements and to register in one major area course each semester in residence.

II. The Bachelor of Fine Arts (B.F.A.) degree is awarded, a degree with added professional emphasis, requires (with minimum of 36 semester hours):

1. Faculty approval to enter the B.F.A. program. Candidates may substitute one semester of work for review following the completion of the basic studio courses if it qualifies for graduate standing.

2. The minimum Skills and Core requirements for a B.A. in art, except that final art courses must be satisfied by the foreign language requirement reduced to ten semester hours.

3. Non-art electives totaling the non-art courses to a minimum of 36 semester hours.


11-27-28 History and Appreciation of Art 4 s.h.

Intermediate and Advanced Studio:

One major area 3 s.h.

Three minor studio areas, 5 s.h. each 15 s.h.

One major studio area 16 s.h.

Two minor studio areas, 5 s.h. each 10 s.h.

The major area of concentration should be de-

tained at least three-fourths of the semester hours from that area. The basic studio courses do not count as part of this major or minor.

Electives in the history of art, studio, or art education combined to bring the total semester hours of courses offered in the School of Art to not less than 33 but not more than 37 semester hours. Art courses taken beyond 37 semester hours do not count toward the degree.

III. The Bachelor of Arts or Bachelor of Fine Arts degree in art education requires:

In addition to the Skills and Core, and art requirements for the B.A. or B.F.A. in art (see above under I and II).
ART

2. State requirements for teacher certification as follows:
   a. American Government
      3 credits
   b. Educational Psychology
      3 credits
   c. Introduction to Secondary School
      3 credits
   d. Art Education Studio
      3 credits
   e. Art Education Elementary Studio
      3 credits
   f. Methods of Elementary School Art
      3 credits
   g. 6 credits of Secondary School Art
      (total of 12 credits)
   h. 3 credits of Ceramics and Laboratory
      Practice (senior year, altered
      offerings)
3. Electives to complete the minimum 126
   semester hours.

IV. Suggested minor in art for non-art majors:
   a. 11 credits in Art History
   b. 12 credits in Studio Art
   c. 6 credits in Ceramics or Glass
   d. 6 credits in Printmaking or Painting
   e. 3 credits in Photography
   f. 3 credits in Seminar

V. Graduate Program
   a. Graduate students
   b. 1. Graduate prerequisites for graduate work
      in art history:
      i. A degree from an accredited college
         of liberal arts.
      ii. A degree from an accredited college
         or university.
      iii. A degree from an accredited college
         of liberal arts.
   c. Graduate prerequisites for graduate work
      in studio art:
      i. A degree from an accredited college
         of liberal arts.
      ii. A degree from an accredited college
         of liberal arts.
   d. Graduate prerequisites for graduate work
      in art technology:
      i. A degree from an accredited college
         of liberal arts.
      ii. A degree from an accredited college
         of liberal arts.
   e. Graduate prerequisites for graduate work
      in art education:
      i. A degree from an accredited college
         of liberal arts.
      ii. A degree from an accredited college
         of liberal arts.
   f. Graduate prerequisites for graduate work
      in art administration:
      i. A degree from an accredited college
         of liberal arts.
      ii. A degree from an accredited college
         of liberal arts.
   g. Graduate prerequisites for graduate work
      in art therapy:
      i. A degree from an accredited college
         of liberal arts.
      ii. A degree from an accredited college
         of liberal arts.

VI. Master's degree requirements for all degree
    candidates:
   a. 1. Degree candidates entering the graduate
      program without the M.A. from another
      institution will be expected to show
      the degree at the U. of I. in each
      semester hour of course work in art
      history.
   b. 2. Degree candidates entering with an M.A.
      in art from an accredited college or university
      will be expected to show the degree at the U. of I.
      in each semester hour of course work in art
      history.

VII. Graduate level courses:
   a. 1. Graduate level courses in art history
      are offered in the Graduate School and
      can be obtained from the Committee on Admissions,
      School of Art, or the Director of Admissions,
      Office of Admissions and Records.
   b. 2. Graduate level courses in art history
      are offered in the Graduate School and
      can be obtained from the Committee on Admissions.
VII. The degree candidate's committees and direction of the graduate program.

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

2. A committee advisor who will later serve as chairman of the student's committee will be chosen by the student with that advisor's consent. This is generally done in the second or third semester of graduate work, or as soon as the student knows definitely in what area he desires to do his thesis, and his work is then considered to have a thesis potential.

3. Each graduate major will be reviewed for clearance for M.A. candidacy by his advisor at any of the three regularly scheduled clearance meetings, that is, in January, May, and September. The departmental chairman should be held responsible for 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. committees may follow clearance.

7. Review for M.F.A. candidacy will be held in January, May, and September. A student may be invited by his advisor 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.F.A. degree.

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

10. M.F.A. degree reviews are conducted by a standing faculty committee which includes the director and the graduate chairman, or his nominee, of the field of specialization from whom he has had the most work.

11. Formation of the student's M.F.A. committee follows clearance.

12. Committee selection is done by the advisor, in consultation with the School's Director. They have the right of final selection, of course, of the graduate candidate and five advisors for the M.F.A. and the Ph.D.

13. The standing committee has the responsibility of reviewing the candidate's work periodically, advising with regard to the extent of his progress, and making the final decision about his readiness for the degree.

14. Deadlines for summer students, transfer as possible, are made commensurate with those established for the year.

VIII. Plan of Study:

Following consultation with his advisor, every graduate degree candidate selects a plan of study to the Graduate College during the semester of his graduation. This plan lists all courses which will count toward 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. Average studio work is written if the thesis is required, and may be a brief statement by the student of his technical, critical, and/or psycho- logical approach, unless he is assigned an art history, technical subject by his advisor. Content, if technical, will be supervised by the studio advisor and if historical, by an art historian. Studio students doing written theses on art historical or technical subjects are exempted from a written paper in the art history seminar.

2. Majors in studio, as completion with both their thesis advisor, may take 112-115 Individual Instruction and 112-125 Written Thesis. This amount of one semester hour each for their studio and written thesis. Such credits are applicable only when the thesis requirements are met and 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 112-125 Written Thesis, following consultation with their advisor. Such credit may apply to the total required for graduation, but not 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 examinations coursework is decided in consultation with the advisor. Normally a minimum of 8 semester hours or sufficient hours to complete the minimum total of 8 semester hours of graduate credit is taken. Three may be devoted entirely to the dissertation or in part to the related studies.

5. All studio and written theses become the property of the University. On registering, students automatically accept this condition.

6. Students should obtain regulations concerning the form of written theses, deadlines for submissions, etc., from the Graduate College office. A full draft of written theses is due in the School's office two weeks before the date of the oral examination when such is required.

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

The M.A. in studio may be written with a major in painting, drawing, sculpture, prints, design, photography, ceramics, furniture design, or sculpture.

The degree requires:

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

2. A minimum of 18 semester hours of graduate work (a year and one summer session) for students with undergraduate deficiencies following a minimum of 8 semester hours of graduate credit is taken. Three may be devoted entirely to the dissertation or in part to the related studies.

3. Studio courses, at least 12 semester hours and 28 hours total.

Those must include a minimum of 12 semester hours in a major area.

4. History and Theory of Art 3 hour

5. Courses outside of studio art 0 to 8 hours

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

7. A final oral examination by the standing committee in the semester of graduation, usually in May or July.

XI. The Master of Arts degree (M.A.) in art history.

This degree requires:

1. The B.A. or B.F.A. degree (see above in 2), and

2. A minimum of 30 semester hours of graduate work plus a written thesis, or

3. A minimum of 30 semester hours plus one studio course.

XII. Art history courses (including Methodology and at least one other seminar) 12-18 hours.

Studio courses 0-5 hours.

M.A. candidates having had substantial undergraduate studio, following review by the standing committee, are exempted from this requirement. M.A. candidates with little or no prior studio will have certain courses in their multiple studio fields. In studio courses consideration will be given to the feasibility of this lower preparation and/or aptitude of the history student. History and studio courses will be selected under Individual instruction on an S/U basis.

Courses outside of studio 0-9 hours.

XIII. Ability to read art historical writings in an appropriate foreign language.
8. An examination in art history (in two parts), 3 hours in a major field of choice, and courses of comprehensive examination over the history of art. The examination will be given at the beginning of each semester.
9. For the 20 semester hour program with thesis, a full draft of the written art historical thesis must be submitted by the end of the semester preceding the semester in which the degree is taken.
10. The candidate completing the M.A. degree on a nonthesis plan will offer additional semester hours of graduate work in art history to make a total of 36 semester hours.

XII. The Master of Arts degree (M.A.) in art education general requirements:
1. The B.A. or B.F.A. in art equivalent to that offered at the U of I.
2. Courses leading to teacher certification with a major in art.
3. Completion of 28 semester hours of graduate credit as indicated below.
4. An oral and/or written examination in art education and related fields.
5. Eighteen semester hours at studio and art history in a ratio of two to one.
6. Eight semester hours in art education.
7. Twelve semester hours to be specified after the student consults his program.
8. A written or studio thesis. In the case of the latter, it must be accompanied by a brief statement of his technical, aesthetic, and/or psychological approach.

XIII. The Master of Fine Arts degree (M.F.A.): The M.F.A. may be taken with a studio major in painting, drawing, sculpture, prints, design, photography, ceramics, metalcraft, or multimedia. The M.F.A. graduate from this University should be prepared to accept the most advanced position at the college level. The taking of enough advanced courses to obtain a teaching certificate is not required. The M.F.A. is oriented toward encouragement of the mature student who has a definite goal to and, special competence in, his art specialty. This degree is fully applicable to the M.F.A. However, students entering the Graduate College with a bachelor's degree and an M.F.A. are considered for a higher degree and must be cleared for M.F.A. candidates by the Dean of the Graduate College. The degree requires:
1. A student must take every course in the M.F.A. program with the approval of a standing committee of the faculty which includes the student's advisor and a representative of faculty with whom he has studied most. This semester must be followed by the taking of the M.A. (see above under VIII) and may be made as a second semester.
2. Satisfactory completion of a minimum of two years (90 semester hours) of graduate work by students with undergraduate preparation equivalent to that of the U of I and a minimum of 30 semester hours by those entering with the M.A.
3. Acceptance of studio thesis supervision and advisory responsibility by a member of the staff member of the student's thesis field of specialization. This usually takes place at the beginning of the third semester of the second year of the degree program.
4. Acceptance of responsibility for supervising the written thesis, where such thesis is assigned, by a member of the art history staff.
5. Formation of a faculty committee consisting of the student's advisor as chairman, the thesis advisor, and members of the student's executive committee. The committee shall consist of at least five. An additional faculty who have been closely involved in the student may be invited (see above under VII).
6. Review of the candidate's progress by the committee's faculty advisor's seminar, and at least once each semester thereafter by the committee and/or the faculty.

7. Completion of minimum coursework as follows, in addition to removal of any conditions resulting from lack of undergraduate work equivalent to that at the U of I.
   Studio Courses 42.0
   (Required to be a major subject of 12-24 semester hours, and from 18-30 semester hours of electives with at least 6 semester hours in a minor subject. For thesis requirements see above under IX.)
   Art History and Theory of Art Courses 9.0
   (These must include one seminar, but not Methodology.)
   Courses outside the School of Art 8.0
   (May be reduced, if replaced with art courses, upon consultation with the School's Director.)
8. Final review and acceptance, by committees, of the thesis when submitted during the semester in which the degree is taken.

XIV. The Doctor of Philosophy degree in the history of art. The Ph.D. degree of the School of Art is offered only in the history of art. It is designed for those having a philosophy of art, with special emphasis in the pertinent areas of learning, research, and analysis. The formal requirements are:
1. A total of at least 30 semester hours of graduate work, planned with the School's Director and interested faculty.
2. Reading knowledge of two foreign languages, normally French and German.
3. Completion of 12 to 25 semester hours of approved courses outside the School.
4. Satisfactory completion of a general examination in a written and an oral portion. The written portion will include a major field of choice (6 hours) and 3 minor fields (3 hours each). The choice of major and minor fields will be selected in accordance with the student's committee.
5. Satisfactory completion of a written dissertation including a final oral examination concerning the thesis and related fields.
6. The emphasis is on post-graduate level examination and research with a broad-based foundation for the dissertation. Normally minimum of 8 semester hours research and a maximum of the minimum total of 50 semester hours graduate credit is taken. These may be devoted only to the dissertation or in part to other related studies.

STAFF


Visiting Artist: Tony Underhill.


Librarian, Art Library: Hadas Soffin.

Curator, Visual Information: Carolyn Miligan.


Art History
Primarily for Undergraduates

IH:2 Introduction to Primitive Art
3.0
Art, architecture, and artifacts of primitive cultures in Africa, America, and the South Pacific. Prerequisites, 11:37, 11:38, or equivalent.
ART

1H:16 Introduction to Oriental Art 3 s.h.
Art and architecture in India, Southeast Asia, China, and Japan. Prerequisites: 11.57, 11.58, or equivalent. Same as Chinese and Oriental Studies 11.54.

1H:26 Introduction to Ancient Art 3 s.h.
Art and architecture of Mediterranean civilizations from Mesopotamian times to the age of Constantine. Prerequisites: 11.57, 11.58, or equivalent. Same as Classics 14.26.

1H:40 Introduction to Medieval Art 3 s.h.
Art and architecture in Europe from 300 to 1400 A.D. Prerequisites: 11.57, 11.58, or equivalent.

1H:47 Introduction to Renaissanc Art 3 s.h.
Art and architecture in Europe from the early Renaissance to 1600. Prerequisites: 11.57, 11.58, or equivalent.

1H:53 Introduction to Baroque Art 3 s.h.
Art and architecture in Europe from 1500 to 1750. Prerequisites: 11.57, 11.58, or equivalent.

1H: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: 11.57, 11.58, or equivalent.

For Undergraduates and Graduates

Note: Courses numbered above 125,500 have as prerequisites an introductory course in the appropriate art history area or permission of instructor.

1H:102 Primitives Art: African 3 s.h.

1H:105 Primitives Art: American 3 s.h.

1H:106 Primitives Art: American 3 s.h.
Indigenous art styles in America from their origins to the Spanish Conquest.

1H:110 Egyptian and Mesopotamian Art 3 s.h.
Sculpture, painting, architecture, and mine arts from the dawn of civilization to classical times. Includes art of ancient Egypt and Mesopotamia.

1H:116 Oriental Art: India 3 s.h.
Art and architecture of Greater India from the prehistoric period to the 19th century. Prerequisites: 11.57, 11.58, or equivalent. Includes art of the Indus Valley, the Vedic and Classical periods, the Buddhist and Hindu periods, and the Mughal period. Same as Chinese and Oriental Studies 10.25.

1H:117 Oriental Art: India 3 s.h.
Art and architecture of Greater India, from 1000 A.D. to the modern period, in relation to religions and philosophies (Hinduism and Islam). Same as Chinese and Oriental Studies 10.25.

1H:119 Art of China 3 s.h.
Art and architecture of China in relation to philosophies and religions (Confucianism, Taoism, and Buddhism). Same as Chinese and Oriental Studies 10.25.

1H:120 Chinese Painting I 3 s.h.

1H:121 Chinese Painting II 3 s.h.

1H:122 Oriental Art: Japan 3 s.h.

1H:126 Greek Art I 3 s.h.
From Mycenaean to Hellenistic times. Architecture, sculpture, painting, and minor arts. Same as Classics 14.126.

1H:126 Greek Vase Painting 3 s.h.
Same as Classics 14.111.

1H:132 Roman Art 3 s.h.
Roman architecture, sculpture, painting, and mosaics of the Republican, Imperial, and Late Antiquity periods. Same as Classics 20.119.

1H:155 Ancient Art: Early Christian and Byzantine Art 3 s.h.
Architecture, sculpture, painting, and mosaics of the 4th to the 10th century in the West and to the 15th century in the East.

1H:157 Byzantine Art 3 s.h.

1H:140 Medieval Art 3 s.h.
Art of the early medieval period. From the dark ages in the Orient to the Ottonian period, including contemporary secular art.

1H:141 Medieval Art 3 s.h.
Late Romanesque and Gothic period.

1H:143 Medieval Art 3 s.h.
Late Gothic period.

1H:144 Northern Renaissance Art 3 s.h.
Art of the International style. Netherlands and French art to 1500.

1H:145 Northern Renaissance Art 3 s.h.
German art of the 15th and 16th centuries: Netherlands and 16th century art through Bruegel.

1H:147 Italian Renaissance Art 3 s.h.
Painting, sculpture, and architecture in Italy from 1250 to 1490.

1H:148 Italian Renaissance Art 3 s.h.
Painting, sculpture, and architecture in Italy from 1490 to 1600.

1H:149 Italian Renaissance Art 3 s.h.
Painting, sculpture, and architecture in Italy from 1500 to 1600.

1H:150 17th Century Masters in Southern Europe 3 s.h.

1H:151 French Painting 3 s.h.
From School of Fontainebleau to Bordeaux (1530-1700).

1H:152 Spanish Painting 3 s.h.
From El Greco to Goya (1270-1800).

1H:153 Baroque and Rococo Art 3 s.h.
Painting, sculpture, and architecture in Italy from 1600 to 1750.

1H:154 Baroque and Rococo Art 3 s.h.
Painting, sculpture, and architecture in The Netherlands, France, Germany, and England from 1600 to 1750.

1H:156 18th Century Art 3 s.h.
Architecture, sculpture, and painting in the 18th century in France, Germany, and England.

1H: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 century.

1H: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.

1H:162 Modern Art I 3 s.h.
Architecture from 1900 to the present in Europe and America.

1H:163 Modern Art II 3 s.h.
Painting from 1900 to the present in Europe. Fauvism, Cubism, Futurism, Surrealism, and abstract art. Art of Nazi Germany, Fascist Italy, and Communist Russia.

1H:166 American Art I 3 s.h.
Architecture, painting, and sculpture in the United States from colonial times through the Early Republic.
For art majors only. Color theory; pictorial design; painting tools and techniques; print project: three-dimensional design. Prerequisite: 15:3.

15:5 Art Forms I 2 s.h.
For art majors only. Drawing tools and media; two-dimensional design problems; principles of space articulation; drawing from the human figure.

15:6 Art Forms IV 2 s.h.
For art majors only. Group and individual projects in traditional or mixed media; two or three-dimensional problem. Prerequisites: 15:3, 15:4, 15:5.

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

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

15:10 Prints and Compositions I 2 s.h.
Elements of printmaking in various media: etching, emulsion, dry point, color print. Renaissance technique: intaglio, relief, gravure. Not open to freshmen or sophomores. Prerequisite, 15:7 or equivalent. May not be repeated.

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

15:20 Basic Design 2 s.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.

15:21 Problems in Design—Form and Structure 2 s.h.
Materials and their formal and structural possibilities. Prerequisite, 15:20.

15:32 Problems in Design: Form and Function 2 s.h.
Prerequisites: 15:20, 15:21.

15:35 Lettering I 2 s.h.
Basic letter forms and their relation to type design. Use of lettering with brush, pen, and white India ink; lettering with brush nibbed pen leading to build-up letters. Problems in page design. Prerequisites, 15:3, 15:4, 15:20, or consent of instructor.

15:36 Graphic Design I 2 s.h.
Painting, printing, and writing. Commercial poster and commercial lettering; use of pen and brush. Prerequisite, 15:30.

15:34 Fundamentals of Photography 2 s.h.
Use of the camera, light meter, and darkness; theory of photography and photographic history. May not be repeated. Prerequisite, 15:4.

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

15:48 Undergraduate Painting Workshop 2 or 3 s.h.
Individual projects in any painting medium or combination of media. Prerequisite, 15:46 or equivalent.

15:50 Ceramics I 2 s.h.
Basic methods of forming, firing, and glazing clay. May not be repeated. Prerequisite, 15:4, 5, or permission of instructor.

99
15:133 Graphic Design II 3 a.h.
Intermediate study of contemporary graphic communication. Designing for various printing and reproduction processes. Problems in relating image, type, lettering, paper, and color. Prerequisites: 15:120.

15:135 Advanced Problems in Graphic Design 3 a.h.
Individual instruction; specialized research in graphic techniques. Prerequisites: 15:132 and permission of instructor.

15:137 Environmental Design I 3 a.h.
Essential technology, including drafting and rendering, employed in architectural and industrial design and related Especially to environmental factors, human and geographical. Prerequisites: 15:1, 15:14, 15:20, or equivalent.

15:138 Environmental Design II 3 a.h.
Relationship of interior design to its architecture, to environment, and to the human element. The use of color, materials, furnishings, and lighting in selected projects. Prerequisites: 15:17, 15:23, 15:29.

15:141 Interior Design I 3 a.h.
Relationship of interior design to its architecture, to environment, and to the human element. The use of color, materials, furnishings, and lighting in selected projects. Prerequisites: 15:17, 15:23, 15:29.

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

15:145 Industrial Design I 3 a.h.
Preliminary studies of products and how they are designed. The student will develop modeling skills and the graphic communication skills necessary to basic product development. Design considerations related to human factors, methods of manufacturing, and marketing. Prerequisites: 15:1, 15:14, 15:15, 15:23, 15:25.

15:146 Industrial Design II 3 a.h.
Design and development of products for mass consumption. Special attention to new developments in technology and how they relate to human needs. Prerequisites: 15:145. 15:147 Industrial Design III 3 a.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 improve and widen our living conditions. Prerequisites: 15:145, 146.

15:149 Advanced Problems in Design 3 a.h.
Advanced design projects for advanced students. Prerequisites: 15:1, 15:14, 15:15, 15:23, 15:25, permission of instructor.

15:151 Painting Materials I 2 or 3 a.h.
Survey of painting and survey of painting materials and techniques from the 12th to the 20th centuries. Nature of materials. Principles, techniques, composition, color theory, ground, supports, and surface protection. May not be repeated. 15:152 Painting Materials II 2 or 3 a.h.
Continuation of 15:151. May not be repeated.

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

15:154 New Materials Workshop 2 or 3 a.h.
Recent techniques of gesso and egg-oil emulsion underpainting, with various grounds and glazing media. Prerequisites: 15:131, 132.

15:155 Fundamentals of Conservation and Restoration I 2 or 3 a.h.
Causes of deterioration of materials: cleaning, lining, surface protection; use of scientific equipment (infra-red, ultraviolet, X-ray, etc.). The care, handling, and storage of art objects. Prerequisites: 15:131 or equivalent. May not be repeated.

15:132 Film Laboratory 2 a.h.
Fundamental instruction in expressive film making; use of cameras; editing and composing film ideas.
<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:125</td>
<td>Fundamentals of Conservation and Restoration II</td>
<td>2 or 3 s.h.</td>
<td>Continuation of 15:124. May not be repeated.</td>
</tr>
<tr>
<td>15:126</td>
<td>Sculpture II</td>
<td>3 s.h.</td>
<td>Molding in clay or plaster; casting in wax or stone; welding. Prerequisite, 15:125 or equivalent.</td>
</tr>
<tr>
<td>15:144</td>
<td>Sculpture Workshop</td>
<td>2 or 3 s.h.</td>
<td>Advanced sculptural problems. Prerequisite, 15:125.</td>
</tr>
<tr>
<td>15:153</td>
<td>Sculpture III</td>
<td>3 s.h.</td>
<td>Fundamentals of lost wax technique. Molding and pouring of bronze, aluminum, lead, and pewter. Fielding techniques of patina and chiseling. Prerequisite, 15:125 or equivalent.</td>
</tr>
<tr>
<td>15:161</td>
<td>Ceramics II</td>
<td>3 s.h.</td>
<td>Sculptural problems in various clay bodies and glazes. Prerequisite, 15:13 and 15:49.</td>
</tr>
<tr>
<td>15:170</td>
<td>Ceramics III</td>
<td>2 s.h.</td>
<td>Individual projects as approved by the instructor. Prerequisites, 15:51 and 65. Taken consecutively.</td>
</tr>
<tr>
<td>15:111</td>
<td>Ceramics Workshop</td>
<td>3 cr.arr.</td>
<td>Prerequisites, 15:170 and permission of instructor.</td>
</tr>
<tr>
<td>15:179</td>
<td>Glass Calculations</td>
<td>3 cr.</td>
<td>Experimental and practical methods of glass formulation; effects of various types of kilns, firing atmosphere, and glazes.</td>
</tr>
<tr>
<td>15:174</td>
<td>Kiln Construction</td>
<td>1 or 2 s.h.</td>
<td>Theory and construction of kilns. One semester required for all ceramics majors.</td>
</tr>
<tr>
<td>15:163</td>
<td>Metalsmelting II</td>
<td>2 or 3 s.h.</td>
<td>Continued from 15:162; emphasis on conceptual development. Prerequisite, 15:84; recommended, 15:162, 15:16.</td>
</tr>
<tr>
<td>15:165</td>
<td>Metalsmelting Workshop</td>
<td>3 cr.arr.</td>
<td>Individual projects; open to majors only. Prerequisite, 15:162.</td>
</tr>
<tr>
<td>15:166</td>
<td>Individual Instruction</td>
<td>3 cr.arr.</td>
<td>Open only to majors.</td>
</tr>
<tr>
<td>15:200</td>
<td>Art in Urban Environment</td>
<td>5 s.h.</td>
<td>Summer only. Combination studio and lecture.</td>
</tr>
</tbody>
</table>

**Art Education**

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:155</td>
<td>Art Projects for Elementary School Teachers</td>
<td>2 or 3 s.h.</td>
<td>Both semesters. Same as Education 75:126.</td>
</tr>
<tr>
<td>15:106</td>
<td>Art Education—I Elementary</td>
<td>3 s.h.</td>
<td>Projects, techniques, and processes in art for the elementary art teacher. Open to elementary art majors. Painting, drawing, printmaking, sculpture, and crafts using tools and materials commonly available in the elementary schools. Junior year.</td>
</tr>
<tr>
<td>15:108</td>
<td>Art Education—Secondary</td>
<td>2 s.h.</td>
<td>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.</td>
</tr>
<tr>
<td>15:135</td>
<td>Supervision of Art</td>
<td>2 or 3 s.h.</td>
<td>Same as 10:125.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7E:191 and 7E:192</td>
<td>Laboratory Practice in the Elementary School</td>
<td>cr.arr.</td>
<td>Both semesters.</td>
</tr>
<tr>
<td>7E:197</td>
<td>Seminar in Elementary Art</td>
<td>Education</td>
<td>2 or 3 s.h.</td>
</tr>
<tr>
<td>7S:105</td>
<td>Methods of Secondary Art</td>
<td>Education</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7S:191</td>
<td>Observations and Laboratory Practice in High School</td>
<td>cr.arr.</td>
<td>Both semesters.</td>
</tr>
<tr>
<td>7S:406</td>
<td>Art Education: Research</td>
<td>Offered both semesters.</td>
<td></td>
</tr>
</tbody>
</table>

**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 assist 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 22:32 Analytical Geometry
- 4:14, 4:141, and 4:144 Organic Chemistry
- Twenty-four semester-hours of botany to include:
  - 2:21 Introduction to Botany 3 s.h.
  - (Succinct completion of the core course in 11:21, 12: Life Science may be used to satisfy this requirement.)
  - 2:21 Evolution of Land Plants 3 s.h.
  - 2:22 Algae and Fungi 3 s.h.
  - 2:23 Biology of the Local Flora 3 s.h.
- At least 7 semester-hours to be selected from other botany courses numbered above 110.

41
Honors in Botany

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

Prerequisites for admission to Honor in botany are senior standing and a cumulative grade-point average of 3.00 or better.

In addition to the requirements for a B.A. degree in botany, candidates shall fulfill:
1. Complete 3 semester hours of research (212H Honors in Botany) during their senior year.
2. Maintain a cumulative grade-point average of 3.00 overall and 3.5 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 faculty of the Department of Botany devotes much time and thoughtful attention to planning programs toward the advanced degrees in botany, and it is continually re-evaluating 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 Bachelor of Science degree as stated in the University Catalog. Students who plan graduate study should consult their major professor early in their career. Students should meet the requirements for the Master of Science Examination (Admission 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 some service as teaching or research assistants.

Master's degree in botany. Advanced study may be emphasized in one of the following fields: anatomy, physiology, cytology, ecology, genetics, mycology, paleobotany, or vegetation and community studies.

The master's degree may be awarded after having completed at least 30 semester hours of graduate credit including 6 semester hours of 500-level courses. The preparation of a thesis is optional.

Doctoral degree. To qualify for the doctoral degree the candidate must:
1. Complete a program of study approved by his major adviser and by a graduate committee consisting of his major adviser and 2 other members of the graduate faculty.
2. Pass the advanced test in botany.
3. Complete a minimum of 60 semester hours of graduate credit including 12 semester hours of 600-level courses.
5. Satisfy the University requirements for the Ph.D. degree.

A grade-point average of 3.00 or above is required for all graduate study.

Morphology—hybridology, mycology, paleobotany, physiology

Physiology—plant physiology, experimental mycology

Population Botany—ecology, plant taxonomy

Cellular and Developmental Botany—anatomy, cytology

A. At least one graduate-level course and a minimum of 3 semester hours in related subjects (biochemistry, chemistry, geology, botany, microbiology, medicine, physics, psychology).

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

The master's degree candidate takes 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 teachers, emphasis in botany. A student electing this degree must complete at least 30 semester hours of graduate work in biology including the prerequisites noted above. A program of study will be chosen in consultation with an advisor.

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

Graduation requirements:
1. With thesis: 15-20 semester hours of botany including 225 Research 2-3 semester hours of 500-level courses in elective fields.
2. Without thesis: 25-30 semester hours of botany including 225 Research; 8-10 semester hours of 500-level courses in elective fields.
3. A grade-point average of 3.0 on all courses attempted at the time of the final examination.

For other courses see Zoology.

Doctor of philosophy. The general requirements of the Graduate College and Graduate College, apply to all students. Specialization may be in any one of the fields of advanced study. Doctoral work in botany is supervised by a graduate committee whose chairman must be a member of the botany department. The final degree must be awarded upon the completion of the following requirements:

1. A student should enter directly into his planning for his degree by selecting a program of study in a guidance committee consisting of his major adviser and two other members of the botany department. Normally, at a guidance program the procedure of selection for the degree is supervised.

2. A candidate for the degree will be prepared to complete the requirements for the master's degree.

3. A successful completion of comprehensive examinations covering all fields of botany. Preparation for comprehensive examinations is optional. The student to review and develop scholarship in botany and his field of specialization.

4. A grade-point average of 3.0 on all advanced graduate courses including those required for the master's degree.

Successful completion of comprehensive examinations covering all fields of botany. Preparation for comprehensive examinations is optional. The student to review and develop scholarship in botany and his field of specialization.

5. A successful completion of comprehensive examinations covering all fields of botany. Preparation for comprehensive examinations is optional. The student to review and develop scholarship in botany and his field of specialization.

6. The doctoral thesis shall be submitted prior to the final oral examination. The thesis is a formal presentation of the ideas and the methods of obtaining the facts herein. The thesis shall be of an original and independent contribution to the general body of our knowledge of

42
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. There is also a special laboratory for plant physiology, with attached greenhouse, on the northeast corner. 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 diatomics, for facilities for the graduate student research laboratories, and an electron microscope facility. Special facilities of the Radiation Research Laboratory, the University Computer Center, and the Iowa Lakeside Laboratory at Lake Okoboji (see Directory 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
Professor: Robert L. Hulbert, Robert M. Murr, Martin A. Rudolph
Professor Emeritus: George W. Martin
Associate Professor: Henry L. Dean, Robert W. Rehner, Thomas W. Bushue, Arthur A. Buzzell
Assistant Professor: Wayne R. Carnes, Robert W. Craden, Jeffery T. Schachtman, Richard D. Spalding, Stefan Terestsky
Liberian in Charge, Botany Library: Pauline L. Mann.

COURSE DESCRIPTIONS

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 relationships 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 sections each. Same as Zoology 37:106. Prerequisite, 2:1 or Zoology 27:1 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 37:116. Prerequisites, 2:1 or Zoology 27:1 or equivalent; Chemistry 41:121, 122 recommended.

2:104 Cytopsychics 4 s.h.

2:105 Physiology 4 s.h.
Structure and function of algae, freshwater and marine, including the cytoiology and physiology of representatives of the major taxonomic groups. Laboratory, and field trips. Prerequisite, 2:1 or equivalent.

2:106 Mycology 4 s.h.
Morphology, cytoiology, and taxonomy of fungi with study of representative groups. Prerequisites, 2:1 or equivalent.

2:107 Mycology 4 s.h.
Morphology, physiology of fungi. Procedures for growth and morpho-
logical investigations. Prerequisites, 2:106 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 relationships, and chemical 
   syntheses. Prerequisites, 2:1 and organic chemistry.

2:109 Plant Physiology 4 s.h.
Lecture and laboratory. Experimental study of mineral 
   nutrition, water relations, growth and development of seed 
   plants. Prerequisites, 2:1 and organic chemistry.

2:111 Plant Ecology 4 s.h.
Lecture and laboratory. Study of mechanisms between organisms and their 
   environment. Topics include community succession, 
   adaptation, historical and evolutionary sequence of community 
   development, soil and water relationships. Prerequisites, 2:1 or equivalent; a course in genetics is helpful.

2:112 Plant Anatomy 4 s.h.
Structure and organization of fundamental tissue systems of 
   seed plants including development and differentiation of cell types correlating tissue 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 
   organs with emphasis on the relationship of their structural 
   and functional properties and evaluation of morphological evidence obtained by light and electron microscopy. Prerequisites, 2:1 or equivalent.

2:115 Botanical Microtechniques 3 s.h.
Lectures and practical instruction in preparation of permanent microtome sections. Methods of killing, sectioning, and staining plant materials. Prerequisites, 2:1 or equivalent. Necessary for research in various fields of botany. Prerequisites, 2:1 or equivalent.
2:116 Botanical Microtechnique cr.arr. 3 s.h.

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

2:118 Experimental Techniques cr.arr. 3 s.h.
Classification of 2:115, but may be taken as an independent unit. Chemical analysis, enzyme studies, and measurements of photosynthesis and respiration.

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

2:124 Honors in Botany cr.arr. Both semesters. Prerequisites, senior standing and grade point average 3.6 overall, 3.5 in botany.

2:132 Plant Irradiation Genetics cr.arr. 3 s.h. Laboratory projects in the pedigrees culture of plants, including microorganisms. Methods used in population studies, including the induction of mutations. Thermal effects on biological data. Prerequisite: 2:10 or equivalent. Alternate years; offered spring 1971.

2:137 Medical Mycology cr.arr. 4 s.h. Basic techniques used in the study of fungi which are pathogenic for man. Registration limited and on consent of the instructor. Same as Microbiology 2:139.

2:151 Field Botany cr.arr. 3 s.h.
Identification and identification of plants in the living condition. Methods of identification of plants in natural conditions and field conditions. Lecture and frequent field trips. Offered only in the summer session.

2:160 Genetics of Cell Organelles cr.arr. 3 s.h. Readings and research papers on the function and molecular genetics of cell organelles. Discussion of genetic structures such as chloroplast and mitochondria. The relation between molecular genetics and cytoplasm. Prerequisites: 2:118 or Zoology 2:119 and a course in biochemistry.

Primary for Graduates

2:201 Systematics cr.arr. 3 s.h. Classification, interrelationships, polymorphism, xenoplasmy, cytotaxonomy, experimental biogeographies, and biochemical systematics. Lectures and discussions on utilization of data derived from these areas in the study of evolution problems and relative distribution of populations, species, and genera. Prerequisite, consent of instructor.

2:204 Genetics Seminar cr.arr. 2 or 4 s.h. Lecture and discussion seminars on selected topics in genetics. A specific topic will be assigned each year. Course may be repeated for credit. Prerequisites: 2:118 or Zoology 2:119 or consent of the instructor. Same as 2:204.

2:205 Morphogenesis Seminar cr.arr. 2 s.h. Discussion, lectures, and seminars on literature and current status of cell and tissue differentiation, developmental anatomy and embryological morphology of plants. Prerequisites: 2:118 or 2:114 or equivalent.
Chemistry Courses

4.6* 4.9* or 4.6* Principles of Chemistry

4.121, 122

Elementary Chemistry Laboratory

4.111, 112

Analytical Chemistry

4.131, 132

Physical Chemistry

4.141, 142

Intermediate Chemistry Laboratory

4.143, 144

Advanced Chemistry Laboratory

4.170

Advanced Inorganic Chemistry

4.180

Introduction to Research

4.182

Senior Research

4.190

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 24.1, 25, 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, to total a minimum of 6 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, psychology, etc.

B.S. Curriculum in Chemistry
with Biochemistry Emphasis

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

Chemistry Courses

4.1, 4.9* or 4.6* Principles of Chemistry

4.6

Elementary Chemistry Laboratory

4.111, 112

Analytical Chemistry

4.131, 132

Physical Chemistry

4.141, 142

Intermediate Chemistry Laboratory

4.143, 144

Advanced Chemistry Laboratory

4.170

Advanced Inorganic Chemistry

4.180

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
- A minimum of 12 semester hours in one language 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 for the B.S. or B.A. degrees satisfy the requirements for a major for teaching in secondary schools. Chemistry courses through organic chemistry satisfy the require-
ments for a teaching minor in chemistry. The require-
ments for a minor in mathematics may be satisfied by an
additional advanced course in mathematics. A minor in
physics requires a minimum of 15 additional semester
hours in physics. (See College of Education.)

One and Two-Year Curricula in Chemistry

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

6.1, 6.9* or 6.1* Principles of Chemistry

4.6

Elementary Chemistry Laboratory

4.7

General Chemistry

4.9

Elementary Chemistry Laboratory

4.11

Elementary Quantitative Analysis

4.121, 122

Organic Chemistry

4.141, 142

Intermediate Chemistry Laboratory

Courses 4.1, 4.9 or 4.6 and 4.9 or 4.11, 12, 121, 141 are designed to fulfill a background in general and

inorganic chemistry. Many electives 4.4, 5, 8 and 10 are recom-

mended if a one year curriculum in chemistry is desired.

Graduate Study in Chemistry

Admission. The Department of Chemistry requires the completion of a bachelor’s degree in chemistry for admis-
sion 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 described by the Graduate College must be fulfilled.

Programs. The department offers a full program of graduate study leading to the M.S. and Ph.D. degrees in the areas of analytical, inorganic, or-
ganic, and physical chemistry and chemical physics. Students seeking the Ph.D. degree in chemistry are re-
quired to demonstrate competence in each of four areas of chemistry. This can be accomplished by receiving a minimum 2.50 grade-point average in the course 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

4.171 Advanced Analytical Chemistry

4.172 Advanced Organic Chemistry

4.173 Advanced Physical Chemistry

Selecting students will be the opportunity to take examination examinations to demonstrate competence in the
4.112 Analytical Chemistry 3 a.h.
Continuation of 4.111, which is prerequisite.

4.114 Instrumental Methods of Analysis 3 or 4 a.h.
Potentiometric, colorimetric, spectrophotometric, polarographic, and electrical methods of analysis. Two lectures and one or two laboratory periods weekly. Prerequisite, 4.123.

4.121 Organic Chemistry I 3 a.h.
General principles illustrated by preparation and study of typical representatives of the aliphatic and aromatic series. Three lectures weekly. Prerequisite, 4.112 or 4.116 or 4.121.

4.123 Organic Chemistry II 3 a.h.
Continuation of 4.121, which is prerequisite.

4.125 Introduction to Organic Research 3 to 5 a.h.
Synthesis and purification of one compound. Methods and techniques of structure determination. Two or more courses and one to three laboratory periods weekly. Prerequisite, 4.125 and 4.126.

4.125 Qualitative Organic Analysis 3 or 4 a.h.
Identification of pure organic compounds and mixtures. Two lectures and two laboratory periods weekly. Prerequisites, 4.125 and 4.141.

4.127 Introduction to Polymer Chemistry 3 a.h.
Mechanisms and kinetics of polymerization reactions, structure, physical properties, and preparative methods. Three lectures weekly. Prerequisite, 4.125 and 4.131.

4.130 Physical Chemistry I 3 a.h.
Elements of theoretical chemistry. Elective for premedicai and biological science majors. Three lectures weekly. Prerequisite, 4.125.

4.131 Physical Chemistry II 3 a.h.
Application of the laws of physics to chemical phenomena. Three lectures weekly. Prerequisite, Physics 291B. Cross-listed with 4.121.

4.132 Physical Chemistry II 3 a.h.
Continuation of 4.131, which is prerequisite.

4.135 Introduction to Symmetry in Quantum Chemistry 3 a.h.
Elementary symmetry arguments applied to quantum chemistry problems. Prerequisites, 4.125.

4.141 Intermediate Chemistry Laboratory I 1 a.h.
Preparation, purification, identification, and analysis of chemical compounds, principally organic compounds. One lecture and two laboratory periods weekly. Prerequisite, 4.121 and 4.125 or 4.126.

4.142 Intermediate Chemistry Laboratory II 1 a.h.
Continuation of 4.141, which is prerequisite. One lecture and two laboratory periods weekly. Prerequisite, 4.121 and 4.125 or 4.126.

4.143 Advanced Chemistry Laboratory I 1 a.h.
Physical and analytical measurements. One lecture and two laboratory periods weekly. Prerequisite, 4.121 and 4.125 or 4.126.

4.144 Advanced Chemistry Laboratory II 1 a.h.
Continuation of 4.143, which is prerequisite. One lecture and two laboratory periods weekly. Prerequisite, 4.121 and 4.125 or 4.126.

4.151 History of Chemistry 2 a.h.
Historical survey of the development of chemistry from earliest times to the present. Emphasis is given to great personalities and to economic factors. Two lectures weekly. Prerequisite, 4.123.

4.151A Introduction to Senior Research 1 a.h.
Information retrieval from chemical literature and selection, presentation and evaluation of chemical research problems. One meeting weekly. May be repeated once for credit. Prerequisite, senior standing in chemistry.

4.152 Senior Research 1 to 4 a.h.
May be repeated for credit. Prerequisite, senior standing in chemistry.

4.170 Advanced Inorganic Chemistry 3 a.h.
Advanced topics in inorganic chemistry. Three lectures weekly. Prerequisite, 4.129.

4.171 Advanced Analytical Chemistry 3 a.h.
Discussions of the theoretical basis of modern analytical techniques. Three lectures weekly. Prerequisite, 4.129.

4.172 Advanced Organic Chemistry 3 a.h.
General organic chemistry for advanced students. Three lectures weekly. Prerequisite, 4.125 and 4.126.

4.173 Advanced Physical Chemistry 3 a.h.
Physical Chemistry for advanced students. Three lectures weekly. Prerequisite, 4.132.

4.181 Chemical Pedagogy 3 a.h.
Teaching methods and practice of presenting chemical principles and the principles of self-learning to students. One lecture and two laboratory periods. Prerequisite, senior standing.

Primarily for Graduates

4.201 Special Topics in Inorganic Chemistry 3 a.h.
Intensive study of selected areas of specialization within the field of inorganic chemistry. Three lectures weekly. Topic changes annually. May be repeated for credit. Prerequisite, 4.129.

4.202 Coordination Compounds 3 a.h.
Formation, reactions, physical properties, and structures of molecules formed by combinations of donor molecules with acceptor elements. Three lectures weekly. Prerequisite, 4.129.

4.203 Introduction to Inorganic Research 3 a.h.
Techniques of inorganic research including synthesis and structure determination. One lecture and two laboratory periods weekly. Prerequisite, 4.170.

4.204 Physical Methods in Inorganic Chemistry 3 a.h.
Application of physical methods to problems in inorganic chemistry, with emphasis on recent developments. Three lectures weekly. Prerequisite, 4.170.

4.211 Analytical Emission and Absorption Spectroscopy 3 a.h.
Theory and practice of qualitative and quantitative analysis by means of emission spectroscopy, ultraviolet, visi-
urable and infrared absorption spectroscopy. Study of reactions in solutions. Spectroscopy and chemical struc-
ture. Two lectures and one laboratory weekly. Prerequisite, 4.121.

4.212 Electroanalitical Chemistry 3 a.h.
Theory and practice of electrochemical methods of analysis. Polarization, titrations, coulometric titrations, polarography, amperometric titrations, controlled potential electrolysis. Two lectures and one laboratory weekly. Prerequisite, 4.121.

4.213 Special Topics in Analytical Chemistry 3 a.h.
Topic changes annually. May be repeated for credit. Three lectures weekly. Prerequisite, 4.121.

4.223 Special Topics in Organic Chemistry 3 a.h.
Topic changes annually. Three lectures weekly. Prerequisite, 4.125.

4.234 Physical Organic Chemistry 3 a.h.
Fundamental physio-chemical concepts of molecular structure, stereochemistry, equilibria, and reaction rates applied to organic compounds. Prerequisites, 4.125 and 4.132.

4.251 Mechanisms of Organic Reactions 3 a.h.
Application of basic mechanistic concepts to organic re-
actions. Three lectures weekly. Prerequisite, 4.125.
CHEMISTRY

4.229 Advanced Organic Preparations 3 s.h.
Discussion of the preparation of complex organic compounds. Three lectures weekly. Prerequisite: 4.132.

4.231 Statistical Thermodynamics 3 s.h.
Fundamental principles of statistical thermodynamics and descriptive chemical kinetics. Prerequisite: 4.132.

4.332 Statistical Thermodynamics 3 s.h.
Advanced topics in statistical thermodynamics. A continuation of 4.231, which is a prerequisite.

4.233 Quantum Chemistry 3 s.h.

4.234 Quantum Chemistry 3 s.h.

4.235 Chemical Kinetics 3 s.h.
Chemical kinetics and mechanisms of chemical reactions from a more theoretical viewpoint. Prerequisite: 4.132 or consent of instructor.

4.237 Molecular Spectroscopy 3 s.h.
Application of infrared, microwave, and Raman spectroscopy to chemical problems. Three lectures weekly. Prerequisite: 4.132 or consent of instructor.

4.242 Physical Chemistry Topics 0 or 3 s.h.
Statistics of linear polymers, or high-temperature chemistry, or selected topics. An alternate topic is covered each year the course is offered. May be repeated for credit when topic varies. Three lectures weekly. Prerequisite: 4.132.

4.243 Diffraction Analysis 3 or 4 s.h.
Theory and practice of the diffraction of electrons, neutrons, and X-rays by gases, liquids, and solids. Structure determination 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 advances in the various fields of chemistry. Prerequisite, consent of instructor.

4.251 Seminar: Analytical Chemistry 0 or 1 s.h.

4.252 Seminar: Inorganic Chemistry 0 or 1 s.h.

4.253 Seminar: Organic Chemistry 0 or 1 s.h.

4.254 Seminar: Physical Chemistry 0 or 1 s.h.

Research in Chemistry

The following courses present thesis work for advanced degrees. Conference and laboratory work arranged. Prerequisite, 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, W315 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 discharging this function the Institute 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 twofold aim of providing a broad general education and providing a sound foundation for later specialization in a chosen area of child development. The Institute offers advanced preparation for careers requiring graduate training in several different behavioral fields of normal children. Curricular programs are graded leading to the M.A. degree in preschool education, the M.A. degree in child behavior, and the Ph.D. degree in child psychology.

Facilities

The Institute operates preschool laboratories for purposes of both research and teaching. The annual enrollment exceeds 100 children from three to five years of age. Other groups of subjects are available for research purposes through the numerous 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 communities, several orphanages, and institutions for handicapped 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, audition instruments, physiological, and recording devices, and an adequate supply of automatic computational equipment for data analysis. R.A.'s in child development. In the course of meeting the general requirements of the College of Liberal Arts, students taking the B.A. degree with a major in child development must complete the following curriculum:

Prerequisites

5.111 Elementary Psychology 3 s.h.
5.123 College Algebra 3 s.h.
5.233 Analytic Geometry 3 s.h.

and one of the following:

25.1 College Physics 4 s.h.
25.2 College Physics 4 s.h.
41.1 General Chemistry 4 s.h.
41.2 General Chemistry 4 s.h.
475 Principles of Animal Biology 4 s.h.
487 Principles of Human Genetics 4 s.h.

Required courses

5.151 Introduction to Child Psychology 4 s.h.
5.152 Social Development of Children 3 s.h.
5.153 Language Processes in Children 3 s.h.
5.154 Sensation and Perception in Children 3 s.h.
5.155 Physiological Psychology of Children 3 s.h.
5.156 Introduction to Child Development 3 s.h.
25.202 Introduction to Philosophy of Science 3 s.h.
7P.143 Introduction to Statistical Methods 3 s.h.

25.251 Probability and Statistics 4 s.h.

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

5.154 Children's Language Development 3 s.h.
5.219 Observation and Participation in the Preschools 3 s.h.
17.778 Educational Psychology 3 s.h.
17.179 Principles of Nutrition 3 s.h.
31.411 Introduction to Experimental Psychology 3 s.h.
31.412 Experimental Psychology I 3 s.h.
31.413 Experimental Psychology II 3 s.h.
31.414 Principles of Animal Psychology 3 s.h.
31.415 Psychology of Learning 3 s.h.
31.419 Motivation 3 s.h.

48
Graduate Admission Requirements

Graduate students are admitted at the same time to the Graduate College, and to the Institute. Application for admission to the Graduate College is made to the Director of Admissions, The University of Iowa, Iowa City 2926. The applicant must submit a formal application and official transcripts of all previous academic work, as well as an essay on the Graduate Record Examination Analytic Test. Application for admission to the Institute is made to the Chairman of Admissions, Institute of Child Behavior and Development, The University of Iowa, Iowa City 2926. The applicant must submit formal application to a curriculum program, official college transcripts, documen- tation of progress in previous graduate work, and the names of three professors who can write pertinent letters of recommendation.

Prospective applicants may obtain the following ma- terials by writing to the Chairman of Admissions at the Institute: all necessary applications forms; the brochure, Graduate Training in Child Behavior and Development; and information on graduate assistantships and teach- erships, including the stipends they carry.

M.A. in preschool education. The M.A. program in pre- school education provides information regarding child be- havior theory, opportunity for applying this knowledge in a laboratory preschool, practicing in teaching children and working with their parents and experiences in preschool administration and supervision in teachers in training.

Required courses
5:200 Child Development
5:201 Methodological Problems in Child Development 3.0
5:211 Principles of Human Genetics 3.0
5:212 Principles of Modern Embryology 4.0
5:218 Comparative Anatomy of Vertebrates 4.0

Electric courses (9 semester hours required from these listed below)
5:213 Language Processes of Children 3.0
5:214 Sensation and Perception in Children 3.0
5:215 Psychology of Children 3.0
5:216 Introduction to Child Semiotics 3.0
5:218 Social Behavior of Children 3.0

Recommendation for the granting of the M.A. degree in preschool education requires completion of 33 prescribed semester hours of graduate study with a minimum grade- point average of 3.0, preparation of an acceptable thesis, and satisfactory performance on a final examination con- sisting of written and oral parts.

M.A. in child behavior. The M.A. program in child behavior provides the student with advanced training in psychometric methods. The program contains detailed knowledge in each of several content areas of child development, and provides the student with the professional opportunity for participation in research activities.

Required courses
5:200 Introduction to Child Psychology 3.0
5:201 Methodological Problems in Child Development 3.0
5:211 Research in Child Development 3.0
5:213 Introduction to Statistical Methods 3.0

Staff

Professors: Gordon N. Canter, Howard V. Meredith, Dennis C. Spiker.

Associate Professors: J. Elizabeth Alden, Joan H. Canter, Raymond H. Robins.

49
COURSE DESCRIPTIONS

Courses numbered 100 to 199 are open to undergraduates; courses numbered above 200 are open to graduate students only.

5.100 Child Development
3.0
Methods in psychological study of infants and children; developmental norms; maturation-learning, nature-nurture controversy; perceptual, learning, and motivational processes; cognitive development; personality development; maternal deprivation effects. Same as Education 79.288 and Psychology 21.111. Not open to sophomores. Recommended for students with majors other than child development.

5.123 Observation and Participation in the Preschools 2-5 a. h.
The University Preschool as a laboratory for studying and attempting to influence the behavior of normal 2- to 5-year-old children. Morning, assigned observation, and essay-and-participation in the Preschool Laboratories are required. Prerequisites: 5.100 (same as Psychology 21.111) or 5.151 (same as Psychology 31.114) and consent of instructor.

5.151 Introduction to Child Psychology 4.0
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 3.0
Research focusing on the learning of social behaviors in infants and children. Application of learning principles relevant to the development of social behaviors. Prerequisites: Psychology 31.111 or equivalent.

5.153 Language Processes in Children 3.0
Consideration of contributions from learning psychology, biological research, and linguistics to the area of children's language processes. Two hours lecture, one hour laboratory weekly. Source: Prerequisites: Psychology 21.11 and consent of instructor.

5.154 Sensation and Perception in Children 3.0
Research procedures and results bearing on sensory and perceptual processes in children. Prerequisites: 5.151 and Psychology 31.111 or equivalent.

5.155 Psychophysiology of Children 3.0
Functions of the nervous system and developmental psychophysiology. Results and concepts from studies relating physiological and electrophysiological variables with emphasis on experimental work with infants and children. Prerequisites: Psychology 21.11 or equivalent.

5.156 Introduction to Child Sociology 3.0
Human developmental evolution from embryo to young adult. Body size, form, and tissue variations associated with growth, development, and maturation. Peckish changes. Growth appraisal.

5.211 Social Behavior of Children 3.0
Theories, methods, and research findings, with emphasis on a learning analysis of social interaction. Prerequisites, consent of instructor.

5.230 Preschool Education 3.0
Principles and procedures, with emphasis on unique aspects of curriculum development. Improvement of classrooms throughout the preschool years. Prerequisites: 5.230 or equivalent.

5.232 Seminar: Design and Use of Preschool Equipment, Materials, and Facilities 2.0
Creative teaching in the preschool. Construction of spatial materials. Selection, care, and evaluation of plant and equipment.

5.234 Advanced Practicum in Preschool Education 1 to 4.0
Directed observation and participation in the Preschool Laboratories. Prerequisites, consent of instructor.

5.235 Seminar: Preschool Supervision 2.0
Teacher evaluation and guidance, Curriculum improvement and preparation of materials for use in preschool groups. Prerequisites, consent of instructor.

5.240 Learning in Children 3.0

5.241 Motivational Determinants of Child Behavior 3.0
Motivational and associative interpretations of child behavior; shift in research concerned with anxiety, stress, frustration conflict, incentive motivation, hormones. Prerequisites, consent of instructor.

5.245 Visual Psychophysics in Children 3.0
Analysis and interpretation of research relevant to the study of basic visual processes in children. Prerequisites: 5.114 or consent of instructor.

5.246 Verbal Processes in Children 3.0
Verbal processes in respect to age, with special reference to developmental aspects of short- and long-term memory. Prerequisite, Psychology 31.225 or consent of instructor.

5.244 Mathematical Models of Child Behavior 3.0
Applications of stochastic models to developmental processes. Emphasis on learning, attention, and memory. Prerequisites, Psychology 31.24.

5.245 Social Behavior of the Child 3.0
Theory and research on the influence of social variables on child development, with focus on effects of observe behavior on developmental standards.

5.246 Socialization Process 3.0
Influence of parent behavior and related environmental factors on social and personality development. Prerequisite, consent of instructor.

5.248 Advanced Psychophysiology of Children 3.0
Lecture and laboratory work dealing with neural and psychophysiological techniques. Review and analysis of selected topics with special reference to psychophysiological research on infants and children. Prerequisites, 5.155 or consent of instructor.

5.249 Discrimination Learning in Children 3.0
Theory and research on discrimination and conditional generation in classical and instrumental conditioning and in simultaneous, successive, relational, and...
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, attitudes, extreming, meditated generalization, complex mediated transfer. Prerequisite, consent of instructor.

5.256 Seminar: Motivational Systems of Children 2 s.h.
Theories concerning behavior and curiosity behavior. Infant and child research, regarding stimulus complexity and novelty, stimulus familiarization and change, attention patterns, behavior. Prerequisite: ED 341 or consent of instructor.

5.257 Seminar: Quantitative Child Psychology 2 s.h.
Review of literature on selected quantitative models applicable in child psychology. Prerequisites, 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 anatomical aberrations of children. Prerequisite, ED 346 or consent of instructor.

5.300 Problems in Child Development 1-2 s.h.
For child development majors. Approval of problems required in advance of registration. Consent of instructor required.

5.307 Research in Child Development 0-4 s.h.
Enrolls work for advanced degree. 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 in 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 views of a liberal education. Those who plan to become social sciences 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 Service Certificate 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 financial aid has resulted in the strengthening of the faculty and course offerings of the Chinese and Oriental Studies program. Similar expansions 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 Religion, and the Departments of Anthropology, Geog- raphy, History, Political Science, and Sociology. The aggregate resources of these and 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 languages and civilization are required to complete a program of 22 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. Elective Concentration. The "elective concentration" requirement is intended 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 "elective concentration" requirement to work out a double major program and to fulfill the requirements of both departments. The following are lists of courses under the five categories:

I. Language
25 s.h.
30:101-102 Elementary Chinese 4-4 s.h.
30:103-104 Second-Year Chinese 4-4 s.h.
30:201-202 Third-Year Chinese 4-4 s.h.

II. History and Civilization
5 s.h.
30:131 Chinese Civilization: China 2 s.h.
(A prerequisite to all other courses in Chinese culture)
30:132 History of China to 1860 1 s.h.
(Same as History 10:132)
30:133 History of China to 1940 1 s.h.
(Same as History 10:135)
30:134 History of Modern China 3 s.h.
(Same as History 10:136)

III. Literature and Culture
5 s.h.
Any combination of courses approved by the student's major adviser from those listed under Chinese Literature, 30:141-30:151 and Chinese Thought and Culture, 30:152-30:181.

IV. Related Courses
71 s.h.

Group A
30:150 Literary Tradition of China and the West 3 s.h.
30:156 Oriental Art: India 3 s.h.
30:211 Art and Architecture of Japan 3 s.h.
30:217 Group B
100 General Linguistics 3 s.h.

Group B
30:281 Asian Civilization: Japan 3 s.h.
30:282 Asian Civilization: China 3 s.h.
30:285 Chinese Thought 3 s.h.
30:286 Elementary Japanese 3 s.h.
30:287 Elementary Chinese 3 s.h.
30:288 History of Japan to 1869 3 s.h.
30:289 History of Modern Japan 3 s.h.
30:291-295 Group C
(Same as Anthropology 10:191-125)
30:178 Group D
Group E
30:178 Group E
(Same as Anthropology 10:191-125)
30:248 3 s.h.
(Same as Political Science 30:248)

51
Honor 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 official recommendations for Honors study from his advisor.

2. Enroll during the junior year in 25:331 and 25:332. Undergraduates Honors Tutorial for 2 semester hours for each of the two semesters; write a term research paper in Chinese on a subject of original research under the supervision of his advisor.

3. Enroll during the senior year in 25:335. Senior Honors Thesis and prepare a 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:

25:131 Elementary Chinese Language 4 s.h.
25:231 Intermediate Chinese Language 4 s.h.
25:232 Chinese Literature 1 4 s.h.
25:233 History of China to circa 1840 3 s.h.
25:234 History of Modern China (History 15:44) 3 s.h.
25:235 Introduction to Chinese Civilization (History 15:44) 3 s.h.
25:236 Government and Politics of the P.R.C. 3 s.h.
25:237 Chinese Art (History 15:44) 3 s.h.
25:238 Recommended as Political Science 30:143 3 s.h.

Additional courses as approved by the department chairman 6 s.h.

Recommended as substitutes or additional courses:
25:241 Chinese Literature I 3 s.h.
25:242 Chinese Literature II 3 s.h.
25:243 Art of China 3 s.h.

(Same as Art 11:128)

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 on an advanced level ultimately leading to the doctorate, or for preparation for high school teaching, business, 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 combination of various courses 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 of The University of Iowa or its equivalent, and taken the Graduate Record Examination in both sections. Students with adequate preparation in their undergraduate major are expected to be admitted to the program, although in special cases, some deficiencies in their knowledge of Chinese language and civilization may necessitate additional work in Chinese civilization and Japanese, and consequently a larger program. A bachelor's degree in Chinese studies and a major in Chinese civilization and Japanese afford 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 avert a year's study of Japanese and complete a seminar in 25:240 Methods of Statistical 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 (beyond the first 2 years) 6 s.h.
Japanese 6 s.h.
Seminar: Methods of Statistical Research 3 s.h.
Advanced courses in Chinese literature and thought 9 s.h.
Thesis 9 s.h.

Total 30 s.h.

Program B

Advanced Chinese (beyond the first year) 3 s.h.
Advanced courses in Chinese literature and thought 15 s.h.
Additional courses in Chinese language, thought, journalism, etc., depending upon the student's interest and objectives 15 s.h.

Total 39 s.h.

Undergraduate Major Requirements in Japanese Language and Civilization

Undergraduate majors in Japanese language and civilization, hours distributed under the following categories: I. Japanese language, 2. Japanese History and Civilization, III. Japanese Literature and General Culture, IV. Related Courses, V. Externat Concentration. The "external concentration" requirement is made to enable the student to achieve, besides his Japanese language and area studies, a certain degree of concentration in an established discipline. It is expected that both the foreign language program and the area studies will be enhanced. Some students have already 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. Languages

25:121 Elementary Japanese 4 s.h.
25:122 Elementary Japanese 2 4 s.h.
25:123 Second-Year Japanese 4 s.h.
25:124 Second-Year Japanese 4 s.h.
25:125 Third-Year Japanese 4 s.h.
25:126 Third-Year Japanese 4 s.h.
25:127 Third-Year Japanese 4 s.h.
25:128 History of Japan to 1550 A.D. 3 s.h.

(Same as History 15:18)

II. History and Civilization

25:211 History of Japan (History 15:44) 3 s.h.
25:212 History of Japan 3 s.h.

(Same as History 15:18)

II. Government and Politics

25:211 History of Japan 3 s.h.
25:212 History of Japan 3 s.h.

(Same as History 15:18)
III. Literature and Culture

377.114 Classical Japanese Literature 3 a.h.
377.143 Modern Japanese Literature 3 a.h.
377.145 Survey of Japanese Fiction 3 a.h.
377.145 Modern Japanese Novels 3 a.h.
377.156 Modern Japanese Poetry 3 a.h.
377.156 Art and Architecture of Japan (Same as Art 19.122) 3 a.h.
39-29 Seminar in Methods of Bibliographical Research 3 a.h.

IV. Related Courses

29-155 Ethnology of Japan 3 a.h.
(See Art Anthropology 119.125)
29-159 Art and Architecture of China (Same as Art 19.118) 3 a.h.
120-100 General Linguistics 1
Groups B
120-152 Geography of India 3 a.h.
120-103 Elementary Chinese 4 a.h.
120-103 Elementary Chinese 4 a.h.
120-123 History of China: China 3360 3 a.h.
(See also History 35.397)
120-154 History of Modern China (Same as History 35.394) 3 a.h.
120-178 Government and Politics of the Far East 3 a.h.
(See also Political Science 30.145)

V. External Concentration

12.9 a.h.

Four semester courses in a cognate sequence excluding those listed above, in one of the following fields: anthropology, art, Greek and Roman classics, economics, education, English, French, geography, German, history, journalism, linguistics, philosophy, political science, religion, Russian, sociology, or some other field approved by the advisor.

For general requirements of the College of Liberal Arts see College of Liberal Arts.

Honor in Japanese Language and Civilization

A candidate for Honors in Japanese Language and Civilization must be a student in the field, and must:
1. Have an overall grade-point average of 2.0 or above, and
2. Complete 30 credits of courses in the major field. These courses must include
a. One course in Japanese literature
b. One course in Japanese civilization
3. Enroll during the senior year in 35-196 Senior Honors Thesis and prepare a Honors Thesis under the supervision of an advisor. The thesis must be on a suitable subject in the field of Japanese Language and Civilization.
4. Maintain a B+ grade or above for all Honors courses, and a B+ average in all courses throughout the senior year. A student who has fulfills all the requirements listed above will graduate and receive his 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:
29.115 Elementary Japanese 4 a.h.
29.116 Intermediate Japanese 4 a.h.
29.115 First-Year Japanese 4 a.h.
29.116 Second-Year Japanese 4 a.h.
29.117 History of Japan to 1868 3 a.h.
(See also History 19.126)
29.114 History of Modern Japan 3 a.h.
(See also History 19.126)
29.5 Asian Civilizations: Japan 3 a.h.

CHINESE AND ORIENTAL STUDIES

397.115 Ethnology of Japan: 3 a.h.
(See as Anthropology 119.125)
397.115 Additional courses as approved by the department chairman 3 a.h.
29.44 Recommended as substitutes or additional courses:
397.115 Classical Japanese Literature 3 a.h.
397.115 Modern Japanese Literature 3 a.h.
397.115 Art and Architecture of Japan 3 a.h.
(See as Art 19.122)
397.115 Japanese Thought 3 a.h.

Summer Institute on the Far East

The Summer Institute on the Far East is offered during the University summer session. The objectives of the institute are to:
1. Aid college students in a better intercultural understanding and more adequate preparation for citizenship and leadership in national and world affairs;
2. Contribute to the preparation of teachers in schools and colleges in their family of courses and materials on the Far East and to encourage them and their students to participate in the institute; and
3. Provide material for the promotion of interest in Far Eastern studies and scholarship.
(Two of these will receive additional financial aid to travel to the Far East. The institute will be held at the University of Michigan in Ann Arbor. Students will be selected on the basis of merit and need. Students interested in this program should contact the chairperson of the department of Asian Studies.)

The CIC Far Eastern Language Summer Institute

Under the sponsorship of the midwestern Committee on Institutional Cooperation (CIC), consisting of representatives from the Universities of Chicago, Illinois, Indiana, Iowa, Michigan, Michigan State, Minnesota, Northwestern, Ohio State, Purdue, and Wisconsin, a Far Eastern Language Summer Institute is offered on a rotating basis for a number of years. Intensive courses in Chinese, Japanese, and Korean at all levels as well as courses in religion, literature, and philosophy, are available. The faculty comes from the Chinese and Japanese teaching staffs of the midwestern CIC institutions, to which students from universities outside those are added. Scholarship aid is available to qualified students at both graduate and undergraduate levels.

Financial Aid to Students

The George and Jeanne Richardson Pollock Scholarships — two $100 stipend awards — are available to students in their junior year to finance investigations and honors students majoring in Chinese. Application by qualified students should be made with the chairman of the department. The University of Iowa also offers other opportunities through the Director of Student Financial Aid. NIDA and CIC scholarships are available for the intensive Summer Language Institute which includes travel, insurance, transportation, and living expenses. NSF, Fordham Language Fellowships are full tuition and all required fees, plus a liberal stipend. Application packets are available at the office of the Graduate College during the winter and spring. Application deadline is the third Monday of October. Information should be obtained from the director of the institute.

The Oriental Library Collection

The Oriental Library Collection located in the University Library was begun when the Chinese Language and Area Center was established. The current holding is estimated to be 2,000 volumes; Japanese, 400;
STAFF
Professor: P. C. Lee
Professor Emerit: Y. S. Kao, Y. P. Mei
Associate Professor: G. K. Chouing
Assistant Professor: S. M. Sung, Kao-sheng Wang

Close Examination: Robert D. Baird (Hullington), William Burs (Anthropology), Wayne B. Buxby (Art), David Hamilton (History), Robert H. Howson (Linguistics), Chien Lin Kuo (Political Science), Stephen Long (History), W. Pachar (Religion), William J. Secoe (Sociology), Robert T. Zedor (Art), H. H. Howard Whipped (Anthropology).

COURSE DESCRIPTIONS
Note: Upperclassmen and graduate students may receive credit for courses below 100 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 considered in relation to China's neighbours and characteristics. Prerequisite to all other courses in Chinese civilization.
39:5 Asian Civilization: Japan 3 a.h.
Historical and topical study of Japanese civilization considered in relation to Japan's neighbours and characteristics. Prerequisite to all other courses in Japanese civilization.
39:7 Survey of India 3 a.h.
Introduction to Oriental Art 3 a.h.
Same as Art 1018.
39:46 Living Religions of the East 2 a.h.
Religious thought and practices in India, China, and Japan. Same as Religion 1046.

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.
39:108 Readings in Classical Chinese 3 a.h.
39:109 Readings in Documentary Chinese 3 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 3951, Spanish as 3951.
39:138 Structure of Modern Chinese 3 a.h.
39:139 History of the Chinese Language 3 a.h.

Primarily for Graduates
39:211 Readings in Chinese Literature 2 a.h.
39:212 Readings in Chinese Literature 2 a.h.
39:213 Readings in Chinese History 2 a.h.
39:214 Readings in Chinese History 2 a.h.
39:191 Individual Chinese for Advanced Students 2 a.h.
39:210 Individual Chinese for Advanced Students 2 a.h.
39:239 Seminar in Chinese Linguistics 2 or 3 a.h.
Research in the tradition of Chinese linguistics study and in the problems of applying modern linguistic techniques to 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 15th century A.D. with emphasis on poetry.
39:142 Chinese Literature II 3 a.h.
Characterization of Chinese literature from 15th century A.D. to the present. Emphasis on fiction and drama.
39:143 Contemporary Chinese Literature 3 a.h.
Significant writers of the May Fourth period. Literary development since beginning of Communist regime.
39:144 Chinese Poetry 3 a.h.
Works from the "Golden Age" of classical Chinese poetry (7th-10th 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.
Chinese fiction of the 20th century and its relation to the past and the impact of Western literature.

Chinese Thought and Culture
39:150 Chinese Painting I 3 a.h.
Same as Art 1018.
39:121 Chinese Painting II
Same as Art 133:121.

39:153 History of China to Circa 1840
3 s.h.
Origins and development of Chinese civilization through the early Qing period. Emphasis on political, economic, and social rather than intellectual trends. Prerequisite: junior or senior standing. Same as History 13:153.

39:154 History of Modern China
3 s.h.
Political and social development of China, 1840 to present. Emphasis on Western impact and Chinese response. Prerequisite: History 16:191 or 18:191 or equivalent; graduate standing or permission of instructor. Same as History 16:194.

39:155 Ethnology of China
3 s.h.
Same as Anthropology 11:136.

39:177 Chinese Calligraphy and Painting 1 s.h.

39:180 Chinese Calligraphy and Painting 1 s.h.
Continuation of 39:177.

39:183 Art of China
3 s.h.
Art and architecture of China, including aesthetic principles, stylistic developments, relation to philosophies and religions (Confucianism, Buddhism, Taoism). Same as Art 17:183.

39:191 Religion in China 3 s.h.

Primarily for Graduates

39:253 Topics in Chinese Institutional History cr.arr.
Same as History 25:253. Prerequisite: consent of instructor.

39:254 Seminar in Chinese History cr.arr.
Same as History 25:254. Prerequisite: consent of instructor.

39:258 Topics in Modern Chinese History cr.arr.
Same as History 25:258.

39:260 Seminar in Methods of Sinological Research 3 s.h.
Procedures of research and use of reference materials.

Oriental Culture

39:162 Buddhist Sacred Texts 3 s.h.
Mythology and Theravada texts in translation. Same as Religion 16:162.

39:163 Indian Religious Texts 3 s.h.
Same as Religion 16:163.

39:167 Religion in India 3 s.h.
Movements, doctrines, and religious practices in India both in its history and its modern expression. Same as Religion 16:167.

39:169 Oriental Art: India
3 s.h.
Art and architecture of India and Southeast Asia; aesthetic principles, stylistic developments; their relation to philosophies and religions (Buddhism, Hinduism, Islam). Same as Art 16:169.

39:169 Oriental Art: India
3 s.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 16:169.

39:171 History of East Asia to Circa 1800 3 s.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 17:171.

39:172 History of Modern East Asia
3 s.h.
Continuation of 39:171, to recent times, but may be taken as an independent unit. Modernization and relations with the West. Not open to freshmen. Same as History 18:172.

Far East 3 s.h.
Same as Political Science 20:178.

39:255 Seminar in Oriental Art
Same as Art 17:255.

39:263 Seminar: Buddhism 3 s.h.
Research and reading in a selected Buddhist thinker or movement. Same as Religion 26:363.

39:267 Seminar: Religion in India 3 s.h.
Research and reading in a selected Hindu thinker or movement. Same as Religion 26:367.

39:268 Advanced Oriental Art: India 3 s.h.
Same as Art 17:268.

Honors Courses and Theses in Chinese

39:191 Undergraduate Honors Tutorial 3 s.h.

39:192 Undergraduate Honors Tutorial 3 s.h.

39:195 Senior Honors Thesis 2 to 4 s.h.


Japanese Language and Linguistics

39:101 Elementary Japanese 4 s.h.
Students admitted are required also to take 39:102.

39:102 Elementary Japanese 4 s.h.
Continuation of 39:101, which is prerequisite.

39:103 Second-Year Japanese 4 s.h.
Continuation of 39:102.

39:104 Second-Year Japanese 4 s.h.

39:105 Third-Year Japanese 3 s.h.

39:106 Third-Year Japanese 3 s.h.

39:111 Elementary Japanese 3 s.h.

39:112 Intermediate Japanese 3 s.h.
Conservation 3 s.h.

39:113 Advanced Japanese Conservation 3 s.h.

39:115 Japanese Composition 3 s.h.

39:129 Linguistic Structure 3 s.h.
Same as Linguistics 12:210.

Japanese Literature (in English)

39:141 Classical Japanese Literature 3 s.h.
Development of literature from the beginning to the Heian Period; literary and cultural background; readings from translations.

39:142 Modern Japanese Literature 3 s.h.
Novels, new poetry, drama, and Japanese literature under Western influences. Readings from translations.

39:143 Survey of Japanese Fiction 3 s.h.
Major works from the Tale of Genji to present novels.

39:144 Survey of Japanese Poetry 3 s.h.
Poetry from Man'yoshu through Court Poetry, Linked Verse, and Haiku to modern poetry.

55
CLASSICS

301:145 Modern Japanese Novels 3 s.h.
Major works of fiction of 20th century Japan.

301:146 Modern Japanese Poetry 3 s.h.
Major works of poetry of 20th century Japan.

301:150 Japanese Literature and the West 3 s.h.

Japanese Thought and Culture

301:153 History of Japan to 1867 3 s.h.
Japanese history from the beginning through the Tokugawa Period. Feudal system, culture, and economic growth. Preoccupation, junior or senior standing. Same as History 18:150.

301:154 History of Modern Japan 3 s.h.
Continuation of 301:153 to recent times, but may be taken as an independent unit. Modernization and emergence of Japan as a world power. Preoccupation, junior or senior standing. Same as History 18:150.

301:155 Ethnology of Japan 3 s.h.
Human behavior in the social and cultural setting of contemporary Japan. Contacts with pre-modern conditions; developments since 1868. Same as Anthropology 113:110.

301:156 Art and Architecture of Japan 3 s.h.
Art and architecture of Japan; aesthetic principles, stylistic developments, relation to philosophy and religion (Shintoism, Buddhism, and Zen). Same as Art 15:132.

301:159 Japanese Thought 3 s.h.

301:161 Religion in Japan 3 s.h.

Honors Courses and Theses in Japanese

301:191 Undergraduate Honors Tutorial 2 to 4 s.h.

301:192 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 in the Department of Comparative and Foreign Languages, Western man; three civilizations: Minhoa-Symphonies, Greek, Harvard comparative languages; Greek and Latin, and a geographical area including Europe, North Africa, Egypt, and Asia; and to understand and interpret 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 4 semester hours of approved college-level study in a foreign language; or by passing the 20th (93) minute best-matching proficiency equivalent to that usually attained after one year of college study of a foreign language.

Undergraduate Requirements

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

141 and 142 Elementary Greek 8 s.h.
141-142 Second-Year Greek 8 s.h.
145-146 Elementary Greek Composition 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 270:153, and which include 20:175 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 32 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).

Honors in Classics

Two courses are required in Honors Reading, one each semester. Students must have completed 24 semester hours of approved college-level study in Greek or Latin. These credits are not in addition to the 24 semester hours required for the major or minor in Classics. 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 including the comprehensive examinations, see Graduate College Bulletin.

Graduate students in Classics may include in their program: (a) 12 graduate semester hours for the master's degree and 36 semester hours for the doctor's degree; (b) 24 semester hours of courses numbered 270:153 and above.

M.A. degree in Greek, Latin, or Classics. A minimum of 30 semester hours of courses numbered 270:153 and above must be completed in Greek or Latin who have had no Greek or Latin, although the student is expected to include at least one semester in the major language. The examination in the major language (written and oral) will be held in the spring semester of the student's second year. The degree will be granted the last day of the semester in which the student presents his examination.

Ph.D. degree (given only in Classics, e.g. Greek and Latin). Completion of the degree requires an ability to read and write in Greek and Latin, as tested in qualifying examinations; the reading of qualifying examinations in Greek and Latin, the passing of comprehensive parts of the written examination, the passing of research on a reading list prepared by the student and his advisor and approved by the department, a tested reading list in the Ph.D. language, a written and oral examination in Ancient History, a special field, and Greek or Latin literature, and a two-hour oral examination on Greek or Latin literature. The oral examination will be a dissertation embodying original research or interpretation of a classical subject.
Required courses:
14:301 or 30:301: Preliminary Introduction to
Advanced Study 3 a.h.
One of the following two areas:
a. Ancient Art, Literary Relations 3 a.h.
b. Ancient Linguistics, Paleography 3 a.h.
Latin Seminar 6 a.h.
Greek Seminar 6 a.h.
One of the seminars (6 semester hours) will normally be taken after the writing of the comprehensive
examinations.

Special Facilities
Excursus collections of classical texts and periodicals in the University Library and Art Library institute re-
search 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 objects in bronzes from Mycenae, Pompeii, 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 School of Oriental Research, thereby making available to its
faculty and graduates many of the facilities of those schools.

STAFF
Professor: Jonathan Goldstein, Roger A. Hornby, Omar H. Nyberg.
Associate Professors: Margaret Alexander, William R.
Holloway, Glynis C. Rowe.
Assistant Professors: Archie Bush, Virgil Crasshull,
M. K. Fitchinger, Donald Jackson.

COURSE DESCRIPTIONS
Greek
For Undergraduates Only
Students wishing to study the Greek language should take the following sequence of courses: 14:3, 5, 11, 12.
14:3 Elementary Greek 4 a.h. Fundamentals of Attic Greek and basic concepts of Greek civilization.
Five meetings per week.
14:5 New Testament in Greek 2 a.h. Rapid reading of selections from the Gospels. May be taken in
sequence with 14:3.
14:11 Second-Year Greek 3 a.h. The reading of selected texts of Greek prose and poetry. Permission, 14:3 or equivalent.
14:12 Second-Year Greek 3 a.h. Continuation of 14:11, which is a prerequisite for this course.
For Undergraduates and Graduates
14:131 Homer and Herodot I 2 a.h. For third year Greek students. Selections from Homer's Iliad and Odysseay and from Herodot's Works and Days in Greek; complete works read in English.
14:122 Homer and Herodot II 3 a.h. Continuation of 14:131, which is a prerequisite.
14:161 Greece and Persia 3 a.h. For students in their fourth year of Greek. Events lead-
ing to the Persian war, the course of the war, and its
immediate aftermath. Aeschylus' Persia and selections
from Herodotus read in Greek; supplementary readings read in English.
14:162 Fifth-Century Athens 3 a.h. Continuation of 14:161, which is a prerequisite. The shaping
intellectual climate of the late fifth-century
Athens; democracy. Selections from Thucydides, Sophocles' Philoctetes, Eu-
pidides' Iphigeneia, and fragments of the Sophocles read in Greek; supplementary readings in English.
14:171 Elementary Greek Composition 3 a.h. Review of morphology and syntax, Greek sentence struc-
ture, and the composition of short passages in Greek.
14:172 Advanced Greek Composition 3 a.h. Practice in writing idiomatic Greek prose with styles of
Lyricus and Demosthenes as models.
14:189 Hellenistic Greek Historical Texts 3 a.h. Readings in Polybius and Xenophon.
14:191; 14:192 Honors Reading 6 a.h. Supervised readings on special author or topic leading to se-
veral 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 a.h.
For Classics majors who have completed four years of Greek or the equivalent
14:199 Private Assignments cr. arrv. Supervised individual study. For advanced students who are not majors in the department. May be repeated.

For Graduates
14:201 Preliminary to Advanced Study 3 a.h. Advanced methods and discipline: bibliography, textual
criticism, palaeography, epigraphy, history of classical
scholarship. Required of all graduate students.
14:203 Advanced Reading in Attic Comedy 3 a.h. Open only to graduate students in the department.
14:208 Indo-European Philology 3 a.h.
Exposition of the comparative method as applied spec-
ifically to Greek and Latin, and a study of phonological and
syntactical foundations.
14:306 Greek Paleography 3 a.h.
Study of Greek papyri, papyrologists, early printed texts,
attribution, and the criticism.
14:310 Problems of Ancient Art 2 or 3 a.h.
Same as Art 310.
14:311 Problems of Ancient Art 2 or 3 a.h.
Continuation of 14:310.
14:320 Greek Lyric Poetry 3 a.h.
A detailed and critical reading of selections from Greek
lyric poetry.
14:323 Aeschylus 3 a.h.
Critical reading of the plays of Aeschylus.
14:334 Aristophanes 3 a.h.
Critical reading of selected comedies.
14:335 Plato's Republic 3 a.h.
Examination of Plato's presentation of justice.
14:342 Thucydides 3 a.h.
Reading and critical study emphasizing Thucydides' in-
tellectual background and the aims of his history.
14:380 Greek Biography 3 a.h.
The biographical writings of Xenophon, Xenocrates, and Ple-
daros.
14:381 Greek Seminar 3 a.h.
In 1971-72 the seminar will concern Byzantine Greek
with readings from the Cappadocian church fathers to the Crusades, with emphasis on the characteristics of each age.  (Topic changes annually.)  Required of all Ph.D. candidates.

14:322 Greek Seminar 3 s.h.
Continuation of 14:321.  Required of all Ph.D. Candidates.

14:321 Greek Thesis cr.arr.
Open to Ph.D. candidates for the writing of the dissertation.

Latin

For Undergraduates Only

Students may elect 20:1 and 2 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 20:1 or 20:15 should next enroll in 20:16.

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.
Continuation of 20:1.  prereqquisite, 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: 20:16 or equivalent.  Introduction to Latin poetry and metrics.

20:31 Age of Cicero 3 s.h.
Prerequisite: 20:17 or equivalent.  The cultural and social life of Rome in the first century of the Republic.  Reading in Latin of selected works of Cicero and Catullus.  Supplementary readings in English.

20:32 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 70:129.

20:128 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 poems from the writings of Catullus, Horace, Vergil, and later Latin poets.

20:131 Vergil's Aeneid I,II 3 s.h.
Critical evaluation of the first half of the epic.

20:151 Horace's Lyric Poetry 3 s.h.
A critical reading of Horace's Odes and Epodes; 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 style of Caesar and Cicero as models.

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.
Crises and recovery of the Roman Empire, from 50 to 79 A.D. as seen in Tacitus' Histories and Suetonius' Life of Augustus.

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 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 Prosvarm. 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.

20:213 Cicero's Letters 3 s.h.
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 Litury 3 s.h.
Selections of literary, historical, and cultural interest from Livy's narrative.

20:275 Survey of Latin Literature 3 s.h.
History and character of the literature of the Roman Republic.  Assignments mainly in works not read previously.

20:276 Survey of Latin Literature 3 s.h.
Literature of the early Empire; continuation of 20:275.

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 fathers, lexicons, grammarians, and the reasons for any lack of conformity between the definitions ahd current usage.  (The topic changes annually.)  Required of all Ph.D. candidates.
COMPARATIVE LITERATURE

20:208 Roman Drama in Translation 3 s.h.
Roman drama as an art form with analysis of selected plays and history of the Roman theater. Same as Drama
Art 301B.

20:110 Roman Art and Archaeology 3 s.h.
Roman architecture, sculpture, painting, and mosaics of the Republican, Imperial, and Late Antique periods. Same as
Art 313B.

20:133 Ancient Religion in the Classical World 3 s.h.
Popular and official forms of religious cult and worship in ancient Greece and Rome. Arguments and material from the
Ancient Near East and "primitive" societies will be discussed as the need arises.

COMPARATIVE LITERATURE

Chairman of Program, Frederic Will Office, 425 English-Philology Building

The purpose of the Program of Comparative Literature is to present literature as an interdisciplinary and inter-
national study and to provide a basis for intensive work in literature, literary theory, and critical method.

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 University Office of Admissions.

Master of Arts Degree

The optional degree of Master of Arts in Comparative Literature may be granted to a student in the Program
whenever he has completed 36 semester hours of graduate coursework, at least 24 of them at The University of Iowa,
with a grade-point average of 3.0 or better and in accord-
ance with a plan of study approved by the Comparative Literature Committee and when he has
passed the qualifying examinations for the Ph.D. in Com-
parative Literature. A student who is admitted to the doctoral program

Doctor of Philosophy Degree

A student seeking a doctoral degree in comparative literature will study one literature in depth for his major profes-
sional concentration. All other minor in English or in compar-
eative literature. A third portion of his program is devoted to comparative study which brings his major and minor
into one focus. A total of 40 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. Reading students
should have advanced knowledge of one foreign language (approximately three years of college work or the equiv-
alex). 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.

Vocabulary Building 3 s.h.

Analytical of Greek and Latin elements in English words, distribution, formation, and use in Rome.

20:107 Roman Erotic Poetry 3 s.h.
The love poetry of ancient Rome, its antecedents and influences.
COMPARATIVE LITERATURE

Course of Study

The major should comprise about half of the student's program. Three courses are offered in Classics, English, French, German, Italian, and Spanish. Courses should range over the entire history of literature and should also involve a close study of the most important literary genres. The minor, requiring the study of at least 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 a working knowledge of the comparative methods for 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 methods within his area of specialization (e.g., French, English, or German novels, 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 work, the student should be qualified as a candidate in the doctorate, through the requirements of the examination, or may be considered for the M.A. degree. At the end of the second year, the student should have completed all major requirements (also in the foreign language) of the work in question, and the 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 oral part. The oral examination is divided partly into an oral presentation of a main seminar, and partly into a question and answer session, as the written examination.

In the summer following the second year, the student will have two weeks to prepare and defend his dissertation. The dissertation will be evaluated by a committee of four faculty members.

Dissertation

The candidate's dissertation should demonstrate the ability to write a substantial piece of scholarship or criticism. It should be composed in whole or in part of original research. The student should be familiar with the major principles of research and the relevant literature. The student's dissertation should make a significant contribution to the field of study.

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 the alternative, consult the brochure Graduate Study in English.

Special Programs

Available to Graduate Students in Comparative Literature

Two special programs are also available for students in comparative literature. In the Humanities Workshop offers a workshop course which permits students to participate in the creative process of literary and historical study. In the Interdisciplinary Workshop offers a special program in the theory and practice of literary criticism.

60

STAFF

Faculty committee directing the program:

Professor Alexander Ascalon (French and Italian), Angela Bertolino (English and Comparative Literature), Merle Z. Brown (English), Francisco Casares (French and Italian), Oscar Fernandez (Spanish and Portuguese), Fred Fehling (German), David Freyman (English and Comparative Literature), Robert Horsbruch (Classics), John C. Huchthausen (English), Richard M. Gruenfeld (English and Comparative Literature), Frederick Will (English and Comparative Literature), Curt A. Zawadowski (English), David Beilina (English and Comparative Literature), Norman Lurie (Russian), Assistant Professor George A.を超え (English and Comparative Literature), Allen P. Nagel (English and Comparative Literature), and other members of the faculty taking part in the instruction.

Associate Professors: S. Rhone Dunlap (English), W. B. Irwin (English), Assistant Professors: David Chamberlain (English), Janis G. Horsbruch (French and Italian), David Krasn (Speech and Dramatic Art), Robert Westerfield (English), Assistant Professor: Rudolph H. Kuismanen (English and Comparative Literature).

COURSE DESCRIPTIONS

Students in comparative literature are expected to concentrate their studies primarily in departmental courses in the literature of their choice and should show evidence of concentrated work in foreign literature taught in the original. In addition, the courses and seminars listed below unify studies in several literature studies.

European Literature

Primarily for Graduates

45.221 Medieval Drama
3.0

45.222 Continental Drama: 1500-1700
3.0

Same as Speech 36.222

45.223 Continental Drama: 1700-1875
3.0

Same as Speech 36.223

45.263 Critical Theory: Plato to the Romantics
3.0

Same as English 36.263

45.264 Colonial to Croce
3.0

Same as English 36.264 and Speech 36.272

Comparative Courses

45.203 The European Renaissance
3.0

45.204 Baroque and Neoclassicism
3.0

45.205 Age of Enlightenment
3.0

45.206 European Romanticism
3.0

60
European Fiction
3 s.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 293, French 2907, and Spanish 29:261.

European Poetry
3 s.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 29:3, French 2:280, and Spanish 29:360.

Literary Movements in European Literature
3 s.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 French 2:2:12 and Spanish 29:282.

Literary Genre in Europe
3 s.h.
Theory and practice of selected genres. Different genres (lyric, prose, 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 s.h.
Theory and practice of major literary movements in Europe. Prerequisites: at least one classical or modern foreign language. Same as English 29:3.

Types of Modern Criticism
3 s.h.
Recent European and American criticism. Prerequisite: reading knowledge of one foreign language. Same as French 2:282.

Comparative Seminars
2-3 s.h.
A fluent reading knowledge of at least one foreign language is prerequisite for 48:304, 48:306, and 48:314. All seminar students should also have a reading knowledge in a second foreign language.

Comparative Literature
2 s.h.
Literary Relations
2 s.h.
The concept of "influence" and its application to literary relations between literature, movements, and stylistic trends in various countries.

Comparative Seminars
2 s.h.
Special Topics in Medieval and Renaissance Literature
2 s.h.
Comparative problems in medieval and Renaissance literature. Topics will differ from year to year.

Comparative Seminars
2 s.h.
Special Topics in Neoclassical Literature
2 s.h.
Studies in 18th and 19th century literature, with particular emphasis on Greek and Latin influences on European neoclassicism.

Teaching of Comparative Literature
2 s.h.
Methods and problems in the teaching of comparative literature. Class discussions, directed reading, and occasional participation in teaching comparative literature courses, with the supervision and with the consent of the regular instructor, as circumstances permit.

Modern Literature
3 s.h.
Topics in recent and contemporary literature in Europe, the United States, and other European countries.

Special Topics in
2 s.h.
Dental Hygiene
(See College of Dentistry and Interdisciplinary Programs)

ECONOMICS
Chairman of Department, Calvin D. Siebert
Office, 571 Phillips Hall

Economics is the study of how individuals and societies choose to allocate scarce productive 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 allocation problem involves the examination of individual human behavior, pricing and marketing methods of allocating resources and products, and consideration of the institutional and organizational forms employed in market and nonmarket economies. Economics provides a framework in which to analyze economic policy problems in our society relating to unemployment, growth, and inflation and stabilizes the role of markets, prices, and competition is the problem of economic welfare. The undergraduate major in economics provides the student with a general background which is useful in either public service or business. It also provides a foundation for advanced training in economics or business and government.

Undergraduate Requirements
Besides providing electives for students with majors 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 program for the B.S. degree is a more extensive one, and is suggested for students contemplating graduate study in economics, and for honors students. The students 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 s.h.
ECON 101 and ECON 102 Principles of Economics
(These courses will satisfy the social science core requirement.)

ECON 211 Business and Economic Statistics I
or
ECON 212 Elementary Probability and Statistics

ECON 221 Introduction to Mathematical Economics
for Undeclared Students

101-Level Courses
10 s.h.
Seven hours of credit in 101-level economics courses including ECON 102 Micro-Economics and ECON 103 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 credit in the following courses and electives:

E6:1 and E6:2 Principles of Economics 8 s.h.
E6:187 Introduction to Mathematical Economics II
A 3-semester-hour statistics course specified by the department.
16-21 semester hours of credit in 300-level economics courses including E6:113 Microeconomics and E6:125 Macroeconomics.

Courses outside the Department
225:13 and 225:16 Calculus
225:135 Probability and Statistics
26:104 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 establish a program of study.

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 the Catalog.

STAFF


Professor Emeritus: Paul B. Olsen.

Assistant Professors: Alden W. Barnard, James Jeffers, Thomas Perry, Roy Ruffin, L. G. Spence, Calvin Robert.

Assistant Professor: Edward W. Anderson.

Assistant Professor: Carol A. Bowers, Sarah Jones, Michael Feindel, Joseph Swanson, Darwin Wemcheck, Samuel C. Yurko.

On leave, Fall semester 1970-71.

COURSE LISTINGS

See Economics listing under the College of Business Administration for descriptions of the courses listed below.

Primary for Undergraduates

E6:1 Principles of Economics
E6:2 Principles of Economics
E6:187 Introduction to Mathematical Economics
E6:188 Introduction to Mathematical Economics II

For Undergraduates and Graduates

E6:103 Microeconomics
E6:103 Microeconomics
E6:110 Labor Economics
E6:110 Labor Economics
E6:111 Labor Economics
E6:111 Labor Economics
E6:115 Economics of Human Resources
E6:117 Money and Banking
E6:119 Economics of the Government Sector
E6:125 International Economics
E6:129 Economic Development/Underdeveloped Areas
E6:135 Economic Growth/Industrially Advanced Areas
E6:135 Economic Growth/Industrially Advanced Areas
E6:135 Introduction to Regional and Urban Economics
E6:137 Problems in Urban Economics
E6:141 Industrial Organization
E6:141 Industrial Organization
E6:145 Economic History
E6:145 Economic History
E6:150 Entrepreneurial and Organizational History
E6:150 American Economic History
E6:150 History of Economic Thought
E6:150 Economic Systems
E6:150 Comparative Labor Movements
E6:150 Economic Method, Logic, and Ethics
E6:150 Quantitative Methods in Business and Economics
E6:150 Business and Economic Statistics I
E6:150 Introduction to Mathematical Economics I
E6:150 Introduction to Mathematical Economics II

*Honors and Independent Study in Economics

**Courses E6:116 and E6:119 are intended to be an introduction to students in the Honors Program.

***By registering for E6:106, only fall semester qualified undergraduates may be permitted to work in classes listed for graduate students.

EDUCATION

(See College of Education)

ENGLISH

Head of Department, John C. Gerber

Office, 306 English-Philology Building

The basic curriculum for undergraduates 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 goals. By selecting special emphasis 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 designating your major in English is also available. For general requirements see College of Liberal Arts.

The graduate program is designed to accommodate a variety of interests and specialities. In addition to advanced study in various areas of English and American literature, the department offers work in imaginative writing, critical and interpretative literature, linguistics, folklore, bibliography, and modern letters; the department also participates in interdisciplinary seminars in American civilization and comparative literature.

The English Major

The general purpose of the major is to provide a program of study which will be of value to the student as training for writing and for the teaching of English, as well as in general preparing him 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 by early in his junior year for review and comment. 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 of 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 in literature. In general, the upper division courses required by the college, he should select work which enhances his intellectual background. In addition, the student considering graduation work or careers in teaching should be especially careful to include experience relevant to their later work.

When a prospective major, students should plan to take some courses of limited enrollment. Students who prefer literature courses will usually want to take the limited enrollment 12-semester-hour course called English I and English Literature I. 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 literature as well as abounding opportunities for literary discussion. Students should pre-register and arrange to attend the appropriate section at the same time.

The official requirements for the major are 30 semester
hours of work in courses offered by the Department of English. In addition to the 20 semester hours of English, the student is required to take a minimum of a 28 semester hours in English and all other language courses. The student is required to take a minimum of 36 semester hours in English and all other language courses.

Honors in English

The Honors Program in English is open to junior and senior undergraduate majors who obtain a B average in all work undertaken. The student is required to complete 48 semester hours in English (36 lower division and 12 upper division) and must be nominated by a faculty member to participate in the program. The student must submit a final project at the end of the program. The program is designed to provide a rigorous and challenging program of study approved by the Academy of Arts and Sciences.

Graduate Degrees

Detailed information on requirements for advanced degrees is available in the Graduate School. The student is required to complete the nature of the degree offered.

Student planning office to help them in their first teaching experiences should recognize that they will have to prepare to do work with teaching and living. They will probably need advanced training in writing—composing, poetry, and fiction—all of which are needed. The student should recognize the importance of the English major or minor in preparing for teaching. The student should be aware of the need for teaching as a career in teaching should recognize that an undergraduate major in English is good training for teaching. As long as they should plan a program which will permit graduate study in English, they should be aware of the need for a major or minor in English.
8.82 Understanding Poetry 2 a.h.
A study of poetry similar to the study of fiction in 8.81.
8.85 Undergraduate Writers Workshop: Fiction cr.arr.
Enrollment limited to 18. Admission by application to the Student Writing Program on the basis of samples of the student's work to the instructors. For English majors in Creative Writing.
8.86 Undergraduate Writers Workshop: Poetry cr.arr.
Prerequisites, same as those for 8.85.
8.91 Honors Proseminar 3 a.h.
See Honors in English.
8.92 Honors Proseminar 3 a.h.
See Honors in English.
8.93 Expository Writing 3 a.h.
Analysis, order, and precision in prose. Suitable for majors and nonmajors. Freshmen, freshmen honors or equivalent. Students needing remedial help should go to the Writing Laboratory of the Rhetoric Program and not take 8.93.
8.94 Theories of Rhetoric 3 a.h.
Same as Speech 3038.
8.95 Technical Writing I 2 a.h.
Techniques of objective reporting on problems in science and engineering, syntax of language. Prerequisites, freshman rhetoric or equivalent and junior standing.
8.96 Technical Writing II 2 a.h.
Principles of writing technical papers and business letters. Prerequisite, 8.95.
8.98 Undergraduate Honors Project cr.arr.
Students may register for up to four hours of credit as part of an independent study or reading project. The topic and instructors' consent to instruction 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 Butler 3 a.h.
8.105 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 lore, folklore of various occupants; the religious revival movement and the white spiritual; Negro folk music; methods of collecting and classifying folklore.
8.113 The American Short Story 2 a.h.
8.113 Shakespeare 3 a.h.
Ten to Izen plays.
8.114 American Humor and Satire 2 a.h.
8.115 Afri-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 Iona 3 a.h.
1.119 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 2 a.h.
8.125 Modern Jewish and American Poetry 3 a.h.
8.131 Trolle-Stuart Drama 3 a.h.
8.133 Restoration Drama 3 a.h.
8.134 English Drama of the 18th Century Same as Speech 2104.
8.136 Modern Drama: Israel to Shaw Same as Speech 2105.
8.137 Drama Since Pirandello Same as Speech 2106.
8.138 Modern American Drama Same as Speech 2107.

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 Norse, Old High German narrative poetry, French chansons 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: Froissart, Chaucer, Dryden, Shakespeare, Traversay, lyric poetry.
8.144 Medieval English Literature 2 a.h.
Chiefly Old and Middle English writings; also some Latin and Anglo-Norman, including Bede, Boccaccio, Gipponeau, Caxton, Gower, Gower of Monmouth, Tresise and Huciles, Henry of Ford, Gower, Langland, Chaucer, Gower, Malory, Gower, and lyric.
8.145 European Literature in Translation Same as Letters 2108.
8.146 European Literature of the 19th Century 3 a.h.
Storm and Stress, Romanticism, Realism, and Naturalism. Authors include Goethe, Schiller, Kestel, Balzac, Flaubert, Hauptmann, and Zola.
8.147 European Poetry in Translation Same as Letters 2109.
8.148 The European Novel, 1700-1859 3 a.h.
Descartes, Voltaire, Goethe, Balzac, Dante, Nietzsche, Schiller, Hegel, Herder.
8.149 The European Novel, 1850 to Present 3 a.h.
Readings include, at various times, works by Mann, Dostoevsky, Diderot, Lessse, Gotthil, Jean, Paul, Tuch, Sterndall, Balzac, Flaubert, Dostoevsky, Tolstoy, Turgenev.

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 4135.
8.156 Significant Books in American Civilization II 3 a.h.
Same as American Civilization 4136.
### Linguistics

- **8:150 Introduction to Linguistics** 3 a.h.
  - Linguistic theory and methodology, including descriptive and historical linguistics. Presentation of general principles supported by practical problems in linguistic analysis. Same as Linguistics 101.006.
- **8:161 Modern English Grammar** 3 a.h.
  - Relationship of traditional English grammar to modern structural grammar. Same as Linguistics 101.142.
- **8:172 Structure of English** 3 a.h.
  - Application of modern linguistic theory to analysis and description of linguistic structure. Modern English through the taxonomical and transformational methods of structural linguistics. Prerequisites: E.150. E.161. Same as Linguistics 101.144.
- **8:160 History of English** 3 a.h.
  - Morphological, syntactic, and semantic changes in English from approximately the tenth century to the eighteenth. Prerequisite: E.360. Same as Linguistics 101.131.
- **8:165 Introduction to Historical Linguistics** 3 a.h.
- **8:167 Language Teaching and Linguistic Behavior** 3 a.h.
  - Same as Linguistics 101.272.

### Writing

- **8:171 Advanced Expository Writing** 3 a.h.
  - Theories of prose style. Practice in various styles. Prerequisite: E.171 or better in rhetoric or equivalent. C or better in 8:190, or permission of instructor.
- **8:172 Advanced Expository Writing** 3 a.h.
  - History of English prose style. Practice in various styles. Prerequisite: E.171 or better in rhetoric or equivalent. C or better in 8:190, or permission of instructor.
- **8:173 Advanced Technical Writing** 1 a.h.
  - Writing papers on scientific subjects. Restricted to graduate students in engineering or science.

#### Methods of Seeking Information, Use of Sources

- **8:175 Extended Essay** 3 a.h.
  - Methods of seeking information. Use of sources. The course emphasizes the preparation of an extended paper or report, but various kinds of modest reports and letters will be required.

#### Fiction Writing

- **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.

#### Poetry Writing

- **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 a.h.
  - Organization, objectives, methods. Same as Education 73.512.

### Literature for the Adolescent

- **8:198 Literature for the Adolescent** 3 a.h.
  - Same as Education 73.293 or 73.295.

### Master's Level Courses

- **8:201 Critical and Scholarly Approaches to Literature** 6 a.h.
- **8:210 Studies in Genre: Fiction** cr.arr.
- **8:211 Studies in Genre: Poetry** cr.arr.
- **8:212 Studies in Genre: Drama** cr.arr.
- **8:220 Rhetorical Theory and Application** cr.arr.
- **8:225 Teaching Literature in the Two-Year College** 3 a.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.
- **8:265 Seminar: English in the Two-Year College** cr.arr.
- **8:266 Seminar: English in the Two-Year College** cr.arr.
- **8:281 Fiction Workshop** cr.arr.
  - Group and individual conferences. Prerequisite, consent of instructor.
- **8:283 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 meetings and individual conferences. Prerequisite, consent of instructor.
- **8:288 International Writers Workshop** cr.arr.
  - Prerequisite, consent of instructor.
- **8:291 Form of Fiction** 3 a.h.
- **8:293 Form of Poetry** 3 a.h.
- **8:295 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 a.h.
- **8:302 Old English: Beowulf** 3 a.h.
- **8:303 Middle English Language and Literature** 3 a.h.
- **8:304 Old Norse** 3 a.h.
- **8:305 Old Norse** 3 a.h.
- The Poetic Edda.
- **8:307 Chaucer: Major Poems Other Than the Canterbury Tales** 3 a.h.
- **8:308 Precursors of the Renaissance, 1400-1532** 3 a.h.
- **8:310 The Age of Spenser** 3 a.h.
- **8:311 Shakespeare: Early Plays** cr.arr.
  - Same as Speech 25.420.
- **8:312 Shakespeare: Later Plays** 3 a.h.
- **8:315 17th-Century Literature, 1600-1660** 3 a.h.
- **8:316 Milton** 3 a.h.
8.320 Restoration Literature, 1660-1700 3 a.h.
8.321 Augustan Literature, 1700-1740 3 a.h.
8.322 Later 18th-Century Literature 3 a.h.
8.325 Neoclassical Literary Forms 3 a.h.
8.327 Neoclassical Literature and Intellectual Movements 3 a.h.
8.331 English Romantic Literature 3 a.h.
8.332 British Literature, 1830-1870 3 a.h.
8.333 British Literature, 1870-1914 3 a.h.
8.334 British Literature, 1914-1945 3 a.h.
8.335 British Literature, 1945 to the Present 3 a.h.
8.341 Early American Literature 3 a.h.
8.342 American Romantic Literature of the 19th Century 3 a.h.
8.343 American Realistic Literature of the 19th Century 3 a.h.
8.344 American Literature, 1914-1945 3 a.h.
8.345 American Literature, 1945 to the Present 3 a.h.
8.351 European Fiction 3 a.h.
8.352 Recent European Poetry 3 a.h.
8.353 Modern Anglo-European Literary Relations 3 a.h.
8.355 Dramatic Theory 3 a.h.
8.356 Classical and Renaissance Rhetoric 2 or 4 a.h.
8.357 History of Criticism: Plato to the Romantics 3 a.h.
8.358 History of Criticism: Coleridge to Croce 3 a.h.
8.376 American Criticism and Culture, 1900 to 1930 3 a.h.
8.377 Literary Periods and Movements in Criticism 3 a.h.
8.378 Literary Genres and Modes 3 a.h.
8.381 Articulatory and Acoustic Phonetics 3 a.h.
8.382 Linguistic Analysis I 3 a.h.
8.383 Linguistic Analysis II 3 a.h.
8.384 Dialectology 3 a.h.
8.385 Syntactic Analysis: Generative Grammar 3 a.h.
8.386 Introduction to Language Data Processing 3 a.h.
8.390 Literary Tools and Research Methods 3 a.h.
8.394 Literature and Psychology 2 a.h.
8.395 Literature and Society 2 a.h.
8.396 Literature and the Arts 2 a.h.
8.397 Literature and the Cinema 2 a.h.
8.398 Literature and Science 2 a.h.

Graduate Seminars
Open only to Ph.D. candidates and to other graduate students with adequate background in the field of the seminar. Permission of the instructor must be obtained before registering for any 400-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-Drastic 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.
8.421 Seminar: Neoclassical Prose cr.arr.
8.422 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: Victorian Fiction cr.arr.
8.434 Seminar: 20th-Century British Literature cr.arr.
8.441 Seminar: 18th-Century American Literature cr.arr.
8.443 Seminar: American Realism and Naturalism cr.arr.
8.444 Seminar: American Romantic Literature of the 19th Century cr.arr.
8.447 Seminar: American Realistic Literature of the 19th Century cr.arr.

ENGLISH
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.
Prerequisite: 8:389.
8:467 Seminar: Problems in Thematics cr.arr. Same as Speech 33:346
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.
8:520 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.
Limit to those holding teaching assignments 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, 452 English-Philosphy Building
European literature and thought courses are open to juniors, seniors; and graduate students from any department. A variety of opinions is sought to be upon issues under question. No technical background in history, philosophy, or literature necessary. The classes meet three times a week, and each course may be taken independent study.
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 specialized 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 work 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 this 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 discipline 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.
Literature of England and of the Continent 12 s.h.
Fine arts (excluding studio courses) 6 s.h.
Foreign language: European. One semester beyond elementary level. 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.

Honors 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 admitted 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), James Baker (English), Roy Burnham (Law), David (Political Science), Frederick Duke (Chemistry), (Fromm (German), J. Richard (Greek), Douglas (Rhetoric), Alan O'Bright (Music), Robert Schurmann (German), A. H. Frank Sather (Art), Dewey Sturt (Psychology), John Wailes (Political Science), J. Richard Watson (Language). Associate Professor: Kenneth Cameron (Speech and Drama), Hugh Dugle (Sociology), Benjamin Hopkins (Law), John Huntley (English), John H. Haer (German).
Assistant Professor: William Klink (Physiology).

COURSE DESCRIPTIONS
3:101 The Pursuit of Happiness 2 to 4 s.h.
Treatment of individual happiness in various types of human experience by Aristotle, Freud, Celard, Montaigne, Voltaire, Boswell, Burke, et al.
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.
3:121 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 (Sold, Caesar, War and Peace, Zola, etc.). In 1949-50, the course was included in 3:152.

68
Modern problems in the definition and choice of values examined through the writings of contemporary ethical theorists and novelists.

Relationship of scientific to social and humanitarian thought.

Interplay between art forms and other cultural patterns, including attention to the research and revaluation of cre- ative and theoretical writings, specific works of music, and graphic art.

Library and social manifestations of modern Romanist-
canism.

DIVISION OF FINE ARTS

School of Art, Frank A. Schmolling, Jr., Director.
School of Music, Homer Yvon, Dean.
Department of Speech and Dramatic Art, Samuel Becker, Chairman.

For descriptions of courses, see School of A.R. School of Music, and Department of Speech and Dramatic Art, re- spectively.

FOREIGN STUDIES

The Program of Foreign Studies is designed for under- graduate students who are internationally minded and who seek knowledge of contemporary societies other than their own. General education is the object desirable in both and double as a basis for graduate work. The program is patterned after the course of study 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 who meet the requirements receive a Foreign Language Certificate at the time of their graduation.

The study will be based on any one of the following: China, France, Germany and Austria, Japan, Latin America, or the U.S.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 3.0 in these courses. Programs include a minimum of 15 semester hours of work in addition to language study. In the language of the country or area chosen, a level of competence must be demonstrated as follows: for French, German, or Spanish, the level of competence normally achieved by three years of college study or for equivalent for Chinese, Japanese, Portuguese, or Russian, the level of achievement normally available by two years of college study or the equivalent. The difference rate on the probability of the above. No language in the faculty may have already studied in high school and will be able to meet the requirement with one or two additional years of college study. If the student does not meet the requirement may be met either by completing the appropriate language program and the level of competence as demonstrated by the appropriate language department.

Programs are: Anthropology, Economics, Far Eastern Studies, Geography, His- tory, Journalism, 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 criteria for the B.A. degrees in French and Italian and for the M.A. and Ph.D. degrees in French. All courses are open to both the language, literature, and civilization of the countries rep- resented, 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 four semesters of college-level study in any of the lan- guages offered by the department, or publishing a compila- tion of high school and college study in one language which would be the equivalent of four semesters 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 sem- ester hours of study at the college level, by completing a minimum of 8 semester hours of approved college-level study in the language, or by giving satisfactory perform- ance in an achievement-test measuring proficiency equiva- lent 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:

<table>
<thead>
<tr>
<th>Credit Hours</th>
<th>Language</th>
<th>15 semester hours in Literature and civilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>French</td>
<td>18:115, 18:133</td>
</tr>
<tr>
<td>12</td>
<td>German</td>
<td>18:115, 18:129</td>
</tr>
<tr>
<td>12</td>
<td>Spanish</td>
<td>18:115 or 18:129, 18:133, 18:135 or 18:137</td>
</tr>
<tr>
<td>3</td>
<td>Electives</td>
<td>6 (includes 1 in upper level)</td>
</tr>
</tbody>
</table>

Total 35 hours

Students preparing for the secondary teacher's certificate should elect the course in civilization.

The following courses constitute the minimum major requirements:

<table>
<thead>
<tr>
<th>Credit Hours</th>
<th>Language</th>
<th>Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>French</td>
<td>16:100, 16:778</td>
</tr>
<tr>
<td>12</td>
<td>German</td>
<td>16:191, 16:229, 16:243</td>
</tr>
<tr>
<td>12</td>
<td>Spanish</td>
<td>16:135 or 16:182</td>
</tr>
<tr>
<td>3</td>
<td>Electives</td>
<td>6 (includes 1 in upper level)</td>
</tr>
</tbody>
</table>

Total 38 hours

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 literary topic, and a minimum grade-point average in French of 3.0. For the 9 semester hours, students must elect three of the following courses:

| 18:115, 18:129 | 18:115 Honors: Composition |
| 18:100, 18:135 | 18:100 Literature |

The major paper may pertain to the literature of any period.
Graduate Study

Appointments. Teaching, research, and laboratory assistants are available to qualified graduate students. A certain number of "National Title IV fellowships in French, Teaching-Research Fellowships, and University scholarships 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 8 may be taken in 92B7 (theses supervision), the passing of a written 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, 8137 French Prosacnita and Diction, and 8206 and 8215 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 candidates must fulfill the 30-semester-hour requirement in regular coursework.

Master of Arts in French Education. This is an advanced degree primarily intended for prospective secondary and junior college teachers. Candidates must hold a B.A. in French or its equivalent and a secondary teaching certificate for prospective secondary school teachers. Requirements include a total of 38 semester hours at the advanced level, of which 8 may be taken in education or related fields and a minimum of 6 semester hours of graduate coursework in French literature. Other suggested courses include 8125 and 8124 Fourth-Year Composition and Conversation, 8215 and 8216 Advanced Composition and Conversation, 8215 and 8114 French Civilization, 8115 Language Lab, 8114 Language Laboratory Procedures, 8115 Contemporary French Language, and 8216 French Pronunciation and Diction. Candidates must pass a final examination in French conversation and related fields.

Doctor of Philosophy

The Ph.D. degree in French is awarded after completion of at least three years of graduate study, of which one must be spent in residence at this University, the passing of a comprehensive examination, and the oral defense of a dissertation. The dissertation is based on original research and involves an analysis of a problem in French literature, linguistics, or related fields. The dissertation must be submitted in the form of a thesis. The candidate must pass a final examination in French conversation and related fields.

Specific requirements for the Ph.D. in French must include 2 hours of 8206 and 8207 French Pedagogy and Practice in a foreign language other than French, and a 2-hour oral examination in a foreign language other than French and China, in a subject related field to the graduate courses (minimum of 3 semester hours) in that field. The choice of language and the specific course in the related field are to be determined by the department according to individual needs.

In pursuing the program, coursework and individual research must be designed with the following in mind:

1. Acquire a knowledge of the history of the French language, its literature and related civilization from medieval to modern times;
2. Acquire a knowledge of the principal art forms in the French language, and related arts of the humanities;
3. Develop the capacity for critical analysis of literary texts.

All graduate students working toward the advanced degree are required to spend one year in teaching as a graduate assistant in the department.

Language Laboratory

The Language Laboratory provides facilities for lan-
9:252 Seminar in Teaching 1 s.h.
Problems and techniques of foreign language teaching at the college level. Ordinarily elected as education 11023.
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 Period 3 s.h.
Period 3 s.h.
Continuation of 9:253.
9:255 Old Provençal* 3 s.h.
Phonology and morphology. Selected literary texts. Prerequisite, reading knowledge of modern French.
9:256 Old Provençal* 3 s.h.
Prerequisite, 9:255.
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 1 s.h.
Given in French. Methods and practice of "Explication de Texte."
9:354 Seminar: Exegesis of Texts 1 s.h.
Continuation of 9:256, 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 9:273, but may be taken as an independent unit.
9:357 Seminar 2 or 3 s.h.
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
Primarily for Undergraduates
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 1 s.h.
Prerequisite, 18:2 or equivalent.
18:53 Special Work cr.arr.
18:311 Advanced Composition and Conversation 4 s.h.
Prerequisite, 18:12 or equivalent.
18:115 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.
Prerequisite, 18:103.
18:105 Introduction to Italian Literature 3 s.h.
From earliest writings to end of 16th century. Given in Italian. Prerequisite, 18:102.
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 2 s.h.
Given in Italian.
18:120 Dante and His Times (2nd part) 3 s.h.

Primarily for Graduates
18:279 Special Work cr.arr.

GENERAL SCIENCE
Head of Program, Robert E. Yager
Office, 456B 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 in three of the following science departments: chemistry, biology, 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, 18 semester hours in a second department, and 6 in a third. Earth sciences and life sciences core courses may not be used as part of the 18, 14, or 20 semester hour sequence, but either may be

*Not offered every year.
used to fulfill an 8 semester hour requirement. At least 12 semester hours must be completed in residence.

Both 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 foreign language requirement may be completed with another course(s) in a foreign language if there are circumstances making such a choice desirable. Students in the B.S. program must complete a minimum of 40 semester hours of science credit.

Engineering-General Science Combination
(B.S. in engineering; B.A. in liberal arts)

Coordinator: Donald H. Madsen

Mathematics

22M:35 Elementary Functions 3 s.h.
22M:58 Calculus I 4 s.h.
22M:59 Calculus II 4 s.h.
Electives in Division of Mathematics (as prescribed by the various departments of the College of Engineering) 3 s.h.
Physics

22P:7 General Physics 4 s.h.

22P:8 General Physics 4 s.h.
Chemistry

22C:1 Principles of Chemistry I 5 s.h.
22C:2 Principles of Chemistry II 5 s.h.
22C:8 Elementary Chemistry Laboratory 2 s.h.
(An additional course in chemistry or physics may be substituted for an equivalent course in mathematics)

Total required courses 36 s.h.

Medicinal Technology

Coordinator: Earl Ross, Kenneth Cross

Chemistry

46:1 Principles of Chemistry I 3 s.h.
46:2 Principles of Chemistry II 3 s.h.
46:3 General Quantitative Analysis 4 s.h.
46:15 Organic Chemistry I 3 s.h.
46:16 Organic Chemistry II 3 s.h.
Zoology

27Z:10 Principles of Animal Biology 5 s.h.
27Z:11B Zoology 4 s.h.
Elective in Zoology 3 to 4 s.h.
Mathematics

22M:45 Introduction to Statistical Methods 3 s.h.
22M:53 College Algebra 4 s.h.
(Nine advanced mathematics courses may be substituted)

Other Science Requirements

62:156 General Microbiology 4 s.h.

Total required courses 36 s.h.

Nuclear Medical Technology

Coordinator: R. E. Peterson

Chemistry

46:1 Principles of Chemistry I 3 s.h.
46:2 Principles of Chemistry II 3 s.h.
46:3 General Quantitative Analysis 4 s.h.
46:15 Organic Chemistry I 3 s.h.
46:16 Organic Chemistry II 3 s.h.
Zoology

27Z:10 Principles of Animal Biology 5 s.h.
27Z:11B Principles of Human Genetics 4 s.h.
Physics

22P:1 College Physics 4 s.h.
22P:2 College Physics 4 s.h.

Mathematics

22M:22 Mathematical Techniques I 4 s.h.
22M:23 Mathematical Techniques II 4 s.h.

(Choice of Chemistry for 64 and 65)

Total required courses 48 s.h.

GENERAL SCIENCE

Other Science Requirements

72Z:13 Introduction to Human Anatomy 4 s.h.
72Z:14 Introduction to Radiology 4 s.h.
99:181 Biochemistry 4 s.h.

Total required courses 46 to 51 s.h.

Physical Therapy

Coordinator: Terry Jones

Chemistry

46:1 Principles of Chemistry I 3 s.h.
46:2 Principles of Chemistry II 3 s.h.
46:8 Elementary Chemistry Laboratory 2 s.h.
46:11 Quantitative Analysis 4 s.h.
46:122 Organic Chemistry II 3 s.h.
46:123 Organic Chemistry II 3 s.h.

Zoology

27Z:7 Principles of Animal Biology 5 s.h.
27Z:10 Principles of Human Genetics 4 s.h.
27Z:11B Vertebrate Embryology 4 s.h.
27Z:11C Fundamentals of Genetics 4 s.h.
28Z:100 Human Anatomy 5 s.h.
28Z:110 Human Anatomy 5 s.h.
28Z:111 Mammalian Physiology 5 s.h.

Physics

22P:1 College Physics 4 s.h.
22P:2 College Physics 4 s.h.

Note: 16 semester hours must be in either zoology (with above course) or in chemistry with 12 semester hours completed in the other.

Total required courses 36 s.h.

Predentistry

Coordinator: Richard M. Jacobs

Chemistry

46:1 Principles of Chemistry I 3 s.h.
46:2 Principles of Chemistry II 3 s.h.
46:8 Elementary Chemistry Laboratory 2 s.h.
46:11 Quantitative Analysis 4 s.h.
46:12 Organic Chemistry I 3 s.h.
46:122 Organic Chemistry II 3 s.h.

Mathematics

22M:2 Mathematical Techniques I 3 s.h.
22M:3 Mathematical Techniques II 3 s.h.

(Three advanced mathematics courses may be substituted)

Physics

22P:1 College Physics 4 s.h.
22P:2 College Physics 4 s.h.

Mathematical Techniques

22M:14 Principles of Animal Biology 5 s.h.

Electives: two advanced courses in Department of Zoology 7 to 10 s.h.

Total required courses 48 s.h.

Premedicine

Coordinator: George E. Brosseau, Jr.

Chemistry

46:1 Principles of Chemistry I 3 s.h.
46:2 Principles of Chemistry II 3 s.h.
46:8 Elementary Chemistry Laboratory 2 s.h.
46:11 Quantitative Analysis 4 s.h.
46:12 Organic Chemistry I 3 s.h.
46:122 Organic Chemistry II 3 s.h.
46:125 Intermediate Chemistry Laboratory 3 s.h.

Zoology

27Z:10 Principles of Animal Biology 5 s.h.
27Z:11B Principles of Human Genetics 4 s.h.
27Z:12 Principles of Human Genetics 4 s.h.
27Z:113 Intermediate Animal Laboratory 3 s.h.

Qualifying students may substitute 63 Principles of Chemistry for 64 and 65.

Total required courses 48 s.h.
Minors in Science Teaching
Coordinator: Robert E. Yager

The teaching sciences are also available for
pupils with teaching majors in other academic areas.
Only those combinations of courses will qualify a person for
certification in the area specified with each heading.

Biology - 21 h.
10. Introduction to Botany
27. Gross Anatomy
97.126. Meaning of Science
97.128. History of Science
97.132. History of Science

Chemistry - 24 h.
4. Principles of Chemistry I
4. Principles of Chemistry II
4. Elementary Chemistry Laboratory
4.1. General Chemistry Laboratory
4.11. Organic Chemistry I
4.111. Organic Chemistry II
4.2. Physical Chemistry
97.126. Meaning of Science
97.130. History of Science

Physical Sciences - 24 h.
4. Principles of Chemistry I
4. Principles of Chemistry II
4. Elementary Chemistry Laboratory
4.21 College Physics
4.22 College Physics
97.126 Meaning of Science
97.128 History of Science

General Science - 24 h.
1.1 Introduction to Science
1.2 Principles of Animal Biology
28.61 General Astronomy
13.3 Principles of Geography (Physical)
12.4 Principles of Geology (Historical)
4.1 General Chemistry
28.61 College Physics
97.126 Meaning of Science
97.130 History of Science

Earth Science - 15 h.
12.3 Principles of Geography (Physical)
12.4 Principles of Geography (Historical)
12.5 Physical Geography Laboratory
13.1 Historical Geography Laboratory
28.61 General Astronomy
97.126 Meaning of Science
97.130 History of Science

Graduate Programs in Science Education
Coordinator: Robert E. 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 backgrounds and professional
competencies possessed by the teacher. This purpose is
served in the courses for science instruction at all academic levels—kindergarten through
graduate school as well as in research in science education. The department is the center for several in-
stitute efforts, mental projects, curriculum committees, and professional societies.

Current research being carried on at the Science Edu-
cation Center includes, philosophical and historical foun-
dations 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
Arts, the College of Education, and the Graduate College.

The general requirements mean a grade-point aver-
age of 3.0 for admission to the Graduate College apply. A minimum grade-point average of 2.5 is needed for

Science Education

to and graduation from a master’s program; a 3.0 is re-
quired for the M.A. and Ph.D. degree program.

Master of Arts in Teaching Degree. The M.A. degree
is awarded for previous work in education in the pedagogical
designed for persons who want to become teachers after
they have completed a bachelor’s degree. The degree
is recommended for persons who wish to continue their
work in education beyond the bachelor’s degree.

Eighth semester hours in each, life, or physical sciences
is required. Credit for the M.A. is based on the number of
and the M.S. 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
estimation, 21 semester hours are required for those who have
completed 3 or more semester hours of undergraduate
level courses. One three-hour comprehensive ex-
amination in a science area and one three-hour com-
mprehensive examination in science education are required.
The comprehensive examination is to be given by the
Institute of Education. A comprehensive examination in a
science area, and a third person from a science area or

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 36 semester hours is required for the
comprehensive program. The program consists of 24 semester
hours of graduate study in the science area from the
student’s major field. At least two science areas,
chosen from astronomy, biochemistry, botany, chemistry,
earth sciences, microbiology, physics, zoology, and geology,
and radiation research. A minimum of 12 semes-
ter 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 the appropriate one for candidates who plan to
continue for the specialist degree or the Ph.D. A total of
36 semester hours is required for the thesis program. It
consists of 18 semester hours of graduate level science
study in the student’s major field. Two areas of science
must be selected where the student will spend 6 semester
hours in each of them. Ten semester hours of professional
education are required, plus an additional 3 semester
hours of credit and be included in an area of
the science area, and may be counted as part of the
20 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 participation of the student in science
education, a professor from a science area, and a profes-
sor from a second science area or professional
education. Comprehensive written examinations are re-
quired of the student seeking the master’s degree. The
comprehensive examination consists of examinations in the fields in
which the student has demonstrated competency. The exam-
ations are intended to be comprehensive examinations and are sub-
mitted by the student in writing to the department head of the
student’s major field. The student must pass the comprehensive
examinations in order to be entitled to the graduate degree.

Note: The Ph.D. is an intermediate degree between the master’s and the Ph.D. program. It is recommended for employees of state, regional, or local
government agencies or for those who intend to become instructors in the four-year liberal arts colleges. The degree consists of 30 semester hours of work beyond the bachelor's degree, of which 15 semester hours are in supportive science, 15
semester hours in related fields, and 20 semester hours in science education including research and internship credit.

The comprehensive exam consists of a three-hour examination in a science area, a three-hour examination in a support-

the graduate faculty.

specialty. The Ph.D. degree is required for those who intend to become professors in the various fields of the

Graduate Studies

75
COURSE DESCRIPTIONS

SPECIALIZED COURSES IN SCIENCE EDUCATION are described in the College of Education, TE and TJ divisions. The following general science courses may also be included in the programs.

97:55 Science Foundations I 4 cr.h.
Interdisciplinary laboratory approach to some of the more fundamental areas of science, with emphasis placed upon individualized applications of major science content areas. Enrollment restricted to education education majors.

97:56 Science Foundations II 4 cr.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 education education majors.

97:102 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.

97:103 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.

97:104 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.
Provision for a consideration of modern physics. Participation will be made to the various “national programs” in physical science.

97:106 Modern Concepts in Chemistry cr.arr.
Updates and strengthens the content backgrounds of teachers. Attention will be given to the new curriculum materials in chemistry.

97:110 Seminar: Research in Science Education cr.arr.
Review of research in the field with special reference to its applicability in teaching.

97:112 Advanced Science Foundations 4 cr.h.
A composite of elements of 97:55 and 97:56. Required at least for all teaching majors who have not had adequate background in science education. Several research and student research opportunities are offered in the field of science education. The seminar continues to be an introduction to a wide variety of University students generally (see Scholarships and Loans and Graduate College).

STAFF

ADVISORY COMMITTEE
Robert L. Eldbury, Chairman, Department of Botany. Frederick K. Duke, Chairman, Department of Chemistry. Bruce F. Giesler, Chairman, Department of Geology. Chairman, Department of Geography. Jackson G. Hunter, Chairman, Department of Psychology. Robert E. Yager, Head, General Science Program, chairman.

GENETICS
(See Botany, Microbiology, Zoology, and Genetics—Interdisciplinary Programs)
one semester hour of credit will be awarded each semester on an S-U basis for 44-285 (final seminar).

Requirements for the Ph.D. degree. Doctoral candidates are required to complete all the requirements for the M.A. degree, including the general examination; the reser-

 Requirements for the Ph.D. degree. Doctoral candidates are required to complete all the requirements for the M.A. degree, including the general examination; the research and requirements outlined below; and a qualifying examination. Candidates for the Ph.D. degree must complete the following: Mathematics 242, Introduction to Linear Algebra; 251, Introduction to Analysis; 252, Introduction to Probability, or 253, Introduction to Probability and 352, or by demonstrating competence in a

6. To become a candidate for the Ph.D. a student is required to pass a comprehensive examination consisting of written and oral parts, in which he must demonstrate

7. To become a candidate for the Ph.D. a student is required to pass a comprehensive examination consisting of written and oral parts, in which he must demonstrate

8. To become a candidate for the Ph.D. a student is required to pass a comprehensive examination consisting of written and oral parts, in which he must demonstrate

STAFF

Professor: Clyde F. Kahn.

Professor Emeritus: Harold H. McCarthy.


Assistant Professor: James Gardner, John Maren, Michael McFadden.

COUSE DESCRIPTIONS

Primarily for Undergraduates

44:1 Geography and Human Activities 2 s.h.

geographic aspects of human behavior. Application of principles to contemporary social, economic, and political problems. Open to freshmen.

44:2 Natural Environment and Man 4 s.h.

Geographic aspects of the natural environment in relation to water, landforms, soils, vegetation, and minerals. Man's role in adapting to and altering the natural environment. Major problems in resource use, environmental pollution, and natural hazards. Open to freshmen.

44:50 Undergraduate Seminar for Geography Majors 2 s.h.

Nature of geography as a social scientific field; geographic methods of analysis; research in geography. Students will prepare research papers. Required of all undergraduate majors in their senior year. Open to undergraduate majors in geography.

For Undergraduates and Graduates

44:100 Readings in Geography 1-3 s.h.

Prescriptive, consent of department.

44:101 Introduction to Weather and Climate 3 s.h.

Spatial distribution of weather elements, wind circulation, air masses, storms, and general climatic conditions of the world, including air pollution and climate change. Lab-

44:106 Geography in the School Curriculum 3 s.h.

New concepts and content of geography essential to effec-
tive educational programs. Methods of geographic inquiry. Examination of media effective in teaching geography.

44:108 Quantitative Methods 3 s.h.

Mathematical and statistical techniques in current re-

44:111 Geographic Analysis of Social Behavior 3 s.h.

Spatial distribution of population, including density, com-

44:115 Political Behavior and Urban Structure 3 s.h.

The political organization of urban areas and the prob-

44:116 Political Ecology 3 s.h.

Analysis of temporal and spatial variations in the relation-

44:117 Natural Hazards 3 s.h.

Definition, classification, and world distribution of natural hazards. Examination of causes and consequences through study of the spatial and temporal covariation of selected physical, social, and cultural elements in a series of case studies.

44:122 Natural Habitats of the United States 3 s.h.

The nature, pattern, and interdependence of elements of the natural resource base.

44:132 Industrial Location 3 s.h.

Theory of manufacturing location, and its application to different industries and types of economy, with investiga-

44:135 Internal Spatial Structure of Urban Areas 3 s.h.

Models of urban growth and urban form. Spatial pat-

44:136 Geographic Analysis of Inner City Areas 3 s.h.

Residential segregation of minority groups. The spatial structure of ghetto areas. Environmental quality of inner city neighborhoods. Special aspects of problems of economic and social stress.

44:137 Areas Analysis 3 s.h.

Theory of regions, methods of analysis, geographic sys-

44:141 United States and Canada 3 s.h.

Methods of analysis of regional economic development, with specific application to the regions of these nations.

44:161 Africa 3 s.h.

Spatial aspects of development in Africa. Geographical interpretations of selected problems confronting the Afric-

For Graduates Only

44:191 Geography of Economic Analysis 1 3 s.h.

Past and present philosophies of geography in light of philosophical developments in science in general. Critical review of the research literature of the past.
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 44.100, its equivalent, or consent of the instructor.

44.311 Spatial Organization of Social Processes and Behavior 3 s.h.
Spatial aspects of diffusion processes as applied to the spread of culture traits 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.

44.315 Locational Analysis of Political Behavior 3 s.h.
Locational basis of political and governmental behavior at the individual and various systems levels. Spatial dimensions of electoral behavior; aspects of political modernization; urban public policy making. Prerequisites, 44.308, 44.309, 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.

44.219 Florial 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 explanation of landscape forms.

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, 44.309, or consent of the instructor.

44.330 Spatial Structure of Residential Areas 3 s.h.
Behavioral processes as related to spatial patterns of residential agglomeration. Social and biological 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.

44.335 Travel Behavior in Urban Areas 3 s.h.
Theoretical and empirical basis of urban travel behavior. Evaluation of current models of travel behavior, interaction between intrasystem spatial structure and travel behavior, new research strategies and experimental behavioral settings in gaining insights into urban travel behavior processes. Prerequisites, 44.108, 44.209, 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 are presented, with emphasis on new ways of analyzing and formulating the urban growth process. Prerequisites, 44.302, 44.309, 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 interational comparisons. Urban renewal, regional growth policies, transportation systems, and conservation policies. Prerequisites, 44.108, 44.209, or consent of instructor.

44.339 Spatial Aspects of Urban Renewal 3 s.h.
Process of public urban renewal in American cities from current perspective. Siding of projects, economic impact of urban renewal, social impact and problems of relocation, political decisions, evaluation of the programs, and legislative framework of urban renewal with consideration of programs in selected countries. Prerequisites, 44.108, 44.209.

44.361 Geographic 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, 44.108, 44.209, or consent of instructor.

44.380 Field Techniques in Physical Geography 3 s.h.
Sampling procedures, and the collation of field data in physical geography, together with the laboratory analysis of data.

44.396 Research Seminar: The Teaching of Geography cr.arr.

44.398 Research Seminar: Quantitative Methods, Computer Methods, and Modeling cr.arr.

44.399 Research Seminar: Geographic Analysis of Social Behavior cr.arr.

44.315 Research Seminar: Locational Analysis of Political Behavior cr.arr.

44.316 Research Seminar: Spatial Perception cr.arr.

44.318 Research Seminar: Pleistocene cr.arr.

44.319 Research Seminar: Physical Geography cr.arr.

44.320 Research Seminar: Natural Hazards and Problems cr.arr.

44.330 Research Seminar: Geographic Analysis of Economic Behavior cr.arr.

44.331 Research Seminar: Location Theory cr.arr.

44.335 Research Seminar: Urban Housing, Redevelopment, and Renewal cr.arr.

44.336 Research Seminar: Urban Travel Behavior cr.arr.

44.337 Research Seminar: Urban Macro Models cr.arr.

44.338 Research Seminar: Urban Transportation Issues cr.arr.

Same as Urban and Regional Planning 102:328.

44.339 Research Seminar: Urban Information Systems cr.arr.

Same as Urban and Regional Planning 102:327.

44.350 Staff Seminar: Urban Information Systems cr.arr.

44.380 Field Seminar cr.arr.

44.406 Research: The Teaching of Geography cr.arr.

44.408 Research: Quantitative Methods, Computer Methods, and Modeling cr.arr.

79
GEOLGY
44.413 Research: Physical Geography cr.arr.
44.440 Research: Environment and Behavior cr.arr.
44.451 Research:Locational Analysis cr.arr.
44.462 Research: Models of Spatial Behavior cr.arr.
44.450 Thesis cr.arr.

GEOLOGY
Chairman of Department, Brian F. Glenister Office, 106 Calvin Hall

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 science. The Bachelor of Science degree is optional.

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 30 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 for 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 competence 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 soon 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 core sequence in foreign language, rhetoric, and mathematics at a level appropriate for his high school record and performance. Examination. Geology majors should elect French, German, or Russian to satisfy the language requirement. It is suggested that the social science requirement be fulfilled by approved courses selected from economics, geography, and anthropology. Maximum semester hours in this first category will be 22, most students will require 24.

2. Supporting sciences. Mathematics, chemistry, physics, and biology courses are required by the geology department to give the student an 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 will choose the courses that will best complement the student's high school science background and his career goals. We can suggest some general principles:

A. Most students will take two semesters of chemistry, physics, calculus, and one or two semesters of biological science to obtain minimum breadth of exposure.

B. 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 geologist might elect additional mathematics and physics in place of biology. In all cases the seven-semester-courses minimum is required.

C. A few students may find it advantageous to substitute specialized elective courses for one of the more traditional sciences. Courses in engineering, statistics, computer science, astronomy, or archaeology are examples. Again, the seven-semester-course minimum will be required.

3. Geology courses. Thirty semester hours are required to acquire an undergraduate student with the fundamental and broad scope of geological subjects. Courses required of all geology majors are:

12 a. Physical Geology 4 cr.
12 b. Physical Geology Laboratory 1 cr.
12 c. Geology Field Methods 4 cr.
12 d. Geology 4 cr.
12 e. Principles of Paleontology 3 cr.
12 f. Summer Field Course 4 cr.
12 g. Senior Seminar 1 cr.

Recommended elective to complete the 20-semester-hour minimums are stratigraphy, geomorphology, sedimentology, oceanography, and paleontology. 12 d and 12 e. Field history and Resources may be substituted for 12 d and 12 e. 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. Such cases 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 required 20-hour minimum in 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 are 30 semester hours in one year each, with substitution of an appropriate number of semester hours in astronomy, geography, and psychology.

Graduate Requirements

A ample facilities are available within the department for research. Adequate courses are provided for students who plan to take graduate work in geology should have completed, as undergraduate geology courses equivalent to those required of U of I undergraduate geology majors, as well as satisfactory college courses in chemistry, physics, geology, and meteorology. Deficiencies in background to be remedied in the initial graduate years. 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 34 semester hours of graduate credit in residence.

All graduate study in geology are required to perform either teaching, research, or other services for the department each semester, and for at least 8 credits of the degree program.

Master of Science Degree with Thesis

1. Candidates should, as undergraduates and graduates, complete courses in mathematics, optical mineralogy, stratigraphy, geomorphology field geology and field course, stratigraphy, physiographic and sedimentology, and meteorology, and paleontology. All completed courses in the above subjects are required for the degree.

2. Graduate students are expected to complete the following supporting courses required of departmental 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 25% of the Master of Science degree at the graduate level, of which 8 semester hours must be taken in other departments of the University. All other departmental requirements will apply under this option.

The Master of Science degree without thesis requires a minimum of 36 semester hours of coursework at the graduate level, of which 8 semester hours must be taken in other departments of the University. All other departmental requirements will apply under this option.

An appropriate graduate course in another discipline is permitted in the Master of Science degree program of any student.

Graduate coursework totaling 24 semester hours exceeds the minimum requirements and research credits, and in addition to courses used for the master's degree.

GEOLOGY


COUSE 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 ocean basins of the earth. Open to all except those who have had previous college courses in earth or geology science.

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 animals and plant groups and a survey of geologically important fossils. 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 11.33 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 11.33 Earth History and Resources. May be taken concurrently with 12.4. Prerequisites: college geology.

12.9 Geology of Iowa 1 s.h.
Survey of geologic features in the state. For students who have had a previous course in geology. Lectures and field trips.

12.10 Honors Thesis in Geology cr.arr.
Prerequisites, consent of the department.

12.11 Methods of Geologic Instruction 1 s.h.
Instructional methods utilized in elementary geology. Literature review of presentation techniques, and instructional guides in an elementary laboratory. Prerequisites, consent of instructor.

12.17 Terrain Analysis 3 s.h.
Techniques of topographic map and aerial photo reading, data analysis, and computer cartography.

12.41 Mineralogy 3 s.h.
Introductory study of minerals, mineralogic description, identification, and classification of minerals. Prerequisites, introductory geology course.

12.52 Elementary Petrology and Geochemistry 3 s.h.
A lecture, laboratory, and discussion course dealing with the principles of petrography, geochemistry, and mineralogy, and the principles of petrology for igneous, sedimentary, and metamorphic rocks. Prerequisites, 12.42.

For Undergraduates and Graduates

12.13 Physical Geology 2 or 3 s.h.
Summer session.

12.14 Historical Geology 2 s.h.

12.16 Geologic Map and Aerial Photo Interpretation 3 s.h.
Prerequisites, consent of instructor.

12.18 Geology of North America 3 s.h.
Offered in 1975-76 and in alternate years. Prerequisite, each science or college geology.
12.150 Geology of Ivol 2 or 3 h.

12.151 Geologic Field Methods 1 h.
Familiarization with the basic instruments and methods of geologic mapping. Prerequisites: 12.150.

12.153 Summer Field Course 6 h.
Training in the description and mapping of rock units and geographic mapping in the Wasatch and Uinta mountain ranges. Park City, Utah. Prerequisites: 12.46, 12.152, and 12.157.

12.155 Geology and Ground Water 3 h.
Geologic occurrence and geographic distribution of ground-water provinces; factors controlling the quantity, recharge, and flow of ground water; problems of gaining, loss, and recovery; principles of use and conservation of ground water. Prerequisite, consent of instructor.

12.156 Field Trip 2 h.
Offered on demand, yearly. Seven to ten days during spring months in area of geologic interest. Prerequisite, consent of instructor. Section 1, Carbonado of Florida—section 2, Northern Arizona—section 3, Big Bend, Texas—section 4, Southern Appalachian—section 5, Dakota.

12.159 Directed Study or Arr. Pre-prerequisite, consent of the department.

12.181 Principles of Paleontology 3 h.
Nature, origin, and use of fossil: geologic principles, species concepts, ecological interpretations; evolution of selected animal groups, studies and laboratory study of taxa of greater geologic significance. Prerequisite, earth science or college geology as consent of instructor; open to graduate students in geology or biology.

12.182 Vertebrate Paleontology 3 h.
Phylogenetic history of the vertebrates, taxonomy, stratigraphy, and paleontological concepts of selected taxa. Laboratory and field trips. Prerequisites, introductory geology or zoology and junior standing.

12.185 A Planet in Crisis 2 h.
A lecture discussion and field course concerning man's role in the balance of resources, conservation, pollution, and population. Prerequisites, earth science or life science as consent of instructor.

12.187 Paleobotany 3 h.
Phylogenetic study of plants using fossil evidence; paleobotanical techniques, ecological applications in coal and petroleum industries. Lectures, laboratory, field trips. Prerequisite, introductory botany or geology.

12.192 Sedimentology 4 h.
Lectures, laboratory, and field course treating the processes of weathering, transportation, deposition, and interaction within the environment to form sedimentary rock, mineral, and chemical sedi-

12.241 Optical Mineralogy 3 h.
Theory and practice of mineral study with the polarizing microscope. Prerequisites: Chemistry 402 or 404, Mathematics 325, Physics 223 or 224. Physics may be taken concurrently.

12.243 X-ray Crystallography 3 h.
Theory and practice of powder method, single crystal method, X-ray stereoscopy, space group symmetry, diffractometry, and photographic methods. Offered in 1950/51 and in alternate years. Prerequisite, consent of instructor.

12.245 Crystal Chemistry 3 h.
Principles of solid state geochemistry as applied to impor-
tant minerals and rocks, their metamorphism, oxidation, and at.

12.152 Thin Section Petrography 3 h.
Laboratory course in the description, classification, and analysis of igneous, sedimentary, and metamorphic rocks. Prerequisite, 12.151.

12.161 Principles of Stratigraphy 3 h.
Prerequisite, earth science or college geology.

12.162 Continuation of 12.161, which is prerequisite.

12.171 Geomorphology 4 h.
Prerequisites, earth science or college geology.

12.172 Glacial and Pleistocene Geology 3 h.
Prerequisites, earth science or college geology.

12.173 Quaternary Geology and Exploration 3 h.
Prerequisites, earth science or college geology; laboratory, field trips, and research problem. A lab- and field-oriented approach to study the evolution of selected materials and geologic features. Prerequisites, 12.171 or consent of instructor.

12.181 Principles of Geophysical Exploration 3 h.
Fundamental physical principles, instrumentation, field techniques, data reduction and interpretation. Prerequisites, college geology and college physics.

12.182 Principles of Economic Geology 3 h.
Processes of formation of mineral deposits (exclusive of petroleum, petroleum, gas, and coal); evaluation and geo-

12.183 Principles of Mineral Economics 3 or 4 h.
Mineral resource distribution, utilization, and conserva-
tion; the role of mineral resources in regional, national, and international development. Prerequisites, consent of instructor.

12.191 Structural Geology 4 h.
Description and interpretation of rock structures. Prerequisites, Mathematics 225.

12.192 Geotechnics 4 h.

12.194 Seminar in Geology 2 h.
Required before graduation for undergraduates, junior or senior year; designed to develop consolidated acumulated knowledge in geology.

Primarily for Graduates

12.221 Isotopic Petrology 4 or 5 h.
Morphology, taxonomy, chronology, and evolution of selected macroscopic intermetamorphic rocks. Prerequisites, 12.151 (or by consent of instructor), enrollment for 5 semester hours and signing first half of 12.151, 12.152, and college geology.

12.222 Micropaleontology 3 h.
Morphology, taxonomy, and evolution of selected groups of microfossils. Prerequisites, 12.121 or consent of instructor, 12.155, and college geology.

12.223 Seminar: Paleontology 2 h.
Prerequisites, 12.122 and consent of instructor.

82
12.232 Sedimentary Petrology: Carbonates 3 s.h.
Research-oriented field, laboratory, and lecture-seminar course treating the genesis, diagnosis, classification, and various techniques of study of carbonate rocks. Prerequisites: optical mineralogy and sedimentation.

12.234 Sedimentary Petrology: Sandstones 3 s.h.
Research-oriented field, laboratory, and lecture-seminar course treating the provenance, the transportation, deposition, and diagnostic history of the detrital clastic rocks. Prerequisites: optical mineralogy and sedimentation.

12.551 Igneous Petrology 3 s.h.
Lecture, seminar, and laboratory course. Field of even-numbered years. Petrography of igneous rocks from experimental, chemical, field, and microscopic observations. Prerequisites: 12.122, 12.124, and 22.257.

12.253 Thermodynamics and Phase Equilibria 3 s.h.
Principles of physical chemistry applied to origins of igneous and metamorphic rocks. Prerequisites: 12.45, college chemistry, calculus recommended.

12.255 Metamorphic Petrology 3 s.h.
Lecture, seminars, and laboratory course. Field of odd-numbered years. Structural and mineralogical transformations which accompany the metamorphisms of igneous and sedimentary rocks. Prerequisites: 12.122, 12.124, and Mathematics 22.57.

12.263 Advanced Biostatistics 3 s.h.
Principles and methods ol biostatistics correlated, with emphasis on evaluation of current techniques. Prerequisites: 12.109 and 12.102.

12.271 Advanced Geomorphology 2 s.h.
Prerequisites: 12.121.

12.394 Seminar: Economic Geology 2 s.h.
Prerequisite: consent of instructor.

12.496 Economic Geology: Petroleum 2 s.h.
Principles of exploration and development. Typical structural features and reservoirs. Offered in alternate years. Prerequisites: 12.102 and 12.104.

12.594 Advanced Structural Geology 3 s.h.
Rock deformation and structural analysis. Offered in 1970-71 and in alternate years. Prerequisites: 12.101 and Mathematics 22.57.

12.596 Seminar: Structural Geology 2 s.h.
Offered in 1971-72 and in alternate years. Prerequisites, consent of instructor.

12.300 Research: Summer Field and Laboratory cr.arr.

12.301 Research. General Geology cr.arr.

12.315 Research: Ground Water cr.arr.

12.330 Research: Paleontology cr.arr.

12.321 Research: MicroPaleontology cr.arr.


12.340 Research: Mineralogy cr.arr.

12.350 Research: Petrology cr.arr.

12.360 Research: Stratigraphy cr.arr.

12.370 Research: Geomorphology and Pleistocene Geology cr.arr.

12.380 Research: Economic Geology cr.arr.

12.389 Research: Ecological Geology cr.arr.

12.390 Research: Structural Geology cr.arr.

GERMAN
Chairman of Department, Edward Dovers et Office, 182 Schaeffer Hall
The primary function of the Department of German is to teach German. The course is designed to familiarize students with the language and culture of Germany, and to enable them to speak and understand German. Students may choose to take the major in German, which requires a minimum of four semesters of German, or to take the minor in German, which requires a minimum of two semesters of German. Students may also choose to take the minor in German Studies.

Undergraduate Requirements
Students majoring in German are normally required to complete the following courses: German 101 (four semester hours), German 201 (four semester hours), German 301 (four semester hours), German 401 (four semester hours), and German 499 (one semester hour). Students majoring in German are also required to take a foreign language course in a language other than German, and to complete a minimum of 12 semester hours in courses numbered 200 and above.

Basic Program
First and Second Year
12.11 First Semester German 3 s.h.
12.12 Second Semester German 3 s.h.
12.13 Third Semester German 3 s.h.
12.14 Fourth Semester German 3 s.h.
12.15 German Composition and Conversation 3 s.h.
12.16 German Conversation 3 s.h.

Third Year
12.21 German Classics 2 s.h.
12.22 German Culture 2 s.h.
12.30 Intermediate Composition and Conversation 3 s.h.
12.34 Advanced Composition and Conversation 3 s.h.

Fourth Year
12.255 Advanced Composition and Conversation 3 s.h.
12.256 German Cultural History 2 s.h.
12.111 Survey of German Literature 3 s.h.
12.113 History of German Civilization 2 s.h.

*An eight-week intensive course of 12.11 is offered. Students who accept this intensive course must apply for professional development and are graded by the professional seminar.

Students who plan to go on for an advanced degree are encouraged to add 12.255 German Phonology (3 semester hours) to the above.

German majors, whether undergraduate or graduate, are encouraged to participate in the German Club and to take part in various cultural activities, such as music, dance, and drama. German majors are also encouraged to participate in the annual German Film Festival and to attend the German Film Society meetings. German majors are expected to earn a grade of A in each course they take in German, and to complete a minimum of 12 semester hours in courses numbered 200 and above. If a student does not earn a grade of A in each course he takes in German, he may be required to take the course again.
The Teaching Minor
In addition to the Basic Program of the first and second year, above, the following courses or their equivalents are required for the minor, in German, effective September 1, 1968:

19.03.10 German Classics
19.03.22 German Literature
19.03.24 Intermediate Composition and Conversation
19.03.61 Advanced Composition and Conversation

Honors in German
German majors of junior or senior standing with an overall grade-point average of at least 3.5 and a 3.0 or better in the minor are eligible for the Minor in German. The candidate chooses the particular area in the field of the minor in which he or she is interested, with whom he or she works. An extensive reading program, thesis, and regular reports, and a seminar paper are required for each work 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 minor year terminates the program.

Special Facilities
Students have the opportunity to improve their comprehension and command of the language by working with recorded materials in the Language Laboratory. An extensive collection of works still pertinent to the courses in the University Library facilitates research in all major areas of German literature and Germanic linguistics.

Graduate Study Requirements
Master of Arts Degree in German
M.A. with thesis. Graduate students of German who demonstrate an interest and potential for productive scholarship on the graduate level and who plan to continue in the doctoral study should elect the program with thesis. A minimum of 30 semester hours or the equivalent of graduate-level work beyond that which normally meets the requirements for the baccalaureate degree in German (see above) is required. If the candidate for the M.A. degree in German has not already had those undergraduate courses or their equivalents, he will include them in his program 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 student's advisor. The student must complete at least 15 semester hours beyond the core requirements for the degree, some graduate work may be needed. Normally 6 semester hours credit may be approved for satisfactory completion of a thesis. The thesis may be in either linguistic or literary and is subject to the approval of the faculty. Those students planning to go on to the Ph.D. degree are required to write a thesis unless departmental approval to do otherwise is granted.

Before the M.A. exam can be administered—usually after acceptance of the M.A. thesis—the candidate must show a competency level in a foreign language other than German equivalent to two years of college study during four years of high school study, with a grade of B or higher. M.A. without thesis. A graduate student who desires 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 24 semester hours of coursework plus a seminar in English literature (or language or translation) and the seminar in German literature (or language or translation) to provide the student with training for the work he plans to do, and is considered adequate for the M.A. without thesis.

The same course requirements outlined for the M.A. with thesis apply to candidates for the M.A. without thesis. The candidate for the M.A. degree in German should, with the approval of the graduate advisor, choose as electives courses from the program which will best prepare them for their teaching careers, etc.

Table of Required Courses* for the Master of Arts Degree in German

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.03.10</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.22</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.24</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.61</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.11</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.12</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.23</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.24</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.25</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.25</td>
<td>3 (any one of the 2)</td>
</tr>
<tr>
<td>19.03.25</td>
<td>3 (any one of the 2)</td>
</tr>
<tr>
<td>19.03.25</td>
<td>3 (any one of the 2)</td>
</tr>
<tr>
<td>19.03.25</td>
<td>3 (any one of the 2)</td>
</tr>
<tr>
<td>19.03.25</td>
<td>3 (any one of the 2)</td>
</tr>
</tbody>
</table>

**The candidate will receive graduate credit for these courses, but this credit will not normally be counted toward the degree.**

***A.M. and Ph.D. candidates must include 19.238 in their graduate work.***

Doctor of Philosophy degree in German. The Ph.D. degree is awarded upon the satisfactory completion of 15 graduate semester courses or their equivalents beyond the requirements for the M.A. degree, and fulfillment of the requirements of the 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 their approved equivalents, and at least two advanced seminars. The remainder of the plan is up to the student in consultation with the graduate advisor in such a way as to assure satisfactory balance and concentration. The student may earn up to 15 semester hours credit for satisfactory completion of the Ph.D. dissertation. Some graduate courses outside the department in related subjects may be counted toward the degree with the approval of the graduate advisor, provided that the student has an overall grade point average of 3.0 or higher. Normally 30 semester hours of graduate coursework are required to demonstrate adequate teaching ability in German. Whenever possible the department will offer the opportunity and privileges to desiring graduate students to gain valuable teaching experience under supervision by making available such awards as teaching, research, teaching assistantships, tuition scholarships, etc.

A reading knowledge of French or Russian, and of a modern Germanic language or Dutch is required of all doctoral candidates in Germanic Linguistics; a candidate concentrating in literature must demonstrate a reading knowledge of French and/or another language which has been certified by his advisor 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 of German. The written exam for the M.A. degree will be administered before the comprehensive exams can be administered.

Table of Required Courses* for the Doctor of Philosophy Degree

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.03.10</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.22</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.24</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.61</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.11</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.12</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.23</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.24</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.25</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.25</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.25</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.25</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19.03.25</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

*The candidate will receive graduate credit for these courses, but this credit will not normally be counted toward the degree.***
Table of Required Courses for the Doctor of Philosophy Degree with a concentration in Germanic linguistics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>13064</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>13065</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>13066</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>13067</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>13068</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>13069</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>13070</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>13071</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>13072</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>13073</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>13074</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>13075</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Primary for Undergraduates**

1311 First-Semester German 3 s.h. Initial unit of the three-semester course sequence. Emphasizes on reading and the basic structure of the German language.

1312 Second-Semester German 3 s.h. Second unit of a three-semester course sequence. Study of the basic structure of the German language.

1313 Third-Semester German 3 s.h. Third unit of a three-semester course sequence. Study of the basic structure of the German language; German literature is used in simple conversation, composition, and exercises.

**Note.** A student who has had all three of the units of the basic course sequence or equivalents has an option of taking either 1322 or 1323 for his fourth semester. Courses 1322 and 1323 in no way duplicate each other, so they may be taken concurrently or in a credit hour.

1322 Fourth-Semester German: Reading 3 s.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.

1323 Fourth-Semester German: Elementary Composition and Conversation 3 s.h. Fourth-semester course for students satisfying their foreign language requirement for the B.A. degree. Recommended for those who wish further training in the active use of the language. Emphasis on writing compositions and developing proficiency in conversations in German.

1331 German Classics 3 s.h. Representative works of Lessing, Goethe, and Schiller. Study of their place in the classical period of German literature. Prerequisite: 1322 or equivalent.

1333 Intermediate Composition and Conversation I 3 s.h. Practice in the translation of selected English texts, paraphrasing of German texts, the learning of German vocabulary and idioms, and the improvement of oral conversation and oral expression. Prerequisite: 1322 or equivalent.

1334 Intermediate Composition and Conversation II 3 s.h. A continuation of 1333, with emphasis on the development of oral conversation and on the improvement of oral expression. Prerequisite: 1333.

1511 Ph.D. Reading 0 cr. Courses 1322, 1323, 1324, and 1325 (see below) compose a four-credit course service for graduate students seeking research work competence in German as required by the respective departments. 1325 is intended for those students who have had no previous experience in German or for those with a complete review of their previous experience with the language.

1528 Ph.D. Reading (Second Semester) 0 cr. Continuation of 1325. However, students with adequate
experience may enter this course which is oriented to ward reading for comprehension. Prerequisites, 13:32 or equivalent.

13:33 Ph.D. Reading (Third Semester) 3 cr. Continuation of 13:32. Students with a good background in German may enter at this level. Emphasis on vocabulary building, reading facility, and practical translation experience. Prerequisites, 13:32 or equivalent.

13:34 Ph.D. Reading (Fourth Semester) 3 cr. Continuation of 13:33. Students with an excellent background in German may enter at this level. Emphasis on comprehensive reading of sophisticated texts in German with special attention to research materials in the student's own area of specialization. Prerequisites, 13:32 or equivalent.

13:50 Honor Program in German 3 cr.

For Undergraduates and Graduates

13:100 Individuell German 3 cr. Open only to German majors and minors.

13:101 Advanced Composition and Conversation 3 cr. Required for undergraduate German majors and minors. Prerequisites, 13:12 or equivalent.

13:102 Advanced Composition and Conversation 3 cr.

Primarily for first-year graduate students. Permission of instructor required. Prerequisite, 13:32 or equivalent.

13:103 German Phonology 3 cr.

Analysis of the structure of the sound-system of the German language and an introduction to the problems of German morphology and syntax. A basic linguistics course.

13:105 German Cultural History 3 cr. Cultural history of Germany from the earliest beginnings until the present with special emphasis on the development of the arts, philosophy, and literature.

13:107 Teaching of German 3 cr. An on-the-job training course for graduate teaching assistants in the department.

13:111 Survey of German Literature 3 cr.

Survey of the development of German literature from the earliest times to 1779. Prerequisite, 13:32 or equivalent.

13:112 Survey of German Literature 3 cr.

Survey of German literature from 1779 to the present. Prerequisite, 13:32 or equivalent.

13:218 German Literature in Translation 3 cr. Readings in German literature in translation. Prerequisite, satisfactory completion of the literature core requirement.

13:219 Yiddish Literature in Translation 3 cr.

Works of German and other writers of Yiddish literature in the 16th- and 20th-century. Prerequisite, at least junior standing and consent of instructor.

13:220 Methods in High School Modern Foreign Languages 3 cr.

Senior as Education 70:122.

13:131 Nietzsche, Spengler, Thomas Mann 2 cr. The above-mentioned as critics of modern culture. Ability to read German desirable but not required.

13:132 Rilke, George, Hofmannsthal 2 cr. The three poets are studied as a group and as individual artists, with special attention to their mature and representative works.

13:133 Kafka, Broch, Musil 2 cr. These authors studied as representative of 20th-century Austrian literature. The class will be conducted in English.

13:143 The Faust Tradition 3 cr.

Development of the Faust theme in world literature, culminating in Goethe's Faust. Critical analysis of Faust I and the text of Faust II with special emphasis on the philosophical and aesthetic aspects.

13:150 Advanced Studies in German literature and linguistics. Open to graduate majors in German.

13:161 German Proseminar 3 cr.

For first-year graduate students. A general introduction to graduate study in the areas of German literature and Germanic linguistics. Bibliography, methods of research, and writing, and specific problems are introduced and discussed.

13:302 German Proseminar 3 cr.

Continuation of 13:161.

13:321 The German Novel I 3 cr.

Development of the novel is traced, and representative novels are analyzed. A good reading knowledge of German is required.

13:322 The German Novel II 3 cr.

(18th Century) 3 cr.

13:323 German Lyric 3 cr.

Lyric poetry and poetic tradition in German literature from Lessing to 1800. Critical analysis of representative poems together with a study of German critics and criticism of poetry during this period.

13:324 The German Drama 3 cr.

Development of the German drama is traced, and representative dramas are analyzed. A good reading knowledge of German is required.

13:325 The German Drama of the Storm and Stress 3 cr.

13:326 The German Drama 3 cr.

(20th Century) 3 cr.

13:327 The German Novelle 3 cr.

Origins and history of the novelle in Germany from Goethe to Kafka. Critical analysis of representative works with special attention to the characteristics and artistic development of the genre.

13:341 History of the German Language 3 cr.

Development of the German language and dialects from prehistoric times to the present.

13:343 Middle High German 3 cr.

Grammar and syntax of the High German literary language in the period from the 11th to the 14th centuries. Primarily for students concentrating in linguistics.

13:344 Middle High German Literature 3 cr.

Development of the German language and dialects from prehistoric times to the present.

13:345 Old High German 3 cr.

High German dialects in their earliest recorded forms and the cultural, political, and social influences exerted upon them from within and without the German-speaking area (8th to 11th centuries). Selected readings from the literature of the period.

13:346 Old Saxon 3 cr.

Studies in the language of the oldest Low German dialect, and of the historical position of Low German with respect to the other Germanic languages. Prerequisite, German or Old High German or Old English.

13:347 Gothic 3 cr.

The source of the least known of the ancient Germanic languages, and its importance for an understanding of the historical development of the Germanic languages. Introduction to comparative Indo-European linguistics.
13:49 History of the Scandinavian Language 2 s.h.

Development of the Scandinavian languages from earliest times to the present. Extensive readings in linguistic texts in Danish, Swedish, and Norwegian. Pre-C不可思一, one of the earliest Germanic language.

13:52 Early German Literature 3 s.h.

German literature from the earliest documents to the Middle High German period.

13:58 Renaissance of the Literature and Reformulations 3 s.h.

Philomathic Renaissance and the rise of its parallel movement in religion, i.e., Reformation. The development of these two movements in German literature and thought. Readings and analysis of their representative works.

13:57 German Literature of the Baroque 3 s.h.

Age of the Baroque in German literature and thought. Study of its most representative works.

13:58 The Age of Enlightenment and the Period of Storm and Stress 1 s.h.

A continuation of 13:58, but may be taken as a separate unit.

13:58 The Age of Goethe 3 s.h.


His life and thought as expressed in the major literary works.

13:58 Schiller 3 s.h.

Friedrich Schiller's life and his literary, historical, and philosophical works; his position in his own time and that of posterity.

13:58 German Romanticism 3 s.h.

German Romanticism; its representative writers, and influence on modern civilization.

13:54 German Realism 3 s.h.

Concept, development, and manifestations of Realism in German literature. Readings with critical analyses of representative works.

13:58 Naturalism, Impressionism, and Expressionism 3 s.h.

Survey of literary currents from Realism into the 20th century.

13:58 Special Topics in German Literature 2 s.h.

May be repeated for credit.

13:59 Special Topics in German Philosophy 2 s.h.

May be repeated for credit.

13:60 Master's Thesis 2 s.h.

May be repeated for credit.

13:61 Seminar in Linguistics 2 s.h.

May be repeated for credit.

13:62 Seminar in Proto-Germanic Linguistics 3 s.h.

May be repeated for credit.

13:61 Seminar in Early German Literature 2 s.h.

May be repeated for credit.

13:61 Seminar in German Literature of the 18th Century 2 s.h.

May be repeated for credit.

13:61 Seminar in German Literature of the 19th Century 2 s.h.

May be repeated for credit.

13:61 Seminar in German Literature of the 20th Century 2 s.h.

May be repeated for credit.

13:61 Seminar in German Poetry of the 20th Century 2 s.h.

May be repeated for credit.

13:400 F.D. Dissertation 2 s.h.

(See Classics)

GREEK

13:401 SEMINAR IN CLASSICS

HISTORY

Chairman of Department, Sydney V. James Office, 246 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 tracing 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 integrative 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: 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.

 Prospective history majors are advised, but not required, to complete this requirement by taking 11:21, 32 Western Civilization.

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, history, 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 be completed by those under graduates who seek a teaching post in the social sciences.

1. Core courses: 11:21 and 11:24 History of Western Civilization (or equivalent) for the first year.

2. A minimum of 18 semester hours of work in courses offered by the history department of which 12 semester hours are in the Ancient World and Medieval Europe, and America in History.

3. 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 the minimum requirement in related areas.

87
Study Requirements

Master's degree. No special co-units are required for admission to candidacy for 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 excellent record 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 special 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 defending 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 extend at the department at the end of the second semester of his registration unless his thesis committee agrees to have it extend for one additional semester. At the end of the third year the student must have completed the requirements of his first two semesters of registration indicated that they must have completed the requirements of his first two semesters of registration and that the student is in good standing. In the fourth and fifth years, students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D. Students who have made satisfactory progress in their first two years of study will be eligible for the Ph.D.
HISTORY


COURSES DESCRIPTIONS

Primarily for Undergraduates

16:51 Survey of American History, 1600-1877 3 or 4 sh.
Political, economic, and social trends in the growth of the United States from the Age of Discovery through the Civil War and Reconstruction. Not open to freshmen.

16:62 Survey of American History, 1787 to present 3 or 4 sh.
Political, economic, and social history of the United States from 1787 to the present.

Development of religious thought patterns and institutional life in the United States in the context of the growth of American culture. Same as Religion 26:2.

Development of religious thought patterns and institutional life in the United States. A continuation of 16:72, but may be taken independently.

16:91 Individual Study: Undergraduate 3 cr.

16:93 Individual Study: Undergraduate 3 cr.

16:94 Honors Tutorial 3 cr.

16:95 Honors Seminar: Problems in European History 3 cr.

16:96 Honors Seminar: Problems in American History 3 cr.

16:97 Honors Thesis 3 cr.

For Undergraduates and Graduates

Ancient and Medieval History

16:100 Historical Background of Contemporary Institutions 3 cr.

Social, economic, political, and intellectual history of ancient civilizations from the rise in Mesopotamia to the age of the conquests of Alexander the Great. Not open to freshmen.

16:102 Survey of the Hellenistic World and Rome 3 sh.
Social, economic, political, and intellectual history of the Greek-Roman world from the 4th century B.C. to the reign of Justinian.

16:104 Revolution in the Ancient World 3 sh.
A study, based on reading of the original sources in translation, of the methods used in ancient writers for support, preventing, mitigating or precipitating the revolutions leading to revolution and civil war. Prerequisite, junior or senior standing and 16:101 and 16:105, or permission of instructor.

16:105 Revolution in the Greco-Roman World 3 sh.
Continuation of the 16:104 from the 4th century B.C.

16:110 The Waning of the Middle Ages 3 or 4 sh.
Readings in medieval history in the period 1250-1500. Discussion will consider the problems of a civilization in declining. Prerequisite, junior or senior standing and one previous course in medieval history.

16:111 Survey of Medieval Civilization 3 sh.
Europe from the decline of Roman Empire to High Middle Ages. Cultural, political, and economic foundations of Western Civilization. Not open to freshmen.

16:112 Survey of Medieval Civilization 3 sh.
Europe from High Middle Ages to Renaissance. Emphasis on medieval thought and institutions.

16:113 Economic and Social History of Medieval Europe 3 or 4 sh.
Prerequisite, junior or senior standing and a general acquaintance with medieval history.

16:114 Foundations of English Law 3 sh.
From the origins of the common law to early modern times. Not open to freshmen.

16:115 Medieval England, ca. 450-1215 3 or 4 sh.
Prerequisite, junior or senior standing.

16:116 Medieval England, 1215-1485 3 or 4 sh.
Prerequisite, junior or senior standing.

16:117 History of the Medieval Church 3 or 4 sh.

16:118 The Rise of Feudal France 3 or 4 sh.
The evolution of French social and political institutions, 500-1328. Prerequisite, junior or senior standing.

16:119 Late Medieval France 3 or 4 sh.
The evolution of the French monarchy from a feudal to a national state, 1258-1515. Prerequisite, either 16:111 or 118.

Early Modern Europe

16:121 Survey of Early Modern Europe, 1500 to 1648 3 sh.
Europe from Renaissance to Peace of Westphalia. Not open to freshmen.

16:122 Survey of Early Modern Europe, 1648 to 1815 3 sh.
Europe from the Peace of Westphalia to the Congress of Vienna.

16:123 Age of the Renaissance 3 sh.
European history since Italian, French, and Spanish, from the early 15th to the late 16th centuries. Prerequisite, junior or senior standing.

16:124 Reformation 3 sh.
Religious developments and their impact on political, economic, and intellectual history, 1500-1600. Prerequisite, junior or senior standing.

16:125 The Age of Absolutism 3 sh.
Europe in the age of the great dynasties, from the late 16th to the early 18th centuries. Prerequisite, junior or senior standing.

16:126 Intellectual History of the Renaissance 3 sh.
Main currents of intellectual and social history from the 13th century to the beginning of the 17th century. A knowledge of the political history of the period and one relevant foreign language is assumed.

90
16:127 Intellectual History of the

17th Century 3 a.h.

Effects of the Reformation upon religious thought, of the rise of scientific thought and practice as a branch of philosophy, 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 the 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.

16:142 History of East Central Europe to 1800 2 or 3 a.h.

Problems in political, economic, 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, economic, and cultural developments in the Kievan, Muscovite, and early imperial periods.

Modern Europe

16:138 History of France, 1815 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 1815 to present. Prerequisite, junior or senior standing.

16:139 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, 1815-1890 3 a.h.

Main factors in European history, political, economic, social, and intellectual, from beginnings of the 19th century to 1890. 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, economic, and ideological developments in the history of the Polish and non-Germanic peoples of the Hapsburg Empire (Hungarians, Western, and Slavic Slavs). 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.

16:148 History of Russia, 1800 to Present 3 a.h.

Major political, economic, and ideological developments in Russia in the 19th and 20th centuries. Prerequisite, junior or senior standing.

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.

16:151 Modern England, 1660 to 1848 2 or 3 a.h.

Prerequisite, junior or senior standing.

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.

Prerequisite, junior or senior standing.

16:156 War and Society 3 a.h.

Collective ideologies, socialist parties, and labor organizations from the French Revolution to the Bolshevik Revolution. Prerequisite, junior or senior standing.

16:157 European Socialism and Labor Movements 3 a.h.

16:158 History of Marxist Theory in the West, 1840 to Present 3 a.h.

Movement of Capital, bourgeois criticism of the theory, Development of Marxism: late 19th century. Kentucky, Louisiana, Flaksho, Hilter's, Trotsky, Lenin, Bukharin, Gramsci. The modern German and French schools. (Herbertsm, Eren, Anvar, Marcuse, Leib, Sarte, and Althuse.)

16:159 British Empire and Commonwealth 3 a.h.

16:160 American Revolution and the evolution of colonial institutions to 1865. Prerequisite, junior or senior standing.

16:161 British Empire* 3 a.h.

16:162 The American Revolutionary Period, 1740-1780 3 a.h.

Political and military history of the colonies, 1712-1776, imperial expansion, creation of the national system and adjustment of government and politics to the social and economic conditions of the new nation.

91
16:163 United States in the Middle Period, 1715 to 1840 3 h.a.
Development of the economy, society, and culture, 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.a.
Conflict of nationalism and sectionalism culminating in the Civil War and Reconstruction.

16:165 Recent American History, 1877 to 1920 3 h.a.
Emergence of industrial and urban America. Social and political change in the 19th century: the Great Depression, World War I and World War II, the 1920s. Prerequisite, junior or senior standing.

16:166 Recent American History, 1920 to Present 3 h.a.
United States since World War I. Social and political changes in the 1920s; the Great Depression and World War II; the Cold War, the "Cold War," the "Cold War," and other themes of the 1960s and 1970s. Prerequisite, junior or senior standing.

16:168 The Contemporary U.S., 1940- to Present 3 h.a.

16:169 The Revolution Generation 3 h.a.
How the American Revolution did (and did not) promote change in political, governmental, economic, and social life. Some development into the 18th century. Prerequisite, junior or senior standing.

16:170 The Northeast, 1711 to 1850 2 or 3 h.a.
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.a.
The challenges of "free land": expansion, territorial systems, Indian affairs, migration, communications, economic growth. Prerequisite, junior or senior standing.

16:172 The Frontier in American History 3 h.a.
Patterns 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.a.
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 protective factors. Prerequisite, junior or senior standing.

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 conflict in a concentrated economy. Prerequisite, junior or senior standing.

16:175 American Foreign Relations, 1775 to 1890 3 h.a.
Ideas, economic interests, and political considerations affecting the foreign policy of the United States, with emphasis on the diplomatic relations of American foreign policy toward Europe, Latin America, the Pacific Islands, and Western Asia. The historical development of isolationism, territorial and commercial expansion, the Monroe Doctrine, neutrality, and diplomacy during the Revolutionary and Civil War. Prerequisite, junior or senior standing.

16:176 American Foreign Relations, 1890 to Present 3 h.a.
Development of America as a great world power; overseas expansion and imperialism; the balance of power, international organization, the peace movement and military preparedness, moral liberalism, 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, 1630 to 1865 3 h.a.
Since 1865 3 h.a.
Prerequisite, consent of instructor.

16:181 History of Jews 3 h.a.
Geology and climatology, archeology and Indian. French discovery and exploration; Spanish land grants and their effects, the Mexican American War, the Civil War, emphasizing the constitutional and political phases. Prerequisite, junior or senior standing.

16:184 History of Jews 3 h.a.
Transportation and communication, agriculture and industry, journalism, theater and literature, music and drama, foreign and group settlements, and the religious, educational, social, and political history from pioneer days to the present.

16:186 Puritanism in the Shaping of 3 h.a.
A study of "the last representatives of the medieval ambient in colonial America.

Characteristics which define the peculiar genius of institutions of the United States.

16:197 Afro-American History, 1619 to 1860 3 h.a.
Readings in selected aspects of Afro-American history with emphasis on the operation of slavery as a social system. Prerequisite, consent of instructor.

16:198 Afro-American History, 1860 to Present 3 h.a.
A continuation of 16:197, with emphasis on the formation of the ghettos and its operation as a social system. Prerequisite, consent of instructor.

16:199 The Religious and Democratic Traditions of the United States 3 h.a.
Historical examination of what is commonly called "the church-state disentanglement," and an analysis of the concepts of religious liberty and the separation of religion from the state. May be taken by non-majors.

Latin American History
16:153 History of Latin America 3 h.a.
Survey of 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.a.
Political, economic, and social history of Latin American republics in 18th and 19th centuries.

16:185 Latin America in the Atlantic World: 1760 to 1850 2 or 3 h.a.
Globalism, institutional modernization under the Bourbons, revolutions for independence, and liberal reform in Latin America, studied comparatively within a
11.18 Modern Mexico 2 or 3 s.h.
Medieval Revolution of the 30th century and its relationship to the modern pattern. Prerequisite: junior or senior standing.

Far Eastern History
16.191 History of East Asia to ca. 1800 3 s.h.
East Asia from beginning until the early 19th century and the area connected with Chinese and Japanese civilizations. Emphasis on development of political institutions and cultural traditions. Not open to freshmen. Same as Oriental Studies 35.171.

16.191 History of Modern East Asia* 3 s.h.
Continuation of 16.191 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 Oriental Studies 35.172.

16.193 History of China to ca. 1840 3 s.h.
Origin and development of Chinese civilization through the early 19th century. Emphasis on political, economic, and social trends. Prerequisite: junior or senior standing. Same as Oriental Studies 35.353.

16.194 History of Modern China* 3 s.h.
Political and social development of China, 1840 to present. Emphasis on Western impact and Chinese response. Prerequisite, 16.193 or equivalent; graduate students or permission of instructor.

16.195 History of Japan to 1867 3 s.h.
Japanese history from the beginning through the Tokugawa period. Emphasis on the development of the feudal system, culture, and economic growth. Prerequisite, junior or senior standing. Same as Oriental Studies 35.173.

16.196 History of Modern Japan* 3 s.h.
Continuation of 16.195 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 Oriental Studies 35.176.

Primarily for Graduates
16.211 Seminar: Medieval Society and Institutions of Continental Europe, 1000-1200 cr.arr.
16.212 Seminar: Medieval Society and Institutions* cr.arr.
16.215 Readings in Reformation History cr.arr.
16.217 Seminar: The Reformation cr.arr.
16.217 Readings in Early Modern History 3 s.h.
16.221 Seminar: Early Modern Europe 3 s.h.
16.222 Seminar: Early Modern Europe* 3 s.h.
16.223 Seminar: 17th and 18th Centuries cr.arr.
16.227 Readings in Comparative Topics in European History, 1500-1700 3 s.h.
16.228 Readings in Early Central and Eastern European History, 15th to Mid-18th Centuries cr.arr.

Colloquium: Comparative Studies on political and social trends as well as rapid development of the Tsarist Empire, Prussia, Polish-Lithuanian commonwealth, Rus-
17.10 Principles of Nutrition 3 a.h.
Relation of nutrition to health; food preferences, functions of nutrients 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. Prerequisite: 17.12.

17.133 Textile Design I 3 a.h.
Creative problems in fabric design: block printing, rug hooking, silk screening, stippling, and batik. Lecture and studio projects. Prerequisites: Art 126 and 128 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 socioeconomic 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.

17.168 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 costumes. Prerequisite: Art 126, 128, or consent of instructor.

17.110 Advanced Clothing 3 a.h.
Materials, designs, and construction techniques used in tailored garments. Prerequisites: 17.11, 2.100. 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 605, 2, or consent of instructor.

17.112 Textile Design II 3 a.h.
Design and execution of handwoven fabrics through experiment with color, texture, and basic weave. Prerequisites: 17.12 and Art 126 or consent of instructor.

17.114 Interior Decoration 3 a.h.
Assessment and application of functional design problems for residential interiors. Prerequisites: Art 126, 128, and 121.

17.115 Directed Studies in Related Art 0-3 a.h.
Advanced study of interior or textile design. Prerequisites: 17.114 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 therapy. Prerequisite: Biochemistry 90.10 or 921; corequisite: Physiology 72.15.

17.120 Advanced Nutrition 3 a.h.
Continuation of principles of human nutrition. Introduction to nutrition research. Prerequisites: 17.110 or 119. Physiology 72.13, Biochemistry 90.11 or consent of instructor.

17.121 Seminar on Home Economics 2 to 4 a.h.
Exploration covering professional scope of home economics, its scope, development, philosophy. Current factors influencing practical work in higher education. Emphasis on good research and practice.

17.122 Seminar on 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: 17.10 or 11 and 17.10 or 112. Economics 812 recommended.

17.125 Institution Management I 3 a.h.
Quantity food production and service. Equipment selection, maintenance, and layout. Observation and practical work in the women's residence halls and University schools. Prerequisite: 17.110 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. Prerequisites: 17.112 or consent of instructor.

17.127 Diet Therapy 3 a.h.
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 90.11 or consent of instructor.

17.129 Workshop: Current Topics in Food and Nutrition 3 a.h.
Recent developments in food and nutrition with discussion of the scientific principles on which they are based. Summer session only.

17.130 Physical Growth and Nutrition 2 a.h.
Physical growth and nutritional requirements from infancy to adulthood.

17.131 Textile Economics 3 a.h.
Economics and industrial history of textiles. Current developments and problems in domestic production and marketing. Prerequisite: Economics 610 or consent of instructor.

17.132 Family Economics 3 a.h.
Principles of family financial planning. Prerequisite: Economics 610 or consent of instructor.

17.134 Advanced Textiles 3 a.h.
Textile finishes, dyes, and detergents: their classification, structure, and methods of application. Laboratory quantitative analysis of textile fibers. Uses of textile testing equipment in evaluation of the physical and chemical properties of fibers, yarns, and fabrics. Prerequisites: 17.14.

17.135 Directed Studies in Textiles 0-3 a.h.
Prerequisites, senior or graduate standing and consent of instructor.

17.136 Material and Methods in Family Life Education 3 a.h.
Principles of family life education. Resources and methods of presenting family life education materials in grade school, elementary school, and middle school. Same as Education 75.226. Not open to first semester juniors.
17:164 Methods in Home Economics Education 3 s.h.
Philosophy, materials, and methods in high school home economics. Same as Education 17:163.

17:165 Methods for Instructional Problems in Food and Nutrition 3 s.h.
Use of current research findings in food and nutrition. Primarily for the secondary teacher.

17:166 Honors Problems in Home Economics 2 to 4 s.h.
Depending on area of interest, this may be a research project or creative work. Open to both majors and non-majors.

17:167 Directed Studies in Family Development cr.arr.
Individual problems for advanced undergraduates and graduates. Prerequisites, consent of instructor.

17:168 Nutrition Work with Children 3 s.h.
Essentials of effective nutrition education with children. Problems of child nutrition; approaches and techniques currently used. Prerequisite, 715B or consent of instructor. Same as Education 17:102.

17:169 Directed Studies in Food and Nutrition cr.arr.
Prerequisites, senior or graduate standing and consent of instructor.

17:183 Workshop: Advanced Textile Design 3 or 4 s.h.
Summer session only.

17:184 Special Course: Costume Design, Interiors, and Home Architecture 3 s.h.
Summer session only.

17:190 Marriage and Family Interaction 3 s.h.
Contemporary American family. Study of mate selection, marriage, and family interaction. Prerequisites: Psychology 261, Sociology 262.

17:191 Seminar: Parent-Child Relationships I 3 s.h.
Synthesis and application of research in child rearing and parent-child relations. Prerequisite, senior standing.

17:192 Seminar: Parent-Child Relationships II 3 s.h.
Synthesis and application of research related to parent-child relations in exceptional family situations.

Primarily for Graduates 17:200 Seminar: Home Economics in Higher Education 3 or 3 s.h.
History and philosophy of home economics, national, and international organizations. Analysis of home economics curricula in degree-granting institutions. Prerequisites, graduate standing and consent of instructor.

17:210 Workshop: Home Economics Education 3 s.h.
Exploration of special needs of young adolescents. Family development related to mentally retarded and culturally deprived. Sponsored jointly by the Department of Home Economics and Division of Special Education. Summer session only.

17:213 Seminar: Related Art and Family Housing 2 s.h.
History and philosophy of interior design, textile design, and home-making. Readings, reports, and discussions of current literature.

17:215 Research: Problems in Related Art cr.arr.
Individual research problems for advanced students. Prerequisite or corequisite, 17:221.

17:221 Seminar: Home Economics Research cr.arr.
Methods and techniques of research in home economics and closely allied fields. Prerequisite, consent of instructor.

17:223 Seminar: Readings in Nutrition 2 s.h.
Current review of current research literature in nutrition. Prerequisite, 71230 or equivalent.

17:223 Carbohydrates in Food 3 s.h.
Physical and chemical properties of carbohydrates in food and their behavior under conditions encountered in food processing and storage. Prerequisites, Biochemistry 30:152, or 153 or consent of instructor.

17:224 Lipids in Food 3 s.h.
Physical and chemical properties of lipids in food; their behavior under conditions encountered in food processing and storage. Prerequisites, Biochemistry 30:151 or 153 or consent of instructor.

17:227 Animal Research 2 to 4 s.h.
Methods and techniques of research in nutrition using small animals. Prerequisite, 17:130 or consent of instructor.

17:228 Seminar: Food cr.arr.
Readings, reports, and discussion of current literature in food sciences. May be repeated for credit.

17:254 Foundations of Fashion 4 s.h.
Anthropological approaches to fashion and analysis of social, economic, and psychological forces as determinants of fashion in modern times. Summer session only.

17:259 The Role of the Federal Government in the Textiles and Clothing Industry 4 s.h.
Analysis of the legislation, function, and programs of departments and agencies of the federal government in relation to the textile and clothing industry. Summer session only.

17:261 Textile Analysis 3 s.h.
Comparative analysis of the construction, care of care, and workability of finished textile fabrics. Reading in current developments of textiles. Prerequisite, 17:210.

17:262 Research: Problems in Textiles and Clothing cr.arr.
Individual research problems of advanced students. Prerequisite or corequisite, 17:227.

17:267 Research: Problems in Family Development cr.arr.
Individual research problems of advanced students. Prerequisite or corequisite, 17:227.

17:299 Research: Problems in Food and Nutrition cr.arr.
Individual research problems of advanced students. Prerequisite or corequisite, 17:299.

17:359 Thesis (Master's Candidates) cr.arr.
17:359 Thesis Seminar (Master's Candidates) 1 s.h.
Limited to candidates for a degree requiring a thesis. Presentation of original research. Prerequisite, 17:280 or consent of instructor.

17:391 Seminar: Family Dynamics cr.arr.
Reading and discussion of current literature in family development.
HOSPITAL AND HEALTH ADMINISTRATION

HOSPITAL AND HEALTH ADMINISTRATION

Director of Program, Gerhard Hartman
Office, 511 Westlawn

The Graduate Program in Hospital and Health Administration leads to the Master of Arts or Doctor of Philosophy degrees. As hospital and health administration embraces many fields of academic preparation, the student has primary identification with the College of Medicine and the Graduate College, but utilizes the facilities and resources of the entire University.

There are many significant phases of hospital and health administration which present problems profoundly different 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 probably for these reasons that this program was originally instigated.

Programs of Study

Master of Arts. The Master of Arts program consists of a minimum of 50 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 postgraduate assistantship in a selected hospital or health institution under the direction of a qualified administrator.

While the curriculum stresses the conceptual unity and generic nature of the administrative decision-making process, the courses offered by the programs are designed to acquaint the student with the institutional environment of contemporary hospital and health organization. Administrative problems which are unique to hospital administration are stressed. Techniques of motivating people, organization, and planning are considered, as well as the advent of administrative theory as it is related to the provision of hospital care and medical care in general.

During the first academic year the curriculum is designed to assist the student in developing a frame of reference which will enable him to relate his past experiences and his undergraduate education to the specialized program of graduate study in the hospital and health services. The case study and role-playing approach are used in the seminar setting, and subject matter is drawn from the student's experiences. The seminars are planned in terms of situations which typify health-care institutions.

In the second year of the program the student is developing an awareness of the nature of contemporary health-care institutions in a meaningful perspective, emphasizing the basis upon the history and evolution of hospital services and health organization. Additionally, trends and development in the medical field are considered.

During each semester the student is expected to complete major written projects as well as to defend his arguments orally.

During the second academic year, greater stress is placed upon individual study. Plans of study are developed in order to broaden and deepen the student's understanding of the planning of health services and medical care administration, as well as to strengthen his understanding of the social science research techniques.

The thesis is required of the major of the master's thesis. The research for and the writing of the thesis is undertaken during the third and fourth semesters. During the preparation of the thesis the student is responsible for the selection of an interdisciplinary faculty committee, has available the total resources of the University. These include the University Libraries and the Computer Center.

Since the curriculum in hospital and health administration is based on the concept of the generic nature of administration, the courses have been developed, for course, for the interdisciplinary approach. In addition to the study in hospital and health administration, students' programs include courses from the departments of sociology, political science, philosophy, business administration, journalism, education, psychology, and engineering. Additionally, master's candidates are expected to meet a 3-semester-hour minimum in statistics.

Upon satisfactory completion of the two-year on-campus academic program and graduation, each student will be placed with a hospital or health organization as a postgraduate assistant in the capacity of an executive or administrative trainee. The academic representation on page 13 of the program booklet obtained from the department office illustrates the progression of the graduate's continued development.

Doctor of Philosophy. The academic program at the doctoral level is highly individualized. Students admitted to this program will necessarily be motivated to develop the advanced aspects of hospital and health administration with the intention of teaching and engaging in research.

Students may pursue doctoral study directly after completion of the bachelor's degree or the master's degree, whether in hospital administration or another appropriate field. Students have been accepted with and without previous 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 examination may be combined with the comprehensive examination 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 undergraduate academic record, personal qualifications, experience, and their desire and ability 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 program. Students who have been graduated from colleges accredited by agencies which are required to take the Graduate Record Examination may be eligible.

There is no specification of major fields of study that must be included in the undergraduate level prior to undertaking this program of graduate study.

First year: A base of study in the liberal arts and sciences and introduction to certain phases of business administration is required. In addition, three courses in 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 Amstutz, John H. Sabom,* Conway L. Conley, Richard Owen, Fred H. Graham, Dennis D. Feininger.

*On leave.

COURSE DESCRIPTIONS

40:101 Fundamentals of the
Modern Hospital 2 or 3 hrs.
Criminization to techniques and operations 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

98
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 cr.3 h.s.
Lectures and discussions to orient students to research problems peculiar to medical care administration.
80:108 Advanced Hospital and Health Administration 2 or 3 cr.
Interpretation and utilization of subject matter in hospital accounting, statistics, personnel relations, personnel management, and community relations.
80:107 Seminar: Problems of Administrative Behavior in the Modern Health Organization 2 cr.
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 cr.
Continuation of 80:107.
80:109 Current Developments in Hospital and Health Administration 2 cr.
Examination of recent controversies, timely problem areas, and approaches to hospital and health-care ad-
ministration are emphasized. Seminars, lectures, and field trips.
80:111 Thesis: Hospital and Health Administration cr.arr. Original study, review, and written presentation of a problem area in health-care administration.
80:120 Labor Relations in Health Care Facilities 3 cr.
Health manpower structure, labor law for health-care facilities, conflict management, motivational and organiza-
tional theory of labor in the health-care area.
80:122 Financial Management of Health-Care Organizations 3 cr.
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 cr.
Evolution of governmental role in the health-care system.
80:156 Contemporary Health-Issues 3 cr.
Perspectives in health and medical care are presented with special emphasis on community hospitals and the evolving roles of hospital trustees, trustees, adminis-
trators, and others providing patient care services within the hospital setting.
80:202 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 op-
eration 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.
80:209 Clinical Education in Hospital and Health Administration cr.arr.
Continuation of 80:208.
80:306 Medical Information for Hospital and Health Administrators 3 cr.
Restricted to selected graduate students in hospital ad-
ministration and from related disciplines such as business ad-
ministration, 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 communicator 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 deeply critical approach to the institutions of his society, including especially the institutions of mass communica-
tion. 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 re-
search 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 pro-
gram should have the broadest 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, and 184. 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 183, 184, 186, and 188. General's journalism majors are those students re-
tered in fields of journalism and mass communication in other than journalism, advertising, or high school journalism. Journalism majors or students may take courses 183, 184, 186, and 188 only if they complete all of the required courses in the respective semesters and have the approval of the student's advisor. General journalism students have a total of 24 re-
quired journalism semester hours; journalism majors have a total of 27 required journalism semester hours and 11 semester hours in Business Administration, and high school journalism teaching students have a total of 24 required journalism semester hours.
99
Graduate Study

Master of Arts in Journalism. The School of Journalism provides a Master of Arts program which combines graduate courses in journalism with opportunities for research, specialization, and the development of skills and abilities in the field of journalism.

The program emphasizes the development of practical skills in journalism, with a variety of courses in writing, editing, broadcasting, photography, and other areas of journalism. Students are encouraged to develop a strong understanding of the principles of journalism and to apply these principles in their work.

The program requires a total of 36 hours of coursework, including a thesis or a project. The thesis must be a substantial piece of research, and the project must be a significant piece of work that demonstrates the student's ability to apply the principles of journalism in a practical setting.

For more information, please contact the School of Journalism.

STAFF


Majors: Charles F. Cremin, Richard P. Jones, Brent R. Ruben.

COURSE DESCRIPTIONS

19:1 Communication Core and
Colloquium 1 3 sh.


19:2 Communication System Simulation
and Technology Institute I 3 sh.

Intensive experimental study of processes involved in mass communication. The study of the use of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society. The role of mass communication in society.

19:3 Communication Core and
Colloquium II 3 sh.

The message: function and design of mass 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 the legal environment of communication. Colloquia: distinguished speakers on on and off campus. Required for all sequences. Prerequisite: 19:1, corequisites: 19:3. Second semester.

19:4 Communication System Simulation
and Technology Institute II 3 sh.


19:5 Communication Core and
Colloquium III 3 sh.

The mass media: a communication systems approach; the work of the mass media and the public; the role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society. The role of the media in society.

19:6 Communication System Simulation
and Technology Institute III 3 sh.

Intensive experimental study of processes involved in interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication. The study of interpersonal, intrapersonal, and mass communication.
19:39 Senior Seminar  2 s.h.
Reports and discussions concerning major philosophical and technical aspects of mass communication, with which professional mass communicators must deal. Nonmajors wishing to enroll must consult instructor. All sessions.

For Undergraduates and Graduates

19:105 Magazine Article Writing  2 s.h.
Basic writing. Preparation of articles aimed at magazine markets. Practical analysis of markets and of effective magazine writing style. 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 publication. Practical work on school newspaper. Second semester. All sessions. Same as Education 75:113.

19:114 Newspapers in the Classrooms of a Free Society  0 or 2 s.h.
Same as Education 75:114.

19:115 Typography  2 s.h.
Fundamentals of printing procedures: type, its production, design, differentiation, and use; composition and copyfitting: layout, paper, machinery for typesetting and printing; reproduction processes. Critical standards. Independent study and laboratory. Prerequisite: consent of instructor. All sessions.

19:118 High School Advisers Workshop  0 or 1 s.h.
Same as Education 75:355.

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 68:135. Prerequisite: 68:51 or consent of instructor. All sessions.

19:120 Advertising Theory and Planning  3 s.h.
Advertising as a promotional force with emphasis on the theory, planning, and resulting strategic and tactical decisions. Prerequisites: 120 or Business Administration 68:137. All sessions.

19:123 Advertising Communication 3 s.h.
Theories of communication and human behavior as they apply to advertising. Laboratory situations are designed to give the student creative experiences. Prerequisites: 120 or Business Administration 68:137. 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: 120 or Business Administration 68:137. 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. Emphasis in photography in the context of photojournalism. 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 opportunities. Prerequisite: consent of instructor. Second semester.

19:131 Photography Workshop cr.arr.
Advanced credit and special reporting. Open to journalism majors only. Individual instruction in planning and executing photography assignments, evaluation of student work. Laboratory may include work on campus publica-

19:132 Introduction to Broadcasting  3 s.h.
Same as Speech 26:109.

19:133 Practicum in Human Communication  3 s.h.
Seminar focusing on interpersonal and intrapersonal and mass communication. Opportunity to participate in and design individual and group communication experiences which illuminate communication concepts. Extensive varied analytic approaches which may be useful in understanding the behaviors observed. Prerequisite, consent of instructor. All sessions.

19:134 Communication Systems Design I to 4 s.h.
Reassembling real life systems and then attempting to model these systems in order to determine which elements varied in what work can produce beneficial changes in the real life system. Prerequisite, consent of instructor. All sessions.

19:137 Radio-Television News  3 s.h.
Reporting, writing, editing, and presenting news for radio and television. Selection of broadcast news to躯 ed 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 WUPN newsroom. Covering basic 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. Prerequisites: 137 and consent of instructor. All sessions.

19:141 Law of Mass Communication  2 s.h.
Laws which govern 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 utilized in the process of making advertising decisions. Prerequisite: 130 or Business Administration 68:137.

19:151 Advertising Sales and Promotion cr.arr.
Prerequisite: 220 or Business Administration 68:137.

19:155 Journalism Practice cr.arr.
Internship opportunities for students working for or ex-
pecting to work for local newspapers, magazines, radio and television stations, freelancing, etc., during the sessions enrolled. Provides a forum for discussion of student work with review and analysis by appropriate specialists. Course may be repeated for a total of 6 semester hours. Prerequisites: consent of instructor. Journalism majors must have completed 190, except for summer session enrollment. Nonmajors must have completed rhetoric requirements. All sessions.

19:159 Mass Media and the Great Issues  2 or 3 s.h.
Major concern with citizen analysis of major current problems and impact of the mass media on perception of problem coverage, social planning, and social change. Open to freshmen and to nonmajors. Summer sessions.

19:165 Communication of Social Issues  2 s.h.
Critical analysis and review of performance of television media. Development of criteria for judging. A study of
19:166 Seminar: Special Topics in Journalism 3 a.h.
Prerequisites, junior standing or above and consent of instructor. First semester and summer session.

19:168 Seminar: Special Topics in Communication 2 a.h.
Continuation of 19:166. Prerequisite, consent of instructor. Second semester.

19:170 History of Books and Printing 2 a.h.
Recent survey of books and related material, their physical, technical, and cultural qualities, from primitive two-dimensional systems to contemporary and possible future developments. Second semester.

19:171 History of Mass Communication 3 a.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 a.h.
Traditional and contemporary practices and standards in editing, illustration, layout, pages, printing, binding, distribution of books, magazines, and newspapers. First semester.

19:173 Cinematography Techniques 2 a.h.
Same as Speech 36:153. Preregistration advised.

19:174 Cinematography Production 3 a.h.
Same as Speech 36:158.

19:175 Fundamentals of Public Relations 2 or 3 a.h.
Current public relations practices as related to business, institutions, and associations. Utilization of research results and evaluation of procedures. Examination of mass and media selection. Emphasis on position of public relations practice in society. First semester. All semesters.

19:176 Case Studies in Public Relations 2 or 3 a.h.
Public relations problems of business, institutions, and associations with evaluation of actual and/or proposed solutions. Examination in depth of selected case studies of significance. Prerequisite, 19:175. Second semester.

19:177 Comparative Foreign Communication Systems 3 a.h.
Contemporary 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 cr.arr.
Research and extended readings to fit the special needs and interests of the student. May be taken up to 3 credits in good standing with permission of instructor. All sessions.

19:181 Advanced Television Production 3 a.h.
Same as Speech 36:193.

19:183 Current Magazine Practice 3 a.h.
Role of the magazine in American today; organization of publication and operations; analysis of editorial and advertising content; identifying mass and group audiences. First semester. Prerequisite, junior standing.

19:187 Picture Editing 3 a.h.

19:200 Introduction to Master's Study 2 a.h.
Prerequisites and methods of scholarship, good writing, journalism education, the field of journalism. All sessions.

19:201 Master's Seminar 2 a.h.
Communication theory, research methods, and research design for master students. All sessions.

19:305 Practicum for Master's Candidates 3 a.h.
Professional laboratory practice. Certification 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.

Ethical problems affecting news gathering, writing, and publication. Second semester.

Comprehensive training in research and preparation of articles on history of mass communications from general study to final publication. The historical method in communication research. Prerequisites, 19:71 or equivalent. Second semester.

19:218 Communication in Authoritarian Societies 2 a.h.
Contemporary comparative analysis of the concept, theory, practice, 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 a.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 on communication in national development. Second semester.

19:220 Communication Systems of the Western Democracies 2 a.h.
Contemporary comparative analysis of the concept, theory, practice, function, 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 a.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; language and literacy. Second semester. Prerequisite, consent of instructor.

Advanced study of advertising, stressing research and theory. Prerequisite, graduate standing and consent of instructor.

Advanced study and research in theory and problems in political, economic, and cultural communication. Concepts, values, structures, functions, performance, and effect within the context of social, economic, and political environments, cultural diff...
11:30 A.M. - 1:30 P.M. 

LECTURES

108:107 European Drama in Translation 2 s.h.
Same as English 8146

108:111 Yiddish Literature in Translation 3 s.h.
Same as German 13:119. Prerequisites, Junior standing and consent of instructor.

108:450 Seminar: Modern Languages 3 s.h.
Same as English 84:50

For other course offerings in literature for the non-specialist, refer to catalog sections of individual departments and programs which are members of the School of Letters.

American Civilization

China, China and Asia Studies

Classics

Comparative Literature

English

French and Italian

German

Linguistics

Russian

Spanish and Portuguese

Speech and Dramatic Art

LIBRARY SCIENCE

Director of School, Frederick Wesman

Office, 802 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 15-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 1,500,000 volumes. There are over 500,000 periodicals and over 5,000 publications. The library science librarians are 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 the use of graduate students and library scientists. They have access to chapters of the American Library Association, the American Association of School Librarians, the American Association of College Librarians, and the American Library Association.

The Herbert Hoover Presidential Library in West, Iowa, reflects the program.

Undergraduate Study

There is no undergraduate major in library science. Upperclass undergraduates may enroll in the four library science core courses: 11:316 Introduction to Library Science, 11:316 History of Libraries and Librarianship as well as 11:316 Children's Literature, 11:316 History of Children's Books, and 11:336 Library Science 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...
1. Have a personal interview with the director of the school.
2. Hold a bachelor's degree from an accredited college or university with a grade-point average of at least 3.0.
3. Possess a reading knowledge of at least one foreign language, as evidenced by completion of two semester (15-16 hours) of college level modern language or by passing a language proficiency examination.
4. Show professional promise through letters of recommendation.
5. Submit scores from the Graduate Record Examination Aptitude Test.

The ability to fill the facilities and staff of the School of Library Science will not permit the enrollment of every applicant who meets the formal examination requirements listed above. The applicant's general suitability for library science is an important consideration. Priority will be given to recent college graduates with a strong liberal arts background who desire to enroll as full-time students. While the school has no age limitations, persons over 40 will be given careful consideration and generally will be admitted to the degree program only if experience and background indicate unusual promise. Note: Prospective students should arrange for their personal interview with the school's director before proceeding with any of the other admission requirements. No one can be admitted until his language requirements are completed and his GRE scores are received. For further information about admission procedures see Graduate College.

Degree requirements: The M.A. program in the School of Library Science requires a minimum of 33 semester hours of graduate credit on which a grade-point average of 3.0 or above must be maintained. In addition, students must pass a written comprehensive examination. M.A. candidates are required to choose their coursework in the following way:

1. Required courses (18 semester hours):
   b. One course from the following bibliographic area:
      i. 21:231 The Public Library, 21:232 The College and University Library, 21:233 Bibliography and Media Center Administration.

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 curricular science, business, industrial, urban and regional planning, municipal government, etc.

Admission requirements: Normally the program requires two semesters and one summer of residence study; or for the student of four summer sessions, 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 students, the nonthesis program with the additional coursework is recommended. Students with considerable library experience, strong undergraduate work in library science, and strong standing in other areas in which they are especially interested may elect to write a thesis, with approval of the director.

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 towards transfer and correspondence credits than the M.A. program.

Admission 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 M.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 sessions.

Requirements for certification: The certification program requires completion of a course program in which a grade-point average of 2.25 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 towards the requirements for certification provided such credits have relevance to the certification program. In addition, the student must hold an approved secondary school teaching certificate as specified in the certification program. All candidates for certification must complete the following course requirements:

1. Required courses (18 semester hours):
   b. Elective courses (13 semester hours):


Financial Assistance

The School of Library Science awards several tuition scholarships each year to new and continuing students. A limited number of fellowships is available to eligible Title II participants in the Educational Assistance Act. These fellowships provide $2,000 plus tuition. Prospective students will be notified of deadlines and procedures prior to March 1. The school offers assistance to students in the form of employment in area libraries. (See Scholarships and Loans.)

STAFF

Professors: Frederick Wernick, Associate Professor: Leanne L. Newcomer.
Assistant Professor: Emma E. Ridland, Carl F. Ogren.
Instructor: Andrew M. Koenig.

Affiliated Staff: Dale M. Berry, Robert Carlston, William J. Curtis, Leslie W. Dunlap.

COURSE DESCRIPTIONS

21:123 Children's Literature 3 s.h.
Same as Education: 21:123.
21:124 History of Children's Books 3 s.h.
The development of a literature for children traced from its origin to the present time. Adequacy of adult literatures for children in general, with special reference to the examination of the classics of the past. Prerequisite: 21:123.
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 and Young Adults 3 s.h.

Roles, problems, and needs of library service in the elementary and secondary schools and of library with children and young adults in the public library. Prerequisite, 21:332.

21:341 Bibliography of the Humanities 3 s.h.

Special reference works and selection aids in each of the major subject fields.Emphasis on general reference works and materials and on material selected for specialization. Special emphasis on multivolume resources, serials, periodicals, and other closely related areas. Prerequisite, 21:340.

21:342 Bibliography of the Social Sciences 3 s.h.

Special reference works and selection aids in anthropology, economics, education, geography, history, political science, psychology, and other closely related areas. Prerequisite, 21:340.

21:343 Bibliography of the Sciences 3 s.h.

Special reference works and selection aids in each major subject field. Emphasis on building and maintaining collections and on providing information in the field. Periodical and serial literature and its use and control through abstracts and indexes. Prerequisite, 21:340.

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, 21:355.

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 other types of publications, and to the publication and use of reference services. Prerequisite, 21:351.

21:352 Advanced Cataloging 3 s.h.

Advanced problems in the Library of Congress classification and subject heading system; corporate entry; serials Cataloging and classification of special types of materials. Prerequisite, 21:351.

21:353 Research Problems in Problems of a Cataloging Department 3 s.h.

21:354 Advanced Bibliography 3 s.h.

National and trade bibliographies of the world, with concentration on those of the United States. Great Britain, France, Germany, and Russia, considered from the viewpoint and subject bibliography viewpoint. Prerequisite, 21:353.

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 academic libraries. Prerequisites, 21:351.

21:361 Problems in Public Librarianship 3 s.h.


21:362 School Media Center Problems 3 s.h.

Seminar in the analysis of special problems encountered
Linguistics

Chairman of Department, Robert Howren
Office, 574 English-Philosophy Building

Linguistics is concerned with the scientific analysis of the structure and the historical development of languages and with the formulation of a general theory of language. The purpose 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 linguistics, or of those who wish to enter fields in which a knowledge of linguistics is useful. Both the Master of Arts in Linguistics and the Graduate Certificate in Linguistics are designed to satisfy the needs of students who may ultimately pursue careers in fields other than linguistics.

The program of study leading to the Ph.D. in English with major in English linguistics combines a thorough foundation in linguistic theory and method of study and research in the history and structure of the English language and some study of related languages in cognate families. Normally the holder of such a degree will function as a career of teaching and research in the field of English linguistics at the university English department.

The University M.A. in Linguistics and Ph.D. in English with major in English linguistics provides a thorough foundation in linguistic theory and method of study and research in the history and structure of the English language and some study of related languages in cognate families. Normally the holder of such a degree will function as a career of teaching and research in the field of English linguistics at the university English department.

Admission

Admission to a program for the B.A. or the M.A. in Linguistics is by approval of the director of the department. Interested students should consult with the dean of the college concerning the program. Students contemplating a major in linguistics are encouraged to take a foreign language in their freshman year. Students who are majoring in areas other than linguistics but who are interested in linguistics in their programs should consult with the director of the program. In special cases approval is required. This, 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 advisors: Professors John Helms (Anthropology) and Robert Howren (Linguistics).

Undergraduate major requirements. The course of study in the B.A. degree in linguistics consists of an intensive 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 the senior year, the student is required to enroll in the one-semester-hour course 212:300 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 defined as 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 Department of English will arrange for the examination. The exam shall consist of a series of tasks designed to provide a broad test of the candidate's knowledge of the language of the species. Normally the candidate will be given the time necessary to prepare for the examination. The exam shall be given in an hour. Normally the student with strong high school preparation in that foreign language would be able to meet this requirement in a shorter time than the student with little or no preparation.

Linguistics (3 semester hours)

Introduction to Linguistics 3 s.

Archaic and Apatheus Phonetics 3 s.

Linguistic Analysis I 3 s.

Linguistic Analysis II 3 s.

The history or structure of a particular language (e.g., History of English, Structure of Modern Greek, German Phonology, etc.) 3 s.

Linguistic Theory of Language 3 s.

One additional course in Linguistics 3 s.

Related courses (26 semester hours)

1. Courses specifically required.

English, Exhibit American English, General Anthropology or culture, Anthropology of Language, and Culture 2 s.

2. An approved sequence of courses in related fields (the choice of related courses to be worked out in consultation with student's advisor)

A Master of Arts Degree in Linguistics.

Language. A reasonable proficiency in one language (the subject of the appropriate language department of the University) other than the student's native language is required for candidacy for the M.A. in Linguistics.

A grade-point average of 2.00 and a grade-point average of 3.00 usually required for admission to the M.A. program. As a minimum a total of at least 27 semester hours of coursework in linguistics and related courses beyond the requirements of the department 212:300 Introduction to Graduate Study in Linguistics (3 semester hours), two courses in syntax (3 semester hours), and two courses in phonology or comparative linguistics (6 semester hours). Of the required 27 semester hours, 8 may be earned in foreign languages.

Linguistics (24 semester hours)

Ordinarily, an essay of 20 to 50 pages treating some topic in descriptive, historical, or comparative linguistics (3 semester hours).

Comprehensive examination. The comprehensive examination is given in two parts, written and oral. The written examination is based chiefly on a reading list given the student at the beginning of his studies, and may be taken upon completion of the required coursework. The oral examination is more general in nature (although based on the comprehensive examination). It includes a defense of the thesis, and is considered the final examination for the degree.

106
Doctor of Philosophy in English with Major in English Linguistics

Courses

1. Linguistics
   110:315 Introduction to Graduate Study in Linguistics
   110:325 Introduction to Dialectology
   An approved sequence of courses in linguistic theory and analysis, including, each semester of residence, 102:336 Survey of Current Research in Linguistics (1 s.h.)

2. English Language
   105:320 Elementary Old English
   105:325 Middle English Languages and Literature
   105:330 The Structure of English
   105:380 History of British and American English
   105:385 The Teaching of English as a Foreign Language
   One semester of directed research in each of the following areas:
   (a) the structure of Modern English
   (b) the history of the English language
   (c) the period of the English language corresponding to the literary period which the student has elected for study, see 3.

3. Literature
   280:203 Beowulf
   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. Approved courses in some other Indo-European or related 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.).

Comprehensive 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 structure of Modern English (including American dia-
tece), (c) the history of the English language, and (d) the literature period elected. The oral examination will range over all these areas.

Qualifying examination should touch some topics in the history of English, in the structure of English as an independent language 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 competence in one or more "research tools" (another language, statistical, symbolic logic, etc.), pass a comprehensive ex-
amination in cultural anthropology, linguistics, and eth-
omelolinguistic theory and practice, pass a written dissertation, and a dissertation in linguistics required in the pro-
duced. The dissertation must be based on original research in an area of anthropology, linguistics and anthropology, or linguistic anthropology. Basic courses required in anthropology are 3 semester hours in the field of anthropological history, theory, or methods, Social Anthropology, 110:146, 3 sem-
minute hours of an additional course in cultural anthropol-
ology dealing in social institutions, and 3 semester hours of an ethnographic area course. Language and Culture 110:146/110:171, Field Methods in Rhinolinguistics, 110:270/ 110:280, and Rhinolinguistic Theory, 110:271/110:280, is required interdisciplinary courses. By student option to meet the requirements set by staff evaluation and counsel, the student shall take additional semester hours in cultural anthropology and cultural linguistics to complete a minimum of three years of graduate academic work.

All members of the theses group for the Ph.D. degree need not have taken an undergraduate major in either anthropological or linguistics. Unless a student has taken the undergraduate equivalent, Introduction to Graduate Study in Linguistics, 110:315, and General Anthropology, 112:101, 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. 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

Professors: Robert Hazen, John C. McCauley, John C. McCauley, William J. Paff

English Linguistics: Robert J. Wedahl, Edward Konstam, Matuso Suga

Instructor: Larry W. Martin, Joseph McHugh

Interdepartmental faculty: John W. Brown (Speech), Vincent J. Casablich (Classics), James F. Curtis (Speech Phonology and Audiology), Rudolf Demser (German), Arthur Plank (Computer Sciences), George Gerens (Phonetics), S. Stephen Hesdamp (Computer Sciences), Kenneth Mill (Speech Phonology and Audiology), Richard M. Ringe (American Research and Italian), Richard M. Ringe (German), Joseph Beaucage (Spanish and Portuguese).

COURSE DESCRIPTIONS

For Undergraduates and Graduates

103:10 English for Foreign Students

Training in spoken and written English for non-native speakers of English.

103:100 Introduction to Linguistics

A survey of topics in general linguistics. Same as English 830.

103:101 Introduction to Language and Communication

Methods and research in the field of linguistics and communication theory. Same as Speech 630.

103:110 Articulatory and Acoustic Phonetics

Articulatory and acoustical phonetic theory, practice in phonetic transcription. Same as English 855.

103:111 Linguistics: Introduction to Linguistics

Phonological theory: procedures for analyzing and describing the phonological structure of languages. Same as English 830. Prerequisite: 103:100 or equivalent.

103:112 Linguistics: Introduction to Linguistics

Principles and methods for analyzing and describing the phonological structure of languages. Same as English 857. Prerequisite: 103:100 or equivalent.

103:113 Linguistic Field Methods

Field collecting and collation of language data in the field; theory and practical problems; extensive practice in eliciting data from informants. Same as English 855. Prerequisites: 103:110, 111, 112.

103:114, 115 Introduction to Language and Linguistics

Data Processing: 3 s.h.

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 problems, conceptualizing an explicit procedure to handle the problem, embodying the procedure in a computer program, and getting the program to run accurately.

103:120 Historical and Comparative Linguistics

Principles of linguistic change, the comparative method and the genetic classification of languages; historical development, and language typology. Same as English 830. Prerequisite: 103:100 or equivalent.

107
103:260 Old Spanish I 3 s.h.
Same as Spanish 223.221.

103:261 Old Spanish II 3 s.h.
Same as Spanish 223.222.

103:270 Experimental Phonetics 3 s.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 surveyed and discussed. Prerequisite: Spanish 226.226, Spanish 226.227, or permission of instructor. 3 s.h.

103:271 Experimental Phonetics 3 s.h.
Continuation of 103:270, which is prerequisite. Same as Speech Pathology and Audiology 225.222.

103:272 Verbal Processes and Language Behavior 3 s.h.
Fundamental variables affecting acquisition, transfer, and retention of verbal behavior, including the role of language structure and language habits. Same as Psychology 225.223.

103:274 Introduction to Psycholinguistics 3 s.h.
Study of the relationships between linguistic structure and psychological variables affecting language use. Related topics may include information theory and statistics of language, language universals, semantics, language acquisition, bilingualism, and animal communication. Same as Speech Pathology and Audiology 225.221. Fall semester.

103:275 General Experimental Phonetics 4 s.h.
Same as Speech Pathology and Audiology 225.222.

103:300 Survey of Current Research in Linguistics 1 s.h.
Weekly discussions by staff and students of current periodical literature in the field of linguistics. Required of all graduate students in linguistics for each semester of residence.

103:319 Seminar: Problems in Linguistics 1 s.h.
Intensive study of selected theoretical and practical problems. Topic varies each year. Same as English 225.223.

103:320 Seminar: Psychological Awareness 3 s.h.
Selected topics in psychological research and theory. May be repeated for credit. Same as Speech Pathology and Audiology 225.223. Prerequisite, consent of instructor.

103:321 Seminar: Germanic Linguistics 3 s.h.
Prerequisite for admission to the Language and morphology. Same as German 15.166.

103:343 Seminar: Modern German 3 s.h.
Current problems. Same as German 15.161.

103:370 Seminar: Experimental Phonetics 3 s.h.
Same as Speech Pathology and Audiology 325.323. Prerequisites, 103:180, 103:270.

103:375 Seminar: Communication Research, Language Variables 2 or 3 s.h.
Same as Speech 325.325.

103:387 Problems in English Linguistics 3 s.h.
Directed research in the structure and/or history of the English language. May be repeated in different research areas, for credit. Same as English 325.325.

103:390 Special Projects 3 s.h.

103:400 Master's Thesis 3 s.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 the B.A., M.S., and Ph.D. degree. The training provided contributes to the preparation of students for a wide variety of careers ranging from creative scientific research to industrial technology. The division has a comprehensive undergraduate program so that undergraduate students who seek a minor in mathematical sciences may plan a program which will lead to (and may include) advanced work in one or more of the departments of the division. In addition to establishing the general requirements of the College of Liberal Arts, it is necessary that a student satisfy the requirements of one of the programs listed below. Credit may be transferred from other institutions, but transfer courses must take at least two-thirds of 8 semester hours' work in the division.

103:400 Computer Science

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.


Further courses in mathematics, in courses such as 32M:110 and 32M:119, and courses in computer science appropriate for the minor.

Program A: Applied Mathematics

Program B: Computer Science

Students who are preparing for a career in high school teaching must take 32M:26 or its equivalent before registering for Mathematics 32M:26 or 32M:26E, College Teaching (Robotics 72M:26, 72M:26E). They may be certified by completing a major in mathematics consisting of at least 30 semester hours of mathematics at or above the 200 level, with 12 semester hours numbered 300 or above. They may not be counted among the courses taken in the major or with a minor in mathematics which requires 34
semester hour of courses numbered 5EM or higher, including 510EM and at least 4 semester hours of courses numbered 5EM or higher. For requirements for teacher certification, see College of Education.

Students are urged to select additional courses in each of the following fields to give breadth to their educational background: mathematics, statistics, computer sciences, analysis, topology, and computer programming.

Advisors for the Mathematics Education program are Dr. H. V. Price and Dr. M. Seegmuller.

Program D: Pure Mathematics

This program is intended for undergraduates who wish to acquire a broad foundation in the theoretical aspects of mathematics or who plan to do graduate work in pure mathematics. The requirements of this program are

All students in this program are required to take 5EM-115 Introduction to Analysis I, 5EM-125 Abstract Algebra I, 5EM-110 Elementary Topology I, and three of the following courses: 5EM-126 Foundations of Mathematics I, 5EM-104 Foundations of Mathematics II, 5EM-116 Introduction to Analysis II, 5EM-125 Abstract Algebra II, and 5EM-111 Elementary Topology II.

Program E: Statistics, Probability, and Actuarial Science

Students concentrating in these fields will be required to complete the basic undergraduate courses 5EM-225, 5EM-235, or 5EM-226 and 5EM-235 or 5EM-227 or their equivalents. In addition they must complete 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 Actuarial Science must be taken among these advanced undergraduate courses. Suggested courses for such students are the following. Theoretical Statistics and Probability: 5EM-215, 5EM-214, 5EM-216, 5EM-121; Applied Statistics: 5EM-210, 5EM-213, 5EM-214, 5EM-217; Actuarial Science: 5EM-212, 5EM-215, 5EM-216, 5EM-219, 5EM-213.

Program F: Special Program

Recognizing the ever-increasing number of disciplines in which mathematical concepts and techniques are important tools, and the importance of cross-disciplinary work, the Division of Mathematical Sciences is willing to design special programs leading to a major (or minor) in mathematical sciences for those students who wish to use these disciplines in areas outside of the division. The student is expected to receive approval from the Division of Mathematical Sciences and will be expected to acquire, in at least one aspect of mathematics, a depth of understanding equivalent to that obtained in the above programs. In addition, the student will be required to select one to two courses in some department outside of the division in which it is apparent that mathematics is an important component of the curriculum. Economics, Linguistics, political science, and psychology may count toward the special program.

COMPUTER SCIENCE

Chairman of Department, Gerrard P. Weog Office, 111 MacLean Hall

Computer science is a mathematically based discipline concerned with the design and application of information processes. Since the existence of the digital computer makes the execution of algorithms and the manipulation of information practical, computer science is concerned with the digital computer in a very direct way. Thus the computer scientist will be informed about engineering aspects of computer science and the ethical and social implications of computer use. More directly, the computer scientist must be competent in programming, and at the same time must have an understanding of the capabilities and limitations of digital computer relative to information and algorithms. So as to provide the broadest possible background for students to take advantage of courses offered naturally in other fields, the normal curriculum in computer science will include work in several related fields. Within limits, an advanced-degree program in computer science may also serve as a background for a particular need of a student. However, a certain core of courses should generally be taken by any candidate for an advanced degree in this field. It should be emphasized that if a student is concerned about a specific subject area in which computer science is a necessary, but not a major part of his 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 science are stated as Program B 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 such 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 tool competence in the area of computer science. Instead, the department which urges a graduate student to gain proficiency in this field is expected to verify that such proficiency has been gained.

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:

5EM-116, 126 Mathematical Fundamentals for Computer Users I and II, 3 semester hours each. These two courses, amounting to a college algebra prerequisite, cover computer programming in FORTRAN, elements of differential and integral calculus, numerical methods, matrix algebra, and an introduction to the use of a digital computer. Problems are solved with the use of a digital computer, with emphasis placed on error analysis.

Sequence 2

For students wishing to acquire a greater programming proficiency:

5EM-116, 126 Mathematical Fundamentals for Computer Users I and II, 3 semester hours each. These courses are identical in content with Sequence 1, except that the problems are solved with the use of a digital computer.

There will be some graduate students for whom the above two sequences will not be sufficient because of their particular research needs. Depending upon those needs, such courses as 5EM-211, 213, 214, 215, 225, 226, 235, and 235 may be useful.

Graduate Minors

Sufficient coursework is offered in the department to permit any student to minor in computer science in several different areas. It is recognized that a student's total plan of study must be designed to fulfill both his needs and the intent of his degree. However, a number of courses will be given a rigid list of minor courses. However, every student who claims a minor in computer science should have completed as follows:

5EM-116, 126 Mathematical Fundamentals for Computer Users I and II, 3 semester hours each. These courses are identical in content with Sequence 1, except that the problems are solved with the use of a digital computer.

5EM-211, 213, 214, 215, 225, 226, 235, and 235 may be useful.

Graduate Program

Although the plan of study of each advanced degree student is individually arranged to fit his needs, each student will be advised to develop a background in computer science and a background in a specific programming and computation theory. The specific requirements for the M.S. and Ph.D. degrees are as follows:

1.10
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 equivalence 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 chairperson will appoint an advisor for the student. The advisor and student will draw up a plan of study which will ensure that the student 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
      ZSC/372 Advanced Computer Organization 3.0
      ZSC/373 Programming Languages 3.0
      ZSC/374 Introduction to Computer Theory 3.0
      ZSC/376 Problems in Computer Science 3.0
      Additional computer science courses 3.0
   b. Mathematics
      ZSC/210 Linear Algebra 3.0
      ZSC/210 Numerical Methods 3.0
   c. Numerical Solutions of Differential Equations 3.0
   d. Other courses from computer science, mathematics, business administration, electrical engineering, etc., as approved by advisor. 3.0

2. For the M.S. candidate who intends to seek a Ph.D. degree after completing the master's program:
   a. Computer Science
      ZSC/372 Advanced Computer Organization 3.0
      ZSC/373 Programming Languages 3.0
      ZSC/374 Introduction to Computer Theory 3.0
      ZSC/376 Problems in Computer Science 3.0
      ZSC/378 Automata Theory I 3.0
      ZSC/379 Automata Theory II 3.0
      Additional computer science courses 3.0
   b. Mathematics
      ZSC/210 Linear Algebra 3.0
      ZSC/210 Numerical Methods 3.0
   c. Numerical Solutions of Differential Equations 3.0
   d. Other courses selected with the approval of the student's advisor in such a way as to meet the special interest of the student. 3.0

The student may elect to write a thesis provided his advisor consents. In this case, the student may apply some semester hours of thesis credit toward the total required for an M.S. degree, but never more than 6 semester hours for the M.S. degree in computer science with or without thesis in 90 semester hours.

M.S. comprehensive examinations. The candidate for the Master's degree in computer science must successfully complete a set of written comprehensive examinations as described below. These examinations will normally all be taken in the semester in which the degree is to be granted. The nature of the comprehensive examinations may be required by the examiner.

The examinations prepared by a board of examiners consist of three parts: the terminal students must take parts I and II; the students intending to write toward the Ph.D. must take parts I and III.

Part I: Mathematical and Engineering Foundations

A three-hour examination, including the topics of linear algebra, matrix theory, and systems programming.

Part II: Mathematical and Engineering Foundations

A three-hour examination, including the topics of computer science, matrix theory, and numerical analysis.

Part III: Mathematical and Engineering Foundations

An examination covering the major topics in the ten courses in the comprehensive examination described below, provided he has been recommended by a member of the computer science faculty. The comprehensive examination will normally take place within the student's second semester of his coursework as required by his plan of study. The written examinations, which may be followed by an oral review, are as follows:

Part I: Programming Concepts

A three-hour examination on all aspects of programming concepts, covering the following courses:

ZSC/210 Computer Organization
ZSC/372 Programming Languages
ZSC/310 System Programming
ZSC/371 Compiler Construction

Part II: Mathematical Foundations

A two-hour examination, including topics in advanced mathematics and computation theory.

Part III: Advanced Programming Concepts

A two-hour examination including topics in advanced mathematics and computation theory.

Any one of the standard master's examinations offered by the mathematics or statistics departments.

Doctor of Philosophy

Admission. Admissions to candidacy for the Ph.D. degree is granted upon the recommendation of a faculty sponsor and the approval of a departmental committee.

Requirements. Early in the student's work the chairperson of the department will appoint an advisor to the student. At the time the student is a candidate for the Ph.D. degree, the advisor and the student must together select a committee of four, with the advisor as chairman, which will be the student's guidance committee. The student's thesis director and the advisor are not the same person. The student's thesis director will be the chairman of the guidance committee. The committee will then meet 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 chairman 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 need not have a master's degree when he starts the Ph.D. curriculum, nor need he require 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 basic 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 languages, including programming, program design, and applications.
2. Computer organization, including computer systems theory, computer design, and numerical analysis.
3. Theory of computation, including automata theory, computability, and finite state complexity.
4. Mathematical foundations, including set theory, algebra, analysis, logic, and graph theory.

Courses in computer design, switching 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. Normally each student must complete 3 semester hours of coursework each semester after ZSC/378.

Ph.D. comprehensive examination. A student is admitted to candidacy for the Ph.D. degree in computer science only after he successfully completes the comprehensive examination described below, provided he has been recommended by a member of the computer science faculty. The comprehensive examination will normally take place before the student's second semester of his coursework as required by his plan of study. The written examinations, which may be followed by an oral review, are as follows:

Part I: Programming Concepts

A three-hour examination on all aspects of programming concepts, covering the following courses:

ZSC/210 Computer Organization
ZSC/372 Programming Languages
ZSC/310 System Programming
ZSC/371 Compiler Construction

111
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 Introduction to Computational Theory
22C:280 Automata Theory
22C:367 Mathematical Logic

Part III: Foundations
A three-hour examination in disciplines related to computer science, composed of three parts:
Two of the parts must be selected from:
1. Algebra
2. Analysis
3. Logic and set theory
4. Statistics and probability
5. Numerical analysis

While the third must be selected from:
6. Electrical engineering
7. Operations research
8. Business administration
9. Linguistics
10. Other related areas as approved by department, which may be selected from level 1-9.

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 examinations are available at the computer science office.

Theory: Each student must write a thesis which is a significant original contribution to the field of computer science, and successfully defend it in an oral examination conducted by 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 a topic on which he will write his thesis, the student will present a thesis proposal to his committee. The proposal must be approved before the student begins work on the problem area, what others have done, what remains to be done, and what the student's contribution will probably be.

STAFF
Professor: Gerard P. Weeg, Associate Professor: John P. Doh! Arthur C. Fleck, Stephen T. Hedetniemi, Amar Mukhopadhyay, Assistant Professor: C. Gyllenhaal, Instructor: Theodore Snoeren, David Workman.

COURSE DESCRIPTIONS
Primarily for Undergraduates
22C:7 Introduction to Computers and Programming I 3 s.h.
Computer structure, machine language programming, algorithms, with major emphasis upon programming with FORTRAN. Prerequisites: Mathematics 22M:13 or upper level standing.

22C:8 Introduction to Computers and Programming II 3 s.h.
Hierarchy of software, variety of computer hardware, uses of computer survey of languages, with major 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. Prerequisites: 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 SLISP, SIMULA, and LISP. Prerequisites: 22C:8.

22C:31 Computer Organization and Assembly Language 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. Symmetry of coding and assembly systems, macro definition and generation, subprogram linkage, program segmentation, and hardware techniques of computer projects to illustrate basic machine structure and programming techniques. Prerequisites: 22C:5.

For Undergraduates and Graduates
22C:100 Computers and Programming I 2 s.h.
Same as 22C:7 except that problems are selected from advanced areas of importance to the student. Prerequisites, advanced standing. Not open to students in the mathematical sciences division.

22C:101 Computers and Programming II 2 s.h.
Same as 22C:8 except that problems are selected from advanced areas of importance to the student. Prerequisites, 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 calculus, numerical methods, matrix algebra, with applications, and error analysis for computers. For the nonscience student only. Prerequisites, Mathematics 22M:30.

22C:108 Mathematical Fundamentals for Computer Users II 3 s.h.
Continuation of 22C:107, which is prerequisites.

22C:122 Advanced Computer Organization 3 s.h.
Multiple interrupt system, microprogramming, simulation. Multicomputer systems, interlocks, parallel processing. Hardware concepts of multiprogramming and time sharing. Illustrative computer projects. Prerequisites: 22C:7.

22C:123 Programming Languages 3 s.h.
Formal means of program language formulation including statement forms of various classes of programming languages. Use and implementation of various program- ming language functions including methods of storage allocation and recursive programming. Examples and projects in current programming languages. Prerequisites: 22C:28 and 22C:31.

22C:135 Introduction to Computation Theory 3 s.h.
Relationship between basic elements of the theoretical areas of computer science including logical design, finite state machines, and Markov algorithms. Prerequisites, Mathematics 22M:103.

22C:145 Artificial Intelligence 3 s.h.
Treats from heuristic programming, machine learning, game playing, theorem proving, and expert systems. Prerequisite: 22C:5.

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 to computer science. Not open to computer science graduate students. Prerequisites, 22C:31 and 22C:195.

22C:197 Reading in Computer Science cr.arr.
Prerequisites, consent of instructor.
Primarily for Graduates

2EC.201 Automata Theory I 3 s.h.
Advanced and current topics such as Kleene-Rhodes irreducibility result, group complexity, cellular automata, models for parallel computation, Harmanis-Searls loop-free deterministic, universal algebra, and automata. Prerequisites: 2EC.125 or consent of instructor.

2EC.216 Systems Programming 3 s.h.
Analysis of the implementation of a modern operating system including storage allocation, clocking and time sharing, deadlocks, job scheduling, and device independence of input-output. Prerequisites: 2EC.125.

2EC.217 Compiler Construction 3 s.h.
Expression translation, statement recognition, code generators, object code optimization, symbol table organization, memory organization, rewriter. Syntax-directed translation via context-free grammars and other formalisms, parsing algorithms, procedures grammar techniques, illustrative computer projects. Prerequisites: 2EC.125.

2EC.321 Advanced Theory of Computation 3 s.h.
Comparable functions, algorithms, recursively enumerative and recursive sets and predicates, Turing machines and Universal Turing machines, decidability problems, non-computable functions, multi-tape Turing machines, and real-time computation. Prerequisites: 2EC.125.

2EC.347 Theory of Algorithms 3 s.h.
Algorithms, normal algorithms, construction of normal algorithms, the universal algorithm. Prerequisites: 2EC.357.

2EC.357 Mathematical Linguistics 3 s.h.
Characterizations, decision problems, properties, and applications of phrase-structure, context-sensitive, context-free, and linear languages, and pushdown, stack, linear, bi-linear, and finite automata. Applicability to translation and natural language and artificial languages. Prerequisites: 2EC.216.

2EC.397 Seminar on Automata (cr.4)
Topics from algebraic and automata theory, models for parallel computation, iterative circuit computers, Turing machines and applications of concepts of computational formal grammars. Prerequisite, consent of instructor.

2EC.398 Seminar on Programming (cr.4)
Topics from software development, computer-aided program analysis and timing sharing, use of current hardware features. Prerequisites, consent of instructor.

2EC.399 Reading and Research (cr.4)
Prerequisite, consent of adviser.

MATHMATICS

Chairman of Department, Robert H. Oehmke
Office, 106 MacLean Hall

The primary 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 importance to other disciplines, and to develop mathematics as an independent intellectual discipline.

Such training leads to a variety of career opportunities in industry, government, research, and teaching. Many important disciplines are possible, expected, and desirable. The student is strongly urged to seek the advice of individual staff members and advisers.

Undergraduate Program

The course 2EM1 Basic Mathematical Techniques is designed for those students who have a high school mathematical deficiency. A passing grade in this course will satisfy the liberal arts requirements in mathematics.

The courses 2EM1 to 2EM4 are primarily intended to give nonmajors facility in some of the techniques of mathematics. Those students who require a greater depth of understanding of the concepts of mathematics should proceed in the sequences 2EM5 and 2EM11 or in the sequence of the Basic Undergraduate Program.

The sequence 2EM5 and 2EM11 is designed for those students who have the background necessary to pursue the literature of their disciplines and require a greater understanding of these concepts than afforded by the courses 2EM1 to 2EM4 or for those students who wish to acquire some appreciation of mathematical ideas or mathematical disciplines.

A student may not receive either credit or quality points for an elementary course if he has already completed 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 necessary prerequisites. The department also strongly encourages 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 for assistance in arranging self-teaching independent study groups.

The requirements for an undergraduate major in mathematical sciences are described under Division of Mathematical Sciences.

Graduate Program

Work in this department at the graduate level is expected roughly into six areas: algebra, analysis, geometry, topology, probability, and statistics. Programs leading to the M.S. degree (with or without) and the Ph.D. degree are available and are subject to the general rules and regulations of the Grad- uate College. All students are assigned an advisor. Aside from this they are flexible, and are administered within the framework to fit the individual needs of the student. Each new graduate student is assigned initially to a temporary advisor in his area of interest. This advisor assists him in planning his program. When the student has identified the exact area of his interest, another advisor is assigned. The student and his dissertation advisor are expected to be the proper member of the faculty to serve as his adviser, and a working relationship is established upon the consent of the staff member.

To be admitted to candidacy for the M.S. degree in mathematics, a student must have completed work in undergraduate mathematics roughly equivalent to the program previously described for an undergraduate major in mathematics (12 semester hours of mathematics courses numbered 2EM5 or above). A student whose preparation 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 member and the approval of a departmental examining committee. Ordinarily 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 requirement will be determined by the student's thesis advisor. Grad- uate students are urged to acquire the language require- ment at 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 his
algebra, the student is expected to be familiar with the concepts of linear algebra, including vector spaces, linear transformations, and eigenvalues. The student should also be able to apply these concepts to solve problems in physics and engineering.

3. Elective courses:
   - Elective courses are selected according to the student's interests and the requirements of the student's major.
   - The student should consult with their academic advisor to select electives that align with their career goals and interests.
   - Elective courses are chosen to complement the major requirements and provide a well-rounded education.

4. Transfer courses:
   - Transfer courses are evaluated based on their equivalency to the courses offered at the University of Illinois.
   - Transfer students are required to meet the same academic standards as regular students.

5. Course requirements:
   - The course requirements include a mix of required and elective courses.
   - The student should consult with their academic advisor to ensure they meet all course requirements.

6. Honors students:
   - Honors students are expected to maintain a high GPA and complete honors projects.
   - The honors program offers opportunities for research and advanced study.

7. Internships:
   - Internships are available to students who wish to gain practical experience in their field.
   - Internships are evaluated based on the quality of the experience and the relevance to the student's major.

8. Graduation requirements:
   - The student must complete a minimum of 30 semester hours of graduate credit, with at least 21 hours in the major.
   - The student must complete a research project, which is evaluated based on the quality of the research and the presentation of the results.

9. Academic integrity:
   - The student is expected to adhere to the University of Illinois' academic integrity policy.
   - Violations of academic integrity are taken seriously and result in disciplinary action.

Program B: Applied Mathematics

1. Students must take comprehensive examinations in algebra, analysis, and applied mathematics.

2. Required courses (15 semester hours):
   - MATH 411: Advanced Calculus
   - MATH 412: Introduction to Analysis
   - MATH 413: Introduction to Probability

3. Elective courses (15 semester hours):
   - Elective courses are selected to complement the student's interests and career goals.
   - The student should consult with their academic advisor to select electives that align with their major.

Program C: Mathematics with Education Option

1. Students must complete a minimum of 15 semester hours in mathematics, including the following areas: algebra, analysis, and education.

2. Required courses (6 semester hours):
   - MATH 303: Introduction to Algebraic Structures
   - MATH 304: Introduction to Linear Algebra

3. Elective courses (9 semester hours):
   - Elective courses are selected to complement the student's interests and career goals.
   - The student should consult with their academic advisor to select electives that align with their major.

4. Teacher certification:
   - The program includes coursework and field experiences to prepare students for teaching mathematics at the secondary level.
   - The students must pass the Illinois Teacher Certification Exam (CTE) and the Praxis II: Mathematics Content Knowledge Exam.

5. Graduation requirements:
   - The student must complete a minimum of 30 semester hours, including the education coursework.
   - The student must complete a set of supervised teaching experiences.

6. Additional requirements:
   - The student must complete the requirements specified by the College of Education.
   - The student must meet the requirements for a teaching license in Illinois.

7. Internships:
   - Internships are available to students who wish to gain practical experience in teaching mathematics.
   - Internships are evaluated based on the quality of the experience and the relevance to the student's major.

8. Graduation requirements:
   - The student must complete a minimum of 15 semester hours in mathematics, including the following areas: algebra, analysis, and education.
   - The student must complete a set of supervised teaching experiences.

Program D: Mathematics with Computer Science Option

1. Students must complete a minimum of 15 semester hours in mathematics, including the following areas: algebra, analysis, and computer science.

2. Required courses (6 semester hours):
   - MATH 303: Introduction to Algebraic Structures
   - MATH 304: Introduction to Linear Algebra

3. Elective courses (9 semester hours):
   - Elective courses are selected to complement the student's interests and career goals.
   - The student should consult with their academic advisor to select electives that align with their major.

4. Computer science coursework:
   - The student must complete a minimum of 15 semester hours in computer science, including the following areas: programming, data structures, and algorithms.

5. Additional requirements:
   - The student must complete the requirements specified by the College of Engineering.
   - The student must meet the requirements for a computer science degree.

6. Graduation requirements:
   - The student must complete a minimum of 30 semester hours, including the mathematics and computer science coursework.
   - The student must complete a set of supervised teaching experiences.

7. Internships:
   - Internships are available to students who wish to gain practical experience in computer science.
   - Internships are evaluated based on the quality of the experience and the relevance to the student's major.

8. Graduation requirements:
   - The student must complete a minimum of 30 semester hours, including the mathematics and computer science coursework.
   - The student must complete a set of supervised teaching experiences.

Program E: Mathematics with Engineering Option

1. Students must complete a minimum of 15 semester hours in mathematics, including the following areas: algebra, analysis, and engineering.

2. Required courses (6 semester hours):
   - MATH 303: Introduction to Algebraic Structures
   - MATH 304: Introduction to Linear Algebra

3. Elective courses (9 semester hours):
   - Elective courses are selected to complement the student's interests and career goals.
   - The student should consult with their academic advisor to select electives that align with their major.

4. Engineering coursework:
   - The student must complete a minimum of 15 semester hours in engineering, including the following areas: mechanics, materials, and electrical engineering.

5. Additional requirements:
   - The student must complete the requirements specified by the College of Engineering.
   - The student must meet the requirements for an engineering degree.

6. Graduation requirements:
   - The student must complete a minimum of 30 semester hours, including the mathematics and engineering coursework.
   - The student must complete a set of supervised teaching experiences.

7. Internships:
   - Internships are available to students who wish to gain practical experience in engineering.
   - Internships are evaluated based on the quality of the experience and the relevance to the student's major.

8. Graduation requirements:
   - The student must complete a minimum of 30 semester hours, including the mathematics and engineering coursework.
   - The student must complete a set of supervised teaching experiences.
22M.3 Mathematical Techniques II 3 a.h.
Formerly 22M.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, 22M.2 or two years of high school algebra and one year of high school geometry.

22M.6 Matrix Algebra
Elementary manipulations of matrices and determinants, rank and nullity of matrices, systems of linear equations, matrices, linear transformations in the plane. Introduction to differential equations. This course is primarily intended for those students who need some technical competence in the use of matrices. Prerequisites, 22M.3 or three years of high school mathematics.

Survey Courses

22M.10 Fundamentals of College Mathematics I 4 a.h.
Formerly 22M.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, lines, segments and angles, introduction to analytic geometry. Prerequisites, two and one-half years of high school mathematics or 22M.7.

22M.11 Fundamentals of College Mathematics II 4 a.h.
Formerly 22M.1b. Continuation of 22M.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, 22M.10.

Basic Undergraduate Courses

22M.20 Elementary Functions 3 a.h.
Formerly 22M.3. Functions, relations, coordinate systems. Graph of algebraic equations; properties and graphs of trigonometric functions; properties and graphs of logarithmic 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 22M.3. Not intended for students who have had high school analytic geometry.

22M.25 Calculus I 4 a.h.

22M.26 Calculus II 4 a.h.
Formerly 22M.7. Continuation of 22M.25. Prerequisite, 22M.25.

22M.37 Introduction to Linear Algebra 4 a.h.
Formerly 22M.130. An introduction to vectors and vector spaces, matrix theory and linear transformations. This material is partially oriented toward multivariable calculus. Prerequisite, 22M.25.

22M.38 Calculus III 4 a.h.
Fundamental concepts, methods, and techniques of multivariable calculus. An introduction to ordinary differential equations. Prerequisites, 22M.26 and 22M.27.

22M.39 Computational Techniques of Calculus and Linear Algebra 1 a.h.
The use of the computer as an aid to understanding the concepts and techniques of calculus and linear algebra. This course is only open to students concurrently enrolled in 22M.39, 22M.27, or 22M.28. Up to four hours credit may be awarded; one credit hour for each of the above four courses.

22M.55 Engineering Mathematics I 5 a.h.
Formerly 22M.16. The real line, integers, rationals, irrationals, functions, vector elements. Vector algebra. Vectors 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. Indeterminate integral, volume, curve length, area, work. Prerequisite, high school trigonometry.

22M.56 Engineering Mathematics II 5 a.h.

22M.57 Engineering Mathematics III 3 a.h.

22M.58 Engineering Mathematics IV 3 a.h.

Elementary Topics of General Interest

22M.50 Elements of Group Theory 3 a.h.
Formerly 22M.51. Sets, relations, functions, permutation groups, cyclic groups, structure of finitely generated abelian groups. Emphasis will be placed on illustrative examples to demonstrate the concepts and theorems. Prerequisite, 22M.52.

22M.55 Fundamental Properties of Spaces and Functions 3 a.h.
Formerly 22M.51. Elements of set theory and topology, properties of euclidean and metric spaces. Emphasis will be placed on the development of the student's facility to handle definitions, theorems, and proofs. Prerequisite, 22M.52.

22M.70 Euclidean Plane Geometry 3 a.h.
Formerly 22M.61. Axiomatic treatment of the foundations of euclidean plane geometry. Prerequisites, 22M.38 or equivalent.

22M.80 Theory of Arithmetic 3 a.h.
Formerly 22M.72. Enrollment limited to candidates for an elementary teaching certificate. Structure of the real number system. Prerequisite, 22M.1 or equivalent.

Undergraduate: Upper Division

22M.100 Differential Equations 3 a.h.

22M.102 Foundations of Mathematics I 3 a.h.
Formerly 22M.50. Intuitive set theory, a construction of the real number system, cardinal arithmetic, basic logic, axiom of choice, and well-ordering theorem. Prerequisites, 22M.10.

22M.104 Foundations of Mathematics II 3 a.h.
Formerly 22M.51. Informal logic, informal axiomatic theories, and Boolean algebras. Prerequisites, 22M.102.

22M.105 Analysis for Applications 4 a.h.
Continuity, uniform convergence, power series, implicit and inverse function theorems. Vector analysis, Green's
22M:160 Differential Geometry and Tensor Analysis 3 s.h.
Formerly 22M:161. Space curves, differentiable manifolds, vector and tensor fields, integration of forms, covariant differentiation and the intrinsic geometry of surfaces. Prerequisites: 22M:160 or 22M:20 or instruction.

22M:160 Elementary Topology I 3 s.h.
Formerly 22M:151. Topological spaces, properties of spaces and maps. Sums, products, identification and quotient spaces. Prerequisites: 22M:15 or 22M:15 or consent of instructor.

22M:111 Elementary Topology II 3 s.h.
Hausdorff and locally connected spaces, geometric complexes, homotopy theory. Prerequisite: 22M:11 or consent of instructor.

22M:115 Introduction to Analysis I 4 s.h.
Formerly 22M:111. Sets and functions, sequences and series of real numbers, limits, metric spaces, continuity of functions, connectedness, completeness, compactness. Prerequisites: 22M:15 or 22M:15 or 22M:15 or consent of instructor.

22M:116 Introduction to Analysis II 4 s.h.

22M:118 Complex Variables 3 s.h.
Formerly 22M:114. An operational course. Geometry of the complex plane, analytic functions, the Cauchy-Goursat theorem and its applications, Laurent series, residues, elementary conformal mapping. Prerequisite: 22M:16 or 22M:115.

22M:120 Abstract Algebra I 3 s.h.
Rings and linear algebra. Groups with operators, endomorphism rings, polynomial rings, rings with chain conditions, unique factorization, matrix rings, hereditary and canonical forms. Prerequisite: 22M:20 or equivalent.

22M:121 Abstract Algebra II 3 s.h.
A continuation of 22M:120. Prerequisite: 22M:120.

22M:129 Elementary Theory of Numbers 3 s.h.
Formerly 22M:121. Factorization, congruences, Diophantine equations, applications to quadratic residues. Prerequisite: 22M:20 or equivalent.

22M:130 Elementary Theoretical Mechanics I 3 s.h.
Prerequisites 22M:15 or 22M:15 or 22M:15. Theoretical mechanics II 3 s.h.

22M:150 Linear Algebra 3 s.h.
Formerly 22M:142. Linear spaces, bases, linear maps, coordinates, determinants, scalar and vector products, quadratic forms, linear transformations, similarity, eigenvalue problems, matrix methods and applications to differential equations. Prerequisite: 22M:20 or equivalent.

22M:152 Combinatorial Analysis 3 s.h.
Topics to be selected from the general area of combinatorics, in particular, emphasis will be placed on finite structures and systems. Prerequisite: 22M:120.

22M:153 Geometric Algebra 3 s.h.
Formerly 22M:145. Projective properties of incidence of points, lines, and planes, and the construction of coordinate systems. Prerequisite: 22M:20 or 22M:15 or consent of instructor.

22M:155 Field Theory 3 s.h.
Formerly 22M:146. Theory of fields, polynomial ideals, Galois theory. Prerequisite: 22M:121 or equivalent.

22M:161 Differential Geometry and Tensor Analysis 3 s.h.
Formerly 22M:161. Space curves, differentiable manifolds, vector and tensor fields, integration of forms, covariant differentiation and the intrinsic geometry of surfaces. Prerequisites: 22M:160 or 22M:15 or equivalent.

22M:162 Differential Geometry 3 s.h.
Formerly 22M:162. Differentiable manifolds, minimizing geodesics of geodesics, rigidity theorems, Gauss-Bonnet theorem, and applications to geometry and the elementary theory of Lie groups may also be covered. Prerequisite: 22M:160 or equivalent.

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:129. Numerical functions on a graph, classification and structure 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:113. Numerical processes and machine computations. Attention to algebraic and transcendental equations, spectral values of matrices. Prerequisites: 22M:20 or 22M:25 or consent of instructor.

22M:171 Numerical Solutions of Differential Equations 3 s.h.

22M:172 Fourier Series and Boundary Value Problems 3 s.h.

22M:173 Transform Calculus 3 s.h.

22M:180 Supervision of Mathematics 3 s.h.
Formerly 22M:171. Philosophy and objectives, curricu-

lar problems, review and evaluation of current literature, special methods. Prerequisites: 22M:30 or consent of instructor.

22M:197 Individual Study and Honors in Mathematics 3 s.h.
Prerequisite, consent of advisor.

22M:195 Readings in Mathematics 1 to 3 s.h.
Formerly 22M:197. Qualified graduate students who are not mathematics majors may receive up to 3 semester hours credit for 22M:195, 22M:27, and 22M:30 or up to 2 hours credit for 22M:4, 22M:50, and 22M:50 by registering for this course. Prerequisite, consent of instructor.

Core Graduate Courses
22M:200 Introduction to Topology I 3 s.h.
Formerly 22M:204. Set theory, metric spaces, topologi-
sical spaces, convexity, compactness and connectedness and the Hausdorff theorem, products (finite or countable), identification and the elementary theory of manifolds and quotient spaces. Prerequisite: 22M:115 or consent of instructor.

22M:201 Introduction to Topology II 3 s.h.
Formerly 22M:205. Connectedness and local connectedness, components, complements, metric spaces, separability, the Baire theorem, products (finite or countable), identification and the elementary theory of manifolds and quotient spaces. Prerequisite: 22M:20 or consent of instructor.

22M:300 Modern Algebra 3 s.h.
Pre-200 Modern Algebra 3 s.h.

22M:301 Modern Algebra 3 s.h.
Pre-200 Modern Algebra 3 s.h.

22M:302 Modern Algebra 3 s.h.
Pre-200 Modern Algebra 3 s.h.

22M:303 Modern Algebra 3 s.h.
Pre-200 Modern Algebra 3 s.h.

22M:304 Modern Algebra 3 s.h.
Pre-200 Modern Algebra 3 s.h.

22M:305 Modern Algebra 3 s.h.
Pre-200 Modern Algebra 3 s.h.

22M:306 Modern Algebra 3 s.h.
Pre-200 Modern Algebra 3 s.h.

22M:307 Modern Algebra 3 s.h.
Pre-200 Modern Algebra 3 s.h.
22M:305 Introduction to Algebra I 3 s.h.
Formerly 22M:134. Abstract algebra. Algebraic systems including semigroups, groups, rings, integral domains, polynomial rings, fields. Prerequisite: 22M:135 or equivalent.

22M:216 Introduction to Algebra II 3 s.h.

22M:210 Analysis I 3 s.h.

22M:211 Analysis II 3 s.h.

Topics of Interest to Graduates

22M:215 Axionical 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:220 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:221 Introduction to Mathematical Logic II 3 s.h.
Construction of formal number theory, arithmetic hierarchy, Post theorem, Turing oracle machines, recursive functions. Turing machines, truth systems, and word problems. Prerequisite: 22M:220.

22M:226 Introduction to Algebraic Topology 3 s.h.
Formerly 22M:168. Homotopy theory, covering spaces, H-groups, fundamental groups, Van Kampen theorem, and classification of closed 2-manifolds. Prerequisite: 22M:211.

22M:223 Topics in Analysis I 3 s.h.
Selected topics, including measure theory, integration, general topology, or may be repeated. Prerequisite, consent of instructor.

22M:224 General Topology I 3 s.h.
Topics include spaces, continuous product and quotient spaces, metrization theorems, compactifications, uniform spaces, function spaces on compact sets. Prerequisites: 22M:221.

22M:205 Point Set Topology 3 s.h.
Axiomatic study of topological properties of regular Hausdorff spaces satisfying the second axiom of countability. Prerequisites: 22M:211.

22M:226 Topics in Point Set Topology 2 or 3 s.h.
Selection from topology of the plane, topology of Euclidean n-space, metrizable spaces, and compact spaces. May be repeated by consent of instructor. Prerequisite, consent of instructor.

22M:270 Theory of Functions of a Complex Variable 3 s.h.
Cauchy theory, series expansions, analytic continuation, types of singularities. Prerequisites: 22M:216 or consent of instructor.

22M:288 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. Prerequisite: 22M:270.

22M:280 General Topology II 2 or 3 s.h.
Uniform spaces, function spaces, topological groups, topological vector spaces, rings of continuous functions. Prerequisite: 22M:224.

22M:310 Hilbert Space 3 s.h.

22M:312 Integration over Locally Compact Spaces 3 s.h.
Measure and integration over locally compact topological spaces, regular Borel measures, Riesz-Markoff representation theorem for positive linear forms, Haar measure on locally compact group. Prerequisites: 22M:226 and 22M:211.

22M:313 Functional Analysis I 3 s.h.

22M:314 Functional Analysis II 3 s.h.

22M:315 Abstract Harmonic Analysis I 3 s.h.
Theory of Fourier analysis in the setting of locally compact topological groups. Haar measure, Fourier transforms, Pontrjagin duality theorem. Prerequisite: 22M:313.

22M:316 Abstract Harmonic Analysis II 3 s.h.
Continuation of 22M:315, with emphasis on Abelian locally compact groups. The character group, the general Fourier transform, and the Pontrjagin duality theorem. Prerequisite: 22M:315.

22M:318 Topics in Topological Dynamics 3 s.h.
Dynamics of group actions, measure preserving actions on topological spaces; principal partition and its generalizations. May be repeated with consent of instructor. Prerequisite: 22M:304.

22M:319 Ordinary Differential Equations 3 s.h.
Existence, uniqueness, and stability of solutions; oscillation and comparison theorems; plane autonomous systems; Floquet's boundedness theorem. Prerequisite: 22M:315 or consent of instructor.

22M:320 Topics in Ordinary Differential Equations 3 s.h.
Nonlinear boundary value problems; Carathéodory existence theorem; Lyapunov stability theorems. May be repeated by consent of instructor. Prerequisite: 22M:319 or consent of instructor.

22M:321 Calculus of Variations 3 s.h.
Differential equations of a curves which minimizes a definite integral, further properties of a minimizing curve and sufficient conditions for a minimum. Variational problems and the general simple singular problems. Prerequisites: 22M:311 or consent of instructor.

22M:322 Topics in the Calculus of Variations 3 s.h.
Variations 2 s.h.

22M:330 Partial Differential Equations 3 s.h.
Single integral problems of Riche type multiple integral problems, existence theorem for variational problems. Prerequisites: 22M:311 and consent of instructor.

22M:331 Partial Differential Equations 3 s.h.
STATISTICS

Theorems, Cauchy-Kowalewski theorem, classification of equations (hyperbolic, elliptic, parabolic). Applications, solutions of second-order linear equations. Prerequisite, 2EM:218 or consent of instructor.

2EM:234 Partial Differential Equations 3 s.h.


2EM:236 Topics in Linear Algebra 3 s.h.

Linear transformations of vector spaces, geometry based on bilinear forms, products of vector spaces, infinite dimensional vector spaces. Prerequisite, 2EM:230.

2EM:237 Commutative Algebra 3 s.h.

Ideal theory in noetherian rings, field extensions, integrally closed rings. Prerequisite, 2EM:230.

2EM:238 Theory of Groups 3 s.h.

Homomorphisms, abelian groups, Sylow theorems, permutation groups, automorphisms, free groups, composition series, soluble and nilpotent groups. Prerequisite, 2EM:236.

2EM:239 Theory of Rings 3 s.h.

Modules, ideals, radicals, semisimplicity and simple rings, division rings, homomorphisms, rings and module rings, projective and injective modules, power products, annihilators, and duality. Prerequisite, 2EM:236.

2EM:230 Topics in Algebra 2 or 3 s.h.

Selected topics, including ideal theory, structure of rings, groups, group representations, and lattice theory. Prerequisite, 2EM:230 or equivalent.

2EM:231 Representation of Finite Groups 3 s.h.

Structure of the group algebra of a finite group, linear representations, reducibility of representations, character relations, equivalence of representations. Prerequisite, 2EM:230 or equivalent.

2EM:233 Topics in Semigroup Theory 3 s.h.

Ideal theory and congruence theory in semigroups, a partial structure theory of semigroups; relational theory between semigroups and algebras. Prerequisite, 2EM:236 or consent of instructor.

2EM:235 Topics in Nonassociative Algebra 3 s.h.

Structure theory of various classes of algebras and the relationship between algebras and geometries and between algebras and projective and absolute geometry. Prerequisite, 2EM:230 or consent of instructor.

2EM:236 Homological Algebra 3 s.h.

Chain complexes, derived products, groups of homomorphisms, categories, functors, homology functors, projective and injective modules, derived functors, torsion and extension functors, homological dimension. Prerequisite, 2EM:230 or consent of instructor.

2EM:237 Algebraic Varieties 3 s.h.

Local theory of algebraic varieties, normal varieties, birational transformations. Prerequisite, 2EM:230 or equivalent.

2EM:238 Algebraic Topology 3 s.h.

Homology complexes, homology and cohomology theory of simplicial complexes, chain complexes, singular homology and cohomology theory, homology groups, relations between homology and cohomology. Prerequisite, 2EM:230.

2EM:237 Topics in Algebraic Topology 3 s.h.

Homological and cohomological ideas and applications. May be repeated by consent of instructor. Prerequisite, 2EM:230 or consent of instructor.

2EM:332 Theory of Probability 3 s.h.

Basic concepts; distribution and characteristic functions; convergence theorems; conditional expectations; stochastic processes. Prerequisite, 2EM:251.

2EM:335 Metric Geometry 3 s.h.

Metric topology, convexity, isometries, euclidean and spherical spaces, rectification theorems, Baire category theorem, Ascoli's theorem. Prerequisite, 2EM:230 or consent of instructor.

2EM:336 Topology in Metric Geometry 3 s.h.

Topics selected from geometric function, functional analysis, fixed-point theory. Prerequisite, 2EM:335.

2EM:360 Foundations of Mathematics I 3 s.h.

Introduction to the theory of models, including descriptions of first-order theories from abstract algebras, complete theories, undecidable theories, definability, and Beth's theorem. Prerequisite, consent of instructor.

2EM:361 Foundations of Mathematics II 3 s.h.

Continuation of the theory of models or topics on recursion theory. Prerequisite, 2EM:360.

2EM:370 Numerical Methods in Linear Algebra 3 s.h.

Solutions of linear systems, eigenvalue problems, inverse matrices, conditioned and ill-conditioned systems. Prerequisites, 2EM:170 and 2EM:150 or consent of instructor.

2EM:371 Numerical Solutions of Partial Differential Equations 3 s.h.

Numerical solution of various types, partial differential equations, initial and boundary value problems. Prerequisites, 2EM:111 and 2EM:130 or consent of instructor.

2EM:389 Seminar: Algebra cr.arr.

Prerequisite, consent of instructor.

2EM:390 Seminar: Algebraic Geometry cr.arr.


Prerequisite, consent of instructor.

2EM:393 Seminar: Algebraic Topology cr.arr.

Prerequisite, consent of instructor.

2EM:395 Seminar: Analysis cr.arr.

Prerequisite, consent of instructor.


2EM:398 Seminar: Numerical Analysis cr.arr.

Prerequisite, consent of instructor.

2EM:399 Reading and Research cr.arr.

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 statistics 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 technology, and to teach them for research and probability, sta-

118
Undergraduate Program

The requirements for an undergraduate major in mathematical sciences are described under Division of Mathematical Sciences.

Graduate Program

The graduate program is designed to reflect the dual role of statistics as an independent discipline within the mathematical sciences and as a tool. The department of mathematics and statistics offers a Ph.D. in mathematical sciences with an option in mathematics and an option in applied mathematics.

The specific research opportunities vary from year to year; however, the Ph.D. degree program in mathematics and statistics is designed to provide an opportunity for students to specialize in one of the following areas.

1. Pure Mathematics
2. Applied Mathematics
3. Statistics

The Ph.D. degree program in mathematics and statistics is designed to reflect the dual role of mathematics as an independent discipline within the mathematical sciences and as a tool. The department of mathematics and statistics offers a Ph.D. in mathematical sciences with an option in mathematics and an option in applied mathematics.

The specific research opportunities vary from year to year; however, the Ph.D. degree program in mathematics and statistics is designed to provide an opportunity for students to specialize in one of the following areas.

1. Pure Mathematics
2. Applied Mathematics
3. Statistics

The Ph.D. degree program in mathematics and statistics is designed to reflect the dual role of mathematics as an independent discipline within the mathematical sciences and as a tool. The department of mathematics and statistics offers a Ph.D. in mathematical sciences with an option in mathematics and an option in applied mathematics.

The specific research opportunities vary from year to year; however, the Ph.D. degree program in mathematics and statistics is designed to provide an opportunity for students to specialize in one of the following areas.

1. Pure Mathematics
2. Applied Mathematics
3. Statistics
STATISTICS

Expectations, joint distributions, discrete distributions, con-

tinuous distributions, estimation, hypothesis testing, re-

gression. Same as Industrial and Management Engineer-

ing 220-377. Prerequisites: Mathematics 220-328 or equivalent.

225-43 Introduction to Statistical

Methods 3 s.h.

Same as Education TP 1043. Primarily for students who

are not statistics majors. Students should not take both

225-26 and 225-44.

225-53 Mathematical Models 3 s.h.

Prerequisites: An understanding of the physical, economic,

and social sciences will be studied and mathematical

models for the systems will be constructed. The utility

of the models will be critically examined. Prerequisites,

Mathematics 220-35 or 220-36.

225-64 Elementary Probability 3 s.h.

Introduction to probability models through both a rigor-

ous mathematical development for discrete sample spaces

and consideration of "real world" applications. Specific

topics include: interpretations of probability, the statis-

tical approach to probability, combinatorial methods, and

random variables. Prerequisite, Mathematics 220-35 or

220-36.

225-80 Insurance Mathematics 3 s.h.

Elements from probability and the mathematics of finance

are developed and applied to problems in determination

of insurance premiums, benefits, and reserves. Same as

So 65-124. Prerequisite, Mathematics 220-35 or equivalent.

Students with Mathematics 220-328 or 220-34 should take 225-193.

Undergraduates and Graduates

225-101 Biostatistics 2 or 3 s.h.

Elementary course on statistical methods primarily for

research in medical subjects and related fields. Same as

So 221-101. Same as Geography 221-101. Prerequisite:

Mathematics 220-35. 3 s.h.

225-103 Introduction to the Design of

Surveys 3 s.h.

Same as Preventive Medicine and Environmental Health

63-153. Prerequisite, 225-25 or 225-43.

225-120 Probability and Statistics 4 s.h.

Principles and general probability models, random variables,

and functions of random variables, expectations, discrete

and continuous distributions, estimation and hypothesis

testing. Designed for students of the social and biologi-

cal sciences who have a background in calculus. Prereq-

uquisite, Mathematics 220-35.

225-132 Engineering Statistics 4 s.h.

Same as Industrial and Management Engineering 56-132.

Prerequisite, 225-25 or equivalent.

225-133 Quality Control and Reliability 3 s.h.

Same as Industrial and Management Engineering 56-133.

Prerequisite, 225-132.

225-149 Advanced Statistical Methods 4 s.h.

Same as Education TP 249. Prerequisite, 225-49 or equiv-

alent.

225-153 Introduction to Mathematical

Statistics I 4 or 5 s.h.

Basic probability models, distribution of statistical, inter-

val estimation, order statistics, limiting distributions, con-

defidence statistics. Prerequisite, Mathematics 220-328 or

220-35.

225-154 Introduction to Mathematical

Statistics II 4 or 5 s.h.

Continuation of 225-153. Order statistics, maximum likeli-

hood, analysis of variance, further normal distri-

bution theory.

225-157 Correlation Methods 3 s.h.

Same as Education TP 244. Prerequisites, 225-148 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 de-

signs, Latin squares and hypercubes, mixed models,

balanced and unbalanced experiments, split plot experi-

ments, confounding, fractional experiments, analysis of

covariance, regression as industrial and Management Engi-

neering 58-261. Prerequisite, 225-120, 225-132, 225-154 or

equivalent.

225-159 Design of Experiments 3 or 4 s.h.

Same as Education TP 246. Prerequisite, 225-148. 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 50-250.

Prerequisite, 225-120 or 225-154.

225-162 Regression Analysis 3 s.h.

Same as Industrial and Management Engineering 50-252.

Prerequisite, 225-120 or 225-154.

225-164 Introduction to Probability I 4 s.h.

Adaptive probability models, conditional probability and

independence, random variables, expectation and special


225-165 Introduction to Probability II 4 s.h.

A continuation of 225-164. Generating functions, con-

vergence of random variables, weak and strong law of

large numbers, Borel-Cantelli Theorems, law of the iterat-

ed normalisation, and the central limit theorem.

225-167 Introduction to Stochastic

Processes I 3 s.h.

Winer, Poison, and normal processes, generalizations of

the Poisson process, renewal processes and stationary

processes. Applications selected from the physical, bio-

logical, and management sciences. Prerequisites, 225-154.

225-168 Introduction to Stochastic

Processes II 3 s.h.

A continuation of 225-167. Markov chains both discrete and

continuous parameter, with reference to branching

processes, birth and death processes, and queueing and tra-

ffic models.

225-170 Introduction to Nonparametric

Statistics 3 s.h.

One sample procedure; efficiency, testing, point and

interval estimation. The binomial, sample problem, topic

of t-test. Prerequisites, 225-154.

225-172 Topics in Statistics 3 s.h.

Problems selected by the instructor for their rele-

ance, basic ideas in probability and statistics will be

applied to building models of real systems, making sci-

centific inferences, and management decisions. Prerequisite,

225-154, 225-120, or 225-154.

225-177 Numerical Analysis for Actuaries 3 s.h.

Introduction to the calculus of finite differences, inter-

polation, numerical solution of differential equations,

finite difference, linear and non-linear systems. Corequisite,

Mathematics 220-328 or 220-38.

225-178 Graduation

Continuation of 225-177, including graphical, interpolation,

adjusted average, difference equations, curve-fitting meth-

ods of graduation, and methods of testing graduations.

225-179 Advanced Mathematics of Finance 3 s.h.

Compulsory interest, annuitants certain, bonds, depreciation,

yield curves, and the determination of yield rates. Prereq-

uquisite, Mathematics 220-35 or 220-36.

120
225:180 Mathematics of Life Insurance 3 s.h.
Elements from probability and the mathematics of finance are applied to problems of price–benefit structure determination in life insurance. Prerequisite: Mathematics 222:33 or 222:38.

225:181 Actuarial Theory and Practice I 4 s.h.
Mathematical theory of contingencies of both single and multiple lives. Prerequisite or corequisite: 225:179.

225:182 Actuarial Theory and Practice II 4 s.h.
Continuation of 225:181. Development of the multiple decrement model and its application to disability and accidental death insurance and to retirement systems. Prerequisite: 225:181.

225:183 Construction of Demographic Tables 3 s.h.
The construction of life tables, the analysis of mortality and morbidity data, and elements of demography. Prerequisite or corequisite: 225:181 or equivalent.

225:184 Risk Theory 3 s.h.
The individual and the collective risk models for insurance systems. Methods of approximating the distribution of total claims. Applications of risk theory to the management of insurance systems. Prerequisite or corequisite: 225:181 and 225:185.

225:185 Topics in Actuarial Sciences 3 s.h.
Using topics selected by the instructor for their relevance, basic ideas in probability, statistics, and mathematics will be applied to specific problems that arise in actuarial science. Prerequisite or corequisite: 225:181.

225:191 Individual Study cr.arr.
For M.S. thesis students. Prerequisite, consent of adviser.

225:197 Readings in Statistics and/or Actuarial Science cr.arr.
Prerequisite, consent of the department.

225:255 Analysis of Variance 4 s.h.
Fixed, mixed, and random models, multiple comparisons, general linear model, analysis of covariance. Prerequisite: preliminary knowledge of the theory of matrices and 225:184 or equivalent.

225:256 Multivariate Analysis 4 s.h.
Multiple and partial correlation, derivation of the generalized inverse, multivariate linear model, and Wishart distribution. Prerequisite: 225:255 or 225:256.

225:264 Theory of Probability I 3 s.h.
An advanced theoretical course, including: probability spaces and random variables, distribution and characteristic functions, independence and conditioning, and central limit theorem. Same as Mathematics 222:562. Prerequisite: 225:211.

225:265 Theory of Probability II 3 s.h.
A continuation of 225:264 with topics selected from strong and weak laws of large numbers, the Glivenko– Cantelli theorem, the law of the iterated logarithm, infinitely divisible distributions, random walks, Markov processes, and martingales.

225:266 Topics in the Theory of Probability 2 or 3 s.h.
Selected topics in the theory of probability which are of particular interest to the instructor. Prerequisite, consent of instructor. Offered for 2 semester hours only in summer session.

225:267 Stochastic Processes I 3 s.h.
An advanced course, including: foundations, the Kolmogorov–Ganek theory, second order processes, processes with orthogonal increments, stationary processes, and normal processes. Prerequisite: 225:264.

225:268 Stochastic Processes II 3 s.h.
A continuation of 225:267 with topics selected from: analytic properties of sample functions, Markov processes, martingales, crossing problems, linear least-squares problems, and limit theorems.

225:271 Statistical Inference I 3 s.h.

225:272 Statistical Inference II 3 s.h.
Continuation of 225:271. Uniformly most powerful tests: distributions with monotone likelihood ratios, least favorable distributions. Similar and unbiased tests, principle of invariance, compound and multiple decision problems.

Prerequisite, consent of instructor.

225:293 Seminar: Probability cr.arr.
Prerequisite, consent of instructor.

Prerequisite, consent of instructor.

225:297 Seminar: Actuarial Theory cr.arr.
Prerequisite, consent of instructor.

MEDICAL TECHNOLOGY
(See Interdisciplinary Programs and General Science)

MICROBIOLOGY
Head of Department, J. R. Porter
Office, 156 Medical Laboratories Building
Courses in microbiology are described under Microbiology in College of Medicine. Students registered in the College of Liberal Arts may elect a major in microbiology leading to a Bachelor of Science degree. The following requirements must be fulfilled:

Core courses: literature, social science, historical-cultural studies, 3 cr. Required Courses:

Botany 3 cr. Introduction to Botany 5 cr.

Zoology 3 cr. Principles of Animal Biology 5 cr.

Chemistry 4 cr. and 4 cr. Principles of Chemistry I and II 8 cr.

or 5 cr. Principles of Chemistry 8 cr.

or 4 cr. Elementary Chemistry Laboratory 5 cr.

4 cr. Quantitative Analysis 4 cr.

4 cr. Organic Chemistry I 4 cr.

4 cr. Organic Chemistry II 4 cr.

4 cr. Intermediate Chemistry Laboratory I 5 cr.

Biochemistry 9 cr. General Biochemistry 4 cr.

9 cr. Experimental Biochemistry 5 cr.

Physics 5 cr. College Physics 5 cr.

5 cr. College Physics 5 cr.

121
In order to take advantage of advanced placement, students who have had prior ROTC training at other institutions or other active military service in any of the armed forces of the United States should provide information of such training to the ROTC Unit registration. Students may transfer from military science to aerospace military science or vice versa.

Upon registration for the freshman year, each student is tested for placement in the first-year classes. All freshmen are given one hour a week while attending leadership training during the first semester of the sophomore year. ROTC at the University is voluntary.

Army

The freshman program consists of four hours of instruction in each month—two hours of classroom activity and two hours of leadership training. During the first semester of the sophomore year, cadets take Light Terrain Analysis offered by the geography 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.

All cadets take elective courses in the broad area of effective communications, such as English composition, public speaking, and the writing of reports. This is a part of the curriculum for both the freshmen and sophomores.

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 at any branch of the armed forces of the United States or who have completed the field training course in the sophomore year and who are physically qualified for a commission. They agree to serve on active duty for five years after graduation. ROTC students in their junior and senior years receive a subsistence pay of $250 per month.

Upon successful completion of the ROTC program all cadets 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 classes at this University are under a general military science program which allows commissioning in any of the 5 branches of the Army with specialties open in over 40 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, military science, business administration. All cadets are required to maintain high standards, both in the classroom and in ROTC activities.

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-
Aerospace Studies Program is offered to qualified cadets during the senior year in preparation for an Air Force career with a pilot.

**Special Facilities**

The departments use the Army ROTC for leadership laboratory and have their own classrooms. A ten-point indoor rifle range is used for both small arms marksmanship training and the rifle teams. All uniforms, books, and equipment are furnished by the department at no cost to the student. All off-campus training expenses involving travel are borne by the U.S. government.

**Special Activities**

ROTC students are eligible for individual awards presented for outstanding achievement in leadership, academic work, citizenship, scholastic excellence, proficiency in drill and instruction. They also are encouraged to participate in military fraternal organizations such as The Keystone, The U.S. Army, and the rifle teams for which individual and unit recognition may be achieved. The Military Ball and the annual Governor's Day are special cadet corps events.

**ROTC Scholarships**

Four-year scholarships are available to selected high school graduates. One-, two-, and three-year scholarships are available to selected ROTC cadets who participate in the four-year program. (See Scholarships and Loans.)

**STAFF**

**Army**

Professor: Lieutenant Colonel Robert S. Ashley
Assistant Professor: Lieutenant Colonel, Bernard D. Collins, Major Edmund L. Glabon, Captain Edwin O. Hodges, Captain Lawrence M. Jack, Captain Larry H. Johnson
Assistant Instructor: Sergeant Major Shelley R. Kemp
First Sergeant: James H. Smith, First Class Donald D. Smickler, Staff Sergeant Floyd G. Traudt
Air Force

Professor: Colonel John T. McCabe
Assistant Professor: Major Walter H. Foote, Captain Earl D. Bass
Assistant Instructor: Sergeant Major Frank K. Dayes, Major Sergeant Croft Thompson, Staff Sergeant Robert Stephens, Staff Sergeant Don L. Smith

**COURSE DESCRIPTIONS**

**Army ROTC**

**MILITARY SCIENCE**

Military Science I (Freshman)

22:10 Fundamentals of Leadership and Management 0 s.h.
First semester. The military as a profession, the historical growth of the Army and ROTC, organization of the Army, leadership training through practical exercises.

22:20 Fundamentals of Leadership and Management 4 s.h.

Military Science II (Sophomore)

22:34 Applied Leadership and Management 3 s.h.
First semester. Military geography and use of maps and photos. The cellular is part of Geology 1217 Terrain Analysis. Functions and responsibilities of junior officers.


**Military Science III (Junior)**

22:35 Advanced Leadership and Management 3 s.h.
First semester. Case studies of leadership problems common to small units, military teaching principles, fundamentals of educational psychology applicable to instruction, techniques in planning, presenting, and evaluating instruction; small unit tactics and communications; leadership development and training in practical exercises.

22:36 Advanced Leadership and Management 2 s.h.

**Military Science IV (Senior)**

23:37 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 training, and administrative Programs; staff operations; applied leadership and management.

23:38 Theory and Dynamics of the Military Team 2 s.h.

**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**

22:11 Organization and Mission of the USAF 1 s.h.
First semester. A study of the doctrine, mission, and organization of the United States Air Force. U.S. Strategic Offensive and Defensive forces; their mission, function, and employment of nuclear weapons; and defense.

23:31 Defense of the United States 1 s.h.
Second semester. Aerospace defense; missile defense; U.S. general and strategic support forces; the missions, resources, and operations of tactical air forces, with special attention to defended war, review of Army, Navy, and Marine general purpose forces.

123
MUSEUM TRAINING

Sophomore Year
23:51 U.S. Military in World Affairs 1 s.h.
First semester. Defense policies; theories of general war; nature and extent 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. Development of scientific and engineering 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. Development of scientific and engineering skills through study of development and employment of military air power, past, present, and future. 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 the leadership skills needed by junior officers. AS 400.

23:80 The Professional Officer 3 s.h.

23:90 Aerospace Military Studies Flight Instruction Program 2 s.h.
Flight instruction for qualified cadets; 25 hours of flight instruction by the pilot. Completion of course qualifies students to take examination for an FAA private pilot's license.

MUSEUM TRAINING

Head of Department, Walter C. Thieme, Office, 10 Macbride 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.S. 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 as a postgraduate degree. In special cases where a student can furnish evidence of experience, fitness, and ability, it is possible to major in museum studies for a master's degree. The museum-teaching techniques as taught are of value not only to the museum worker, but for example, to premedical and preprofessional students and to art students. Courses are offered for science teachers who wish some training in the caring for birds and mammals and in the preparation of other classroom materials.

STAFF
Assistant Professor: Walter C. Thieme.
Instructor: George D. Schirmer.

COURSES DESCRIPTIONS

For Undergraduates and Graduates
24:101 Museum Techniques 1 or 2 s.h.
Preparation and mounting birds, mammals, and fish. Collecting, mounting, and exhibiting museum materials, including habitat group work. No prerequisites.

24:102 Museum Techniques 1 or 2 s.h.
Continuation of 24:101, but may be taken as an independent unit. No prerequisites.

24:103 Museum Accessory Work 1 or 2 s.h.
Techniques used in preparation of classroom teaching materials and museum exhibit accessories. Instruction in design, casting and modeling procedures used in reproduction of fossils, serpents, and biological specimens. Applications to preclinical and general 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. No prerequisites.

24:105 Anatomical Modeling 1 or 2 s.h.
Modeling and casting various forms of mammals and birds. Primarily for students of museum work. Course arranged for preclinical and general students interested in science and to prepare in preparation of plaster casts. No prerequisites.

24:106 Anatomical Modeling 1 or 2 s.h.
Continuation of 24:105, but may be taken as an independent unit. No prerequisites.

24:110 Special Museum Technique gr. grad. Individual instruction in any of the techniques offered in the preceding course.

24:111 Special Museum Technique gr. grad. 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 curator.

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 curator.

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 attention to the anatomy of various animal forms. Prerequisites, first-year zoology, geology, or botany and consent of curator.

24:306 Advanced Anatomical Modeling 1 or 2 s.h.
Continuation of 24:305, but may be taken as an independent unit.

124
The objectives of the School of Music are to offer a sound musical training to a larger number at the undergraduate and graduate levels and to provide a limited number of courses for the nonmajor. At the undergraduate level, curriculum offers all qualified high school graduates an opportunity for further study of music, either professional or vocational. At the graduate level, curriculum provides advanced study, primarily designed for those preparing for teaching careers in the secondary schools. A limited number of courses is also offered for students majoring in music and for those taking music as a hobby. 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.). Curriculum for the two degrees are identical with the following exceptions: candidates for the B.A. may not count more than 50 semester hours in music toward the 120 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 120 semester hours required for graduation in the College of Liberal Arts and, in addition, have only a 6 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:

B.1. 26-40 Fundamentals and Harmony I, II

B.2. 26-40 Jar Training and Sight Singing

B.3. 26-10 Theory and Literature I, II

B.4. 40-60 Electives

E.250, E.2150 Chamber Music (or adequate proficiency)

Four years of musical study (both solo and ensemble) are expected. Participation in band, orchestra, or chorus is required of all music majors. Professional study is intended for students who plan a career in music. Participation in band, orchestra, or chorus shall be a requirement for graduation in the College of Liberal Arts, but it is not a requirement for graduation in the College of Liberal Arts. As such, students may choose to participate in either, or both, if they wish.

Undergraduate Music Education Programs

I. General requirements for teacher certification, in addition to a College of Liberal Arts major, include the following:

A.1. 26-40 Fundamentals and Harmony I, II

A.2. 26-40 Jar Training and Sight Singing

A.3. 26-10 Theory and Literature I, II

A.4. 40-60 Electives

B.1. 25-50 Music Education I

B.2. 25-50 Music Education II

B.3. 25-50 Music Education III

B.4. 25-50 Music Education IV

B.5. 25-50 Music Education V

For general requirements of the College of Liberal Arts, see College of Liberal Arts.

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 Degrees).
Master’s Degrees

Master of Arts. The Graduate Colleges require a minimum of 30 semester hours of graduate credit toward the M.A. degree; at least 24 semester hours must be completed in residence. As soon as possible in the first semester of residence the candidate should select a field of special interest and contact the area head in that field who will act as his advisor. A Plan of Study approved by the advisor and the departmental executive must be filed with the Graduate Colleges during the semester 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 his 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 Colleges provide that, upon recommendation of the head of the Music student proceeding to the doctorate, the doctoral examination may subsume the comprehensive examination.) A final examination is given for the final master’s examination. In such cases the examination must be of high quality and sufficiently advanced to merit this recognition.

Areas of concentration for M.A. degrees are composition, music theory and methodology, music education, music literature, music theory, and performance (including instrumental music). Close advice and supervision is given by members of the graduate faculty. For the thesis, the student must pass this examination or, in the event of failure, a second examination. The thesis may be of the usual research type or an aesthetic exploration of the general concepts of instruction. For the thesis in performance (5 semester hours of graduate credit is required), one 1/2 length recital is required; degree credit will not be given for a tape recorded lower than B. It is expected that original compositions shall be sufficiently tested by audition before being submitted as theses.

All curricula for the Master of Arts degree include:

1. Music History

2. Theory (any two of the following three, to be taken only if required by the candidate for the examination in music theory and music education)

a) 2245 Counterpoint Form or satisfactory score on the Analytical Studies Examination

b) 2246 Tonal Forms or satisfactory score on the Analytical Studies Examination

c) One elective from the analytical studies sequence

If exempted from either 2245 or 2246 as a result of the Analytical Studies Examination, the student shall take the one from which he was exempted and the elective from the areas of concentration. If exempted from both 2245 and 2246, only the elective from the analytical studies sequence is required.

3. Music History

2263 Advanced History and Literature of Music I or equivalent or satisfactory score on the Advisory Examination

2264 Advanced History and Literature of Music II or equivalent or satisfactory score on the Advisory Examination

If stronger preparation than above is attained at a result of the Analytical Studies Examination, another course should be elected by the student. The following courses are recommended: 2233, 2234, 2235, 2236, 2237, 2238, and 2239, and others that are occasionally offered by the musicology staff, may be elected in special cases with permission of the musicology advisor.

4. Participation in a large ensemble (2510, 2512; Opera Workshop, 2518; University Choir, 2518A; Orchestra, 2518B; Band), Keyboard instrum ents may substitute in accordance in place of participation in a large ensemble as the discretion of their advisor, at least 2 semester hours each must be spent in a large ensemble during the degree requirements.

V. Suitable courses in the candidate’s area of concentration

Graduate programs for the M.A. in music education include all minimum requirements of the Student of Music (see above) as well as 2245 Supervision and Administration of Music, 2246 Psychology of Teaching Music, 2248 General Music in the Elementary Schools of 70441, General Music in Secondary Schools, and two courses selected from the following:

2245 Advanced Instrumental Conducting I

2245 Advanced Choir Conducting I

2245 Advanced Instrumental Methods and Literature I

2245 Advanced Instrumental Methods and Literature II

2245 Advanced Choral Literature I

2245 Advanced Choral Literature II

2245 Advanced Choral Literature III

Master of Fine Arts. The M.F.A. is a degree normally requiring three years of graduate study. In the areas of composition or performance (including instruction). It requires a minimum of 48 post-baccalaureate semester hours. In addition to the curriculum requirements for the Master of Arts degree (see above), the student must also present at least two full-length recitals or programs. A major 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, including two final examinations with a minimum combined total of 60 semester hours of graduate credit. See Graduate Colleges for further details.

Doctoral Degrees

The Graduate College requires a minimum of 72 semester hours of graduate credit for the doctorate; two semesters of Master of Music training in Music Education are required, and the degree of Master of Music is a prerequisite. The requirements of the doctoral program include a comprehensive examination that is intended to examine the candidate’s knowledge of music history and theory major area and to understand the teacher of music education who will take part in the departmental request to the Graduate College for permission to sit for this examination. The examination is offered at the candidate’s request and the comprehensive examination is intended to provide the candidate’s knowledge of music literature. Each candidate must pass the comprehensive examination and be present to the candidate that the requirement of the study in the comprehensive examination is to be completed prior to the completion of his dissertation. The student must be registered in the University at the time of the comprehensive examination, which may be passed not later than the semester before the semester on which the candidate is to be under the degree of Master of Music. The examination may be taken only by the foreign language requirement in addition to the foreign language requirement in the field of specialization. The passing of the comprehensive examination may be held until the candidate has completed the comprehensive examination. See Graduate Colleges for further details.

All doctoral students in initial include

I. Minimum course requirements listed under the M.A.

II. One or more additional electives from the analytical studies sequence 2514A, 2514B, or equivalent.

III. One or more additional courses in the music history, music education sequence (see list above under Master’s Degrees).

IV. 2245A Accompaniment I

V. Reading proficiency in one foreign language (usually German) except for music education students who may elect two courses in statistics. Most areas will require one or more additional languages; these
further language requirements and levels of achievement.

VI. All doctoral graduate students shall be available for enrollment in a large-scale (25-152) University Choir (25-121) (singer) or 25-152 Orchestra (25-123 Band) during each term of registration unless excused by their advisor.

Doctor of Philosophy.

The School of Music includes the following requirements: satisfactory achievement in all the graduate examinations in music theory; demonstration of musical proficiency; qualification for a qualifying research paper; and satisfactory achievement on a qualifying examination. Details of these requirements may be obtained from the Director's office. School of Music.

Basic requirements for Ph.D. programs in music education include, in addition to the requirements for the M.A., in the fourth, two semester hours credit in both 20-646 and 20-648, and a minimum of eight semester hours in education. Additional course requirements in the field of education may be required on the basis of individual needs.

Doctor of Musical Arts.

For the D.M.A. degree in performance, the candidate must satisfactorily complete the general requirements for the Ph.D. in music, with a high standard of excellence. All candidates must pass a satisfactory examination in their field of performance.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.

Doctor of Musical Arts.
MUSIC

25:10 Theory and Literature IV cr.arr. 3 s.h.
Countertpoint and contrapuntal forms. Prerequisite, 25:9.
Second semester.

25:11 Review Theory cr.arr. 3 s.h.

25:15 Undergraduate Composition cr.arr. 3 s.h.
Prerequisite, permission of instructor. Both semesters.

History and Research
25:91 History of Music I cr.arr. 3 s.h.
Prerequisite, music majors, 25:5 or equivalent; non-
majors, consent of Instructor. First semester.

25:92 History of Music II cr.arr. 3 s.h.
Continuation of 25:91, may be taken as an inde-
pendent unit. Prerequisite, same as 25:91. Second semester.

25:97 Honors in Music 1 to 4 s.h.

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 (Cornet, 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 instrumental skills.
First semester.

25:106 Instrumental Techniques 1 to 3 s.h.

25:107 Instrumental Conducting 2 s.h.
Offered both semesters.

25:108 Advanced Instrumental Conducting cr.arr. 3 s.h.
Prerequisite, elementary conducting skills.

25:109 Choral Methods and Conducting 3 s.h.
Same as Education 75:147. First semester.

25:110 Choral Literature and Conducting 3 s.h.

25:111 Choral Techniques 2 s.h.
Same as 25:339 or 25:112, but without elements of com-
position.

25:112 String Techniques and Methods 2 or 3 s.h.
Same as Education 75:120.

25:113 Methods of Teaching Piano 3 s.h.

25:114 Piano Teaching Laboratory cr.arr. 3 s.h.

25:115 Diction for Singers I 3 s.h.

25:116 Diction for Singers II 2 s.h.

German and Italian.

25:117 Problems in Arranging and Orchestration cr.arr. 3 s.h.
25:118 Arranging for Marching Band cr.arr. 2 s.h.

Theory and Composition
25:145 Contrapuntal Forms 3 s.h.
Writing and analysis. Prerequisite, 25:2 or 25:11 or
equivalent.

25:146 19th-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 semesters and
summer.

25:148 Analysis of Music Literature, 1600 to 1750 3 s.h.
Prerequisites, 25:11 or equivalent and 25:2 or equivalent.
May be repeated. First semester.

25:149 Analysis of Music Literature, 1750 to 1820 3 s.h.
Prerequisites, 25:11 or equivalent and 25:2 or equivalent.
May be repeated. First semester.

25:150 Analysis of Music Literature, 1825 to 1900 3 s.h.
Prerequisites, 25:11 or equivalent and 25:2 or equivalent.
May be repeated. Second semester.

25:151 Analysis of Music Literature, 1900 to Present 3 s.h.
Prerequisites, 25:11 or equivalent and 25:2 or equivalent.
May be repeated. Second semester.

25:152 Analysis of Music Literature, Special Topics 3 s.h.

25:154 Intermediate cr.arr. 3 s.h.
Same as Art 36:151, Speech 36:126.

25:155 Studies in Jazz cr.arr. 3 s.h.
Prerequisite, a thorough knowledge of traditional har-
mony and counterpoint and at least junior standing.

25:156 Composition Seminar cr.arr. 3 s.h.
Prerequisites, advanced writing and permission of in-
structor.

25:157 Orchestration 1 s.h.

First semester.

History, Literature, and Research
25:158 Late 18th- and 19th-Century Composers 2 or 3 s.h.

25:159 Early 19th- and 20th-Century Composers 2 or 3 s.h.

25:161 Survey of Opera cr.arr. 3 s.h.
Historical study of opera literature. First semester and
summer.

25:162 Interpretation of German Art cr.arr. 3 s.h.

25:163 Interpretation of Non-German Art cr.arr. 3 s.h.

25:164 History of Organ Building and Design 3 s.h.
Development of organ building; the history of sounds
and of stops, from the Renaissance to the present. Open
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:155</td>
<td>Church Service Playing I</td>
<td>2 s.h.</td>
<td>Service and hymn playing: accompaniment of choral and shared music, and improvisation of short tones and threepart hymn introductions. May be repeated for credit. Offered in alternate years; offered 1971-72.</td>
</tr>
<tr>
<td>25:185</td>
<td>Church Service Playing II</td>
<td>2 s.h.</td>
<td>Continuation of 25:155. May be repeated for credit. Offered in alternate years; offered 1971-72.</td>
</tr>
<tr>
<td>25:167</td>
<td>Organ Literature I</td>
<td>2 s.h.</td>
<td>Pre-Bach literature from the 15th through the 17th centuries. Open to all music students and to others by consent of instructor. May be repeated for credit.</td>
</tr>
<tr>
<td>25:168</td>
<td>Organ Literature II</td>
<td>2 s.h.</td>
<td>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.</td>
</tr>
<tr>
<td>25:169</td>
<td>Vocal Literature</td>
<td>cr.arr.</td>
<td>First semester and alternate summers.</td>
</tr>
<tr>
<td>25:170</td>
<td>Orchestral Literature</td>
<td>cr.arr.</td>
<td>First semester and alternate summers.</td>
</tr>
<tr>
<td>25:171</td>
<td>Piano Literature</td>
<td>cr.arr.</td>
<td>First semester and alternate summers.</td>
</tr>
<tr>
<td>25:172</td>
<td>String Instrument Literature</td>
<td>cr.arr.</td>
<td>First semester and alternate summers.</td>
</tr>
<tr>
<td>25:173</td>
<td>Wind Instrument Literature</td>
<td>cr.arr.</td>
<td>First semester and alternate summers.</td>
</tr>
<tr>
<td>25:175</td>
<td>Special Studies</td>
<td>3 s.h.</td>
<td>Analysis of music literature, including appreciation of its historical and cultural contexts.</td>
</tr>
</tbody>
</table>

**Primarily for Graduates**

**Music Education**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:200</td>
<td>Seminar: Bond Problems</td>
<td>cr.arr.</td>
<td>First semester and alternate summers.</td>
</tr>
<tr>
<td>25:201</td>
<td>Methods of Teaching Voice</td>
<td>cr.arr.</td>
<td>First semester and alternate summers.</td>
</tr>
<tr>
<td>25:203</td>
<td>Church Music I</td>
<td>2 s.h.</td>
<td>Literature and Hymnody: a survey of congregational worship practice.</td>
</tr>
<tr>
<td>25:204</td>
<td>Church Music II</td>
<td>2 s.h.</td>
<td>Church choir repertoire and materials.</td>
</tr>
<tr>
<td>25:207</td>
<td>Advanced Choral Conducting I</td>
<td>2 or 3 s.h.</td>
<td>Alternate semesters. Prerequisite, 25:108.</td>
</tr>
<tr>
<td>25:209</td>
<td>Advanced Instrumental Methods</td>
<td>1 or 2 s.h.</td>
<td>Review of techniques, solo, ensemble, and study materials for wind and percussion instruments. First semester.</td>
</tr>
<tr>
<td>25:330</td>
<td>Fugue</td>
<td>3 s.h.</td>
<td>Prerequisite, mastery of the materials of counterpoint and harmony. Writing and analysis. Both semesters.</td>
</tr>
</tbody>
</table>

**Theory and Composition**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:326</td>
<td>Methods and Techniques of Teaching Basic Musicianship cr.arr.</td>
<td>2 s.h.</td>
<td>Techniques for teaching basic theory skills, interval, rhythmology, melodic, and harmonic dictation, and selected keyboard skills.</td>
</tr>
<tr>
<td>25:327</td>
<td>Seminar: Music Theory Research cr.arr.</td>
<td>2 s.h.</td>
<td>Seminar: Music Theory Research. May be repeated for credit.</td>
</tr>
<tr>
<td>25:341</td>
<td>History of Music Theory I</td>
<td>2 s.h.</td>
<td>History of Music Theory I. May be repeated for credit.</td>
</tr>
<tr>
<td>25:342</td>
<td>History of Music Theory II</td>
<td>2 s.h.</td>
<td>History of Music Theory II. May be repeated for credit.</td>
</tr>
<tr>
<td>25:343</td>
<td>Thorough Bass Realization I</td>
<td>2 s.h.</td>
<td>Practice in writing keyboard accompaniments in 17th- and 18th-century music.</td>
</tr>
<tr>
<td>25:344</td>
<td>Thorough Bass Realization II</td>
<td>2 s.h.</td>
<td>Practice in improvising accompaniments at sight on the keyboard, from figured basses. Open to qualified students with sufficient keyboard proficiency.</td>
</tr>
<tr>
<td>25:351</td>
<td>Electronic Studio II</td>
<td>cr.arr.</td>
<td>Individual creative studies. Prerequisite, 25:200 or consent of instructor. May be repeated for credit. Both semesters.</td>
</tr>
<tr>
<td>25:354</td>
<td>Advanced Theory I</td>
<td>3 s.h.</td>
<td>Examination and evaluation of ideas of such theorists as Rameau, Purcell, Handel, Schenker, Fux, Palestrina. Developing base for analysis.</td>
</tr>
<tr>
<td>25:356</td>
<td>Advanced Theory II</td>
<td>3 s.h.</td>
<td>Problems of musical perception. Examinations of studies pertaining to music aesthetics, such as those of Langen, Meyer, Casimir, Leibnitz.</td>
</tr>
</tbody>
</table>

**Musicology, Literature, and Research**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:301</td>
<td>Advanced History and Literature of Music I</td>
<td>3 s.h.</td>
<td>Style in Western music. First semester.</td>
</tr>
<tr>
<td>25:302</td>
<td>Advanced History and Literature of Music II</td>
<td>3 s.h.</td>
<td>Continuation of 25:301, but may be taken as an independent unit with permission of instructor. Second semester.</td>
</tr>
<tr>
<td>25:303</td>
<td>Medieval Music</td>
<td>3 s.h.</td>
<td>Second semester.</td>
</tr>
<tr>
<td>25:304</td>
<td>Renaissance Music</td>
<td>3 s.h.</td>
<td>Second semester.</td>
</tr>
<tr>
<td>25:305</td>
<td>17th-Century Music</td>
<td>3 s.h.</td>
<td>Second semester.</td>
</tr>
<tr>
<td>25:306</td>
<td>The Age of Bach and Handel</td>
<td>3 s.h.</td>
<td>Second semester.</td>
</tr>
<tr>
<td>25:307</td>
<td>Preclassical Composers</td>
<td>3 s.h.</td>
<td>Second semester.</td>
</tr>
<tr>
<td>25:308</td>
<td>The Classical Period</td>
<td>3 s.h.</td>
<td>Second semester.</td>
</tr>
<tr>
<td>25:309</td>
<td>19th-Century Music</td>
<td>3 s.h.</td>
<td>Second semester.</td>
</tr>
<tr>
<td>25:310</td>
<td>20th-Century Music</td>
<td>3 s.h.</td>
<td>Second semester.</td>
</tr>
<tr>
<td>25:311</td>
<td>Music of the Americas</td>
<td>3 s.h.</td>
<td>(U.S. and Canada)</td>
</tr>
<tr>
<td>25:312</td>
<td>Music of the Americas</td>
<td>3 s.h.</td>
<td>(Latin America)</td>
</tr>
<tr>
<td>25:313</td>
<td>Seminar: Major Composers</td>
<td>3 s.h.</td>
<td>Second semester.</td>
</tr>
<tr>
<td>25:314</td>
<td>Seminar: Genres of Music</td>
<td>3 s.h.</td>
<td>Second semester.</td>
</tr>
<tr>
<td>25:315</td>
<td>The Opera of Mozart</td>
<td>3 s.h.</td>
<td>Second semester.</td>
</tr>
<tr>
<td>25:316</td>
<td>The History of Musical Instruments</td>
<td>3 s.h.</td>
<td>Notes: Courses 25:300 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.</td>
</tr>
</tbody>
</table>

**MUSIC**

129
25.318 Primitive Music 2 s.h.
25.319 Oriental Music 2 s.h.
25.321 Introduction to Graduate Study in Music 2 s.h.

Use of the music library; reference materials; bibliographic research problems and methods, with guest lecturers from various musical subject areas. Required of all graduate students. First semester and summer.

25.322 Advanced Bibliography and Reference Materials 4 s.h.

Intensive bibliography, including additional materials in student’s major field of concentration. Prerequisite: 25.319 or consent of instructor. Second semester and summer.

25.323 Musical Notation 1 or 2 s.h.

Musical palaeography: transcription and stylistic study of early vocal and instrumental notations and manuscripts. May be repeated for credit.

25.325 Multicultural Approaches 2 or 3 s.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 s.h.

Continuation of 25.325. May be repeated for credit. Prerequisite: consent of instructor.

25.331 Seminar: Performance Practices I 3 s.h.

Problems of interpretation, especially in music of the 15th to 18th centuries.

25.332 Seminar: Performance Practices II 3 s.h.

Continuation of 25.331, but may be taken as an independent unit with permission of instructor.

25.334 Seminar: Vocal Performance 3 s.h.

25.335 Seminar: Wind Instrument Performance 3 s.h.

Both semesters.

25.336 Seminar: Percussion Methods, Materials, and Performance Practices 1 or 2 s.h.

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 s.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 s.h.

Continuation of 25.337, with emphasis on individual projects. Prerequisite: 25.337 or consent of instructor.

25.340 Seminar: Brass Instrument Performance 3 s.h.

25.341 Advanced Choral Literature I 2 or 3 s.h.

Mass, motet, and madrigal literature from the Renaissance through the 19th century. Alternate semesters.

25.342 Advanced Choral Literature II 2 or 3 s.h.

Canons, cantata, and Passion literature from the Renaissance through the 19th century. Alternate semesters.

25.343 Advanced Choral Literature III 2 or 3 s.h.

Twentieth-century choral music. Alternate semesters.

25.344 Seminar: Choral Music 3 s.h.

25.351 Survey of Song Literature I 2 s.h.

Solo song before Schubert. Alternate semesters.

25.352 Survey of Song Literature II 2 s.h.

German Art Song from Schubert to the present. Alternate semesters.

25.353 Survey of Song Literature III 2 s.h.


25.361 Special Studies: Piano Literature cr.arr.

Individual research in special aspects of piano literature. Primarily for D.M.A. students. May be repeated for credit.

25.380 Readings in Music Theory cr.arr.

25.381 Readings in Music History cr.arr.

25.400 Thesis (M.A.) cr.arr.

25.401 Thesis (M.F.A.) cr.arr.

25.500 Thesis (Ph.D.) cr.arr.

25.501 Composition (Ph.D. Thesis) cr.arr.

Both semesters.


25.503 D.M.A. Recital cr.arr.

Music Education

78.120 Methods and Materials: Music for the Classroom Teacher 3 s.h.

For elementary education majors only.

78.145 Methods and Materials: Elementary School Music 3 s.h.

For music education majors only.

78.191 Laboratory Practice in Elementary School 3 s.h.

78.245 General Music in the Elementary School 3 s.h.

78.140 Methods and Materials: Junior and Senior High School Music 3 s.h.

For music education majors only.

78.192 Observation and Laboratory Practice in High School 3 s.h.

78.340 Supervision and Administration of Music 2 or 3 s.h.

Open to graduate students and experienced teachers.

78.341 General Music in Secondary Schools 2 s.h.

78.342 Special Studies: Music Education cr.arr.

78.441 Psychology of Teaching Music 2 s.h.

78.443 Music Education, Advanced Observation, and Laboratory Practice 2 s.h.

78.445 Evaluation and Measurement in Music 2 s.h.

78.446 Research in Music Education 2 s.h.

Prerequisite, consent of instructor.

78.447 Social and Psychological Factors in Music Education 2 s.h.

Prerequisite, consent of instructor.
### Applied Music

A fee of $50 per semester is charged for each course. In applied music the student's major field of performance. The courses 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 two $50 courses in the same semester are assessed a fee of $90. 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 particularities, write to the Director. For assignment of teachers and individual lesson hours, students should consult as follows:

<table>
<thead>
<tr>
<th>Course</th>
<th>Instructor</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice</td>
<td>Mr. Stark</td>
<td>120 MB</td>
</tr>
<tr>
<td>Piano</td>
<td>Mrs. Simon</td>
<td>308 MB</td>
</tr>
<tr>
<td>Organ</td>
<td>Mr. Krapf</td>
<td>111 KL</td>
</tr>
<tr>
<td>Violin</td>
<td>Mr. Troger</td>
<td>201 MB</td>
</tr>
<tr>
<td>Viola</td>
<td>Mr. Preuss</td>
<td>212 MB</td>
</tr>
<tr>
<td>Violoncello</td>
<td>Mr. Wunder</td>
<td>165 MB</td>
</tr>
<tr>
<td>Contrabass</td>
<td>Mr. Schmitt</td>
<td>156 MB</td>
</tr>
<tr>
<td>Woodwind</td>
<td>Mr. Voorman</td>
<td>114 MB</td>
</tr>
<tr>
<td>Brass</td>
<td>Mr. Anderson</td>
<td>111 MB</td>
</tr>
<tr>
<td>Percussion</td>
<td>Mr. Darlington</td>
<td>207 MB</td>
</tr>
<tr>
<td>Percussion</td>
<td>Mr. Davis</td>
<td>1 MB</td>
</tr>
</tbody>
</table>

The following courses are offered every semester:

<table>
<thead>
<tr>
<th>Course</th>
<th>CRN</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:12 Voice 4</td>
<td>cr.art.</td>
<td>cr.art.</td>
</tr>
<tr>
<td>25:13 Piano 4</td>
<td>cr.art.</td>
<td>cr.art.</td>
</tr>
<tr>
<td>25:133 Organ 4</td>
<td>cr.art.</td>
<td>cr.art.</td>
</tr>
<tr>
<td>25:134 Harp 4</td>
<td>cr.art.</td>
<td>cr.art.</td>
</tr>
<tr>
<td>25:135 Violin 4</td>
<td>cr.art.</td>
<td>cr.art.</td>
</tr>
<tr>
<td>25:136 Viola 4</td>
<td>cr.art.</td>
<td>cr.art.</td>
</tr>
<tr>
<td>25:137 Cello 4</td>
<td>cr.art.</td>
<td>cr.art.</td>
</tr>
<tr>
<td>25:138 String Bass 4</td>
<td>cr.art.</td>
<td>cr.art.</td>
</tr>
<tr>
<td>25:139 Woodwind 4</td>
<td>cr.art.</td>
<td>cr.art.</td>
</tr>
<tr>
<td>25:140 Brass 4</td>
<td>cr.art.</td>
<td>cr.art.</td>
</tr>
<tr>
<td>25:141 Percussion 4</td>
<td>cr.art.</td>
<td>cr.art.</td>
</tr>
<tr>
<td>25:142 Senior Recital</td>
<td>cr.art.</td>
<td>cr.art.</td>
</tr>
</tbody>
</table>

Instruction in the student's minor field of performance or for non-music majors is offered for a fee of $25 per semester. The course will consist of one one-half hour lesson or two hours of class instruction weekly at the option of the instructor.

<table>
<thead>
<tr>
<th>Course</th>
<th>CRN</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:11 Voice</td>
<td>0 or 1 a.h.</td>
<td>0 or 1 a.h.</td>
</tr>
<tr>
<td>25:12 Piano</td>
<td>0 or 1 a.h.</td>
<td>0 or 1 a.h.</td>
</tr>
<tr>
<td>25:13 Organ</td>
<td>0 or 1 a.h.</td>
<td>0 or 1 a.h.</td>
</tr>
<tr>
<td>25:14 Harp</td>
<td>0 or 1 a.h.</td>
<td>0 or 1 a.h.</td>
</tr>
<tr>
<td>25:15 Cello</td>
<td>0 or 1 a.h.</td>
<td>0 or 1 a.h.</td>
</tr>
<tr>
<td>25:16 String Bass</td>
<td>0 or 1 a.h.</td>
<td>0 or 1 a.h.</td>
</tr>
<tr>
<td>25:17 Woodwind</td>
<td>0 or 1 a.h.</td>
<td>0 or 1 a.h.</td>
</tr>
<tr>
<td>25:18 Brass</td>
<td>0 or 1 a.h.</td>
<td>0 or 1 a.h.</td>
</tr>
<tr>
<td>25:19 Percussion</td>
<td>0 or 1 a.h.</td>
<td>0 or 1 a.h.</td>
</tr>
<tr>
<td>25:20 Flute</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:21 Oboe</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:22 Clarinet</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:23 Saxophone</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:24 Trumpet</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:25 Trombone</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:26 Bassoon</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:27 Tuba</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:28 Euphonium</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:29 Contra Bass</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:31 Tuba</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:32 Euphonium</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:33 Contra Bass</td>
<td>1 a.h.</td>
<td>1 a.h.</td>
</tr>
</tbody>
</table>

### Ensembles

<table>
<thead>
<tr>
<th>Ensemble</th>
<th>CRN</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:55 Beginner</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:57 Voice 3</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:58 Piano 3</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:59 Violin 3</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:60 Cello</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:61 String Bass 3</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:62 Woodwind 3</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:63 Brass 3</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:67 Percussion 3</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
</tbody>
</table>

No fee is charged for ensembles. Courses may be repeated for credit, and are offered each semester. Pre-requisites for each is the consent of the instructor.

<table>
<thead>
<tr>
<th>Course</th>
<th>CRN</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:180 Solo Roles</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:181 Old Gold Singers</td>
<td>0 to 2 a.h.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:182 Opera Workshop</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:183 Chamber Orchestra</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:184 Collegium Musicum</td>
<td>1 a.h.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:185 University Choir</td>
<td>1 a.h.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:186 Piano Accompaniment</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:187 Piano Chamber Music</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
<tr>
<td>25:188 String Chamber Music</td>
<td>cr.arts.</td>
<td>cr.arts.</td>
</tr>
</tbody>
</table>

131
PHILOSOPHY

22:158 Woodwind Chamber Music cr.arr.
22:190 Brass Chamber Music cr.arr.
22:281 Oratorio Chorus 1 s.h.
22:292 Orchestra 1 s.h.
22:153 Marching Band 1 s.h.
First semester.
22:254 Symphony Band and Haukepe Concert Band 1 s.h.
22:155 Percussion Ensemble 1 s.h.
Second semester.
22:197 Jazz Workshop 0 or 1 s.h.
Prerequisite, consent of instructor.

Summer Instruction
Children may enroll for applied music courses during the eight-week summer session for the 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, 22 Bunting Road

STAFF
Associate Professor: H. Lee Jacobs

COURSE DESCRIPTIONS

0:101 Biological and Psychological Aspects of Aging 3 s.h.
Aging as process; physiological changes with age; major theorists of biological and psychological aging; biological, pathological aging as determinant of integrity; the psychology of aging in historical perspective; changes in perceptual 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 Societal 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 disabling family and intergenerational relationships; community planning and coordination in relation to aging issues; and trends in continuing education for the middle and older 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)

Chairman of Department, Panayot Butchevvarov
Office, 274 English-Philosophy Building

The Bachelor of Arts Degree

The undergraduate program in philosophy provides a broad survey of the basic field of philosophy and strengthens logical skills which are useful in a wide variety of fields. Undergraduate majors are required to take the following courses:

22:101 Introduction to Philosophy 3 s.h.
22:102 Introduction to Rhetoric 3 s.h.
22:104 Introduction to Philosophy of Science 3 s.h.
22:113 Survey of Ancient Philosophy 3 s.h.
22:115 Survey of Modern Philosophy 3 s.h.

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 3.8 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 48 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, Metaphysics and Epistemology, and Ethics. For the Ph.D., degree one foreign language other than German, Latin, Greek, or Hebrew is required. Normally, knowledge of French or German, or French and German, the E.T.S. examinations, are employed. The Department of Philosophy reserves the right to require examinations for Latin and Greek. The fourth year of graduate study will be spent in writing a doctoral dissertation.

STAFF
Professor: Gunar Bergmann, Panayot Butchevvarov, Associate Professor: Laid Addis, Philip Cummins, Moltha Gest, Assistant Professor: John Brinkley, William Robinson, Frank Beane

COURSE DESCRIPTIONS

For Freshmen and Sophomores Only

22:1 Elementary Rhetoric 3 s.h.
Trends of thought and methods of argument in moral and social issues through seminars.

22:2 Elementary Logic 3 s.h.
Elementary study of valid and invalid reasoning. Such seminars.
PHYSICAL EDUCATION FOR MEN

29:249 Research: Logic and Epistemology 29:251 Research: History of Philosophy
May be repeated for credit. May be repeated for credit.

PHYSICAL EDUCATION FOR MEN

Head of Department, Louis E. Alley

207 Poindexter Hall

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 coaches; and the program for the endorsement of athletic trainers.

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-auricular 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 exercises.

Students who have completed the physical education skills requirement may take additional skills courses by registering for elective Physical Education for Men 27:26, 27:27, or 27:28.

Programs for Undergraduate Majors

Undergraduate programs of study in physical education lead to the B.A. degree or to the B.S. degree.

The program of study leading to the B.A. degree is designed for the superior student majoring in physical education for adults and in the physical sciences as well. Completion of this program represents the first step toward the B.S. degree, with major emphasis on exercise physiology, adapted physical education and rehabilitation, or anatomy and kinesiology. By selecting appropriate electives, the student can meet the College, 207, 208, and 211, requirements for teaching science (see General Science for science requirements and College of Education for certification requirements), for coaching athletic teams, and for serving as athletic trainers in the program, as underpinnings for endorsement of athletic coaches and athletic trainers. A minimum of 12 semester hours of French, Russian, or German is required for the B.A. degree.

The program of study leading to the B.S. degree with a major in physical education is designed to prepare students for professional careers in two general areas: teaching and coaching in schools and colleges and special physical education. A minimum of 12 semester hours in a foreign language is required for this degree.

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:

Course in Physical Education

27:13 Introduction to Physical Education
27:22 or 22 Teaching of Recreational Sports
27:23 Human Anatomy
27:29 Leadership Training
27:39 Adapted Physical Education

TP:500 Educational Psychology and Measurement
75:146 Methods in High School Physical Education for Boys
75:147 Methods in High School Physical Education for Girls
75:149 Physiology of Exercise
75:150 General Anthropology

Foundation courses in science
4:1, 4:2 General Chemistry and Qualitative Analysis
4:3, 4:4 Biochemistry
4:5, 4:6 Organic Chemistry
4:7 College Algebra
4:8 Trigonometry
4:9 Analytic Geometry
4:10 Calculus
4:11 Principles of Animal Biology
4:12 Principles of Human Genetics

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
27:21, 27:22 Teaching of Recreational Sports
27:32 Teaching of Gymnastics
27:33 Coaching of Gymnastics
27:34 Coaching of Football
27:35 Coaching of Handball
27:36 Coaching of Track and Field
27:37 Coaching of Basketball
27:38 Coaching of Swimming
27:39 Coaching of Wrestling
27:40 Human Anatomy

One of the seven coaching courses must be elected
27:103 Administration of Physical Education and Athletics
27:105 Adapted Physical Education
27:148 Foundations of Physical Education
27:181 Foundations of Physical Education II
75:13 Human Physiology
75:138 Human Physiology II

Courses required for certification in physical education
27:143 Methods and Materials in Elementary School Physical Education
27:142 Methods and Materials in Elementary School Physical Education or
27:19 Social Forms of Dance
27:145 Methods in High School Physical Education for Boys
75:75 Educational Psychology and Measurement
75:100 Introduction to Secondary School Teaching
27:181-1 Laboratory Practice in Elementary School Physical Education
27:181-3 Observation and Laboratory Practice in Elementary School Physical Education

Majors in teaching and coaching must apply to the Director of Admissions in January of their senior year in 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 physical education (e.g., adapted physical education, therapeutic recreation, or special education) or to complete pre-physical therapy requirements must satisfactorily complete the following:

Courses in physical education and related areas
27:11, 27:22 Teaching of Recreational Sports
27:31 Teaching of Swimming
27:31 Teaching of Swimming
27:32 Teaching of Swimming
27:35 Coaching of Handball
27:36 Coaching of Track and Field
27:37 Coaching of Basketball
27:38 Coaching of Swimming
27:39 Coaching of Wrestling
27:40 Human Anatomy

One of the seven coaching courses must be elected
27:103 Administration of Physical Education and Athletics
27:105 Adapted Physical Education
27:148 Foundations of Physical Education
27:181 Foundations of Physical Education II
75:13 Human Physiology
75:138 Human Physiology II

Courses required for certification in physical education
27:143 Methods and Materials in Elementary School Physical Education
27:142 Methods and Materials in Elementary School Physical Education or
27:19 Social Forms of Dance
27:145 Methods in High School Physical Education for Boys
75:75 Educational Psychology and Measurement
75:100 Introduction to Secondary School Teaching
27:181-1 Laboratory Practice in Elementary School Physical Education
27:181-3 Observation and Laboratory Practice in Elementary School Physical Education

134
PHYSICAL EDUCATION FOR MEN

TP:143

Introductory to Statistics

63:251

Elementary Statistical Inference in Medicine

Electives may be selected from the following:

27:157

Advanced Anatomy and Kinesiology

27:157

Advanced Anatomy and Kinesiology

27:205

Advanced Physical Education

27:211

History of Physical Education

27:233

Applied Anatomy

27:237

Curriculum in Physical Education

27:307

Motor Development

104:221

Philosophy and Trends in Recreation

May not be elected if the student has completed an equivalent course in undergraduate study.

Writes comprehensive examinations. The candidate for the M.A. degree with thesis must write in Research and, in addition, must elect four areas from each of the following two groups:

Group I

Anatomy and Kinesiology

Exercise Physiology

Mechanical Analysis of Sports

Psychology of Motor Learning

Tests and Measurements in Physical Education

Group II

Adapted Physical Education

Administration of Physical Education

Curriculum in Physical Education

History of Physical Education

Recreation

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.

1. Satisfactory completion of the M.A. comprehensive examination.

2. Ampleness of thesis by Graduate College.

3. Completion of required (undergraduate and graduate) courses in physical education and related fields 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.

4. A grade-point average of 2.65 or higher on all work attempted at this University.

M.A. without thesis. The study program leading to the M.A. degree without thesis is primarily designed as a terminal unit of advanced study in preparation for the administration, teaching, or coaching of physical education in the schools. A seminar paper is required in connection with this degree.

Undergraduate prerequisites. The undergraduate courses (or equivalents) are required, 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 (minimum)

Human Anatomy

2

Human Physiology

2

Methods in Physical Education

2

Administration of Physical Education and Recreation

3

Intermediate Algebra (or equivalent)

3

Teaching of Recreational Sports (or equivalent)

4

Practice Teaching (or equivalent)

2

Elective in physical education and related areas

13

Total 30

Requirements. The specific courses listed below, together with elective courses sufficient to total 30 semester hours in physical education and related areas, are required for the M.A. degree with thesis.

27:147 Seminar: Mechanical Analysis of Human Motion

27:257 Seminar: Motor Learning I

27:258 Seminar: Motor Learning II

27:262 Seminar: Research in Physical Education (M.A.)

27:263 Seminar: Research in Physical Education (M.A.)

27:148 Physiology of Exercise

13
PHYSICAL EDUCATION FOR MEN

Requirements. The specific courses listed below, in-
goclur with elective courses in physical education and
related areas sufficient to total 30 semester hours, are re-
quired for the B.A. degree without thesis.

27:125 Adapted Physical Education
27:233 Advanced Adapted Physical Education and
27:137 Mechanical Analysis of Athletic Performances
27:237 Public School Curriculum in Physical

Education
27:287 Advanced Measurement II
27:291 Seminar: Nonleisur
27:294 Seminar: Exercise Physiology
27:294 Seminar: Exercise Physiology
27:294 Seminar: Exercise Physiology
27:294 Seminar: Exercise Physiology

Students who wish to qualify as elementary-secondary
supervisors of physical education should select the courses
required for such certification. Those students should consult
their advisers concerning the 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 edu-
cation; anatomy and kinesiology; curriculum in physical
education; history of physical education; mechanical anal-
ysis of sports; exercise physiology; psychology of motor
learning; recreation; and tests and measurements in phys-
ical education. Candidates for the M.A. degree with
thesis 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 Men.
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
work must be earned in residence at this University. Six semester hours of grad-
uate credit earned at another institution may be applied to the M.A. degree provided that the courses in which the credit is earned are acceptable toward the M.A. de-
gree for which the student is working. The student must be in residence at least one
week of the semester during which the credits are to be applied. Six semester hours may be
applied toward the degree upon approval of the student's advisor.

Not more than six semester hours of graduate credit can be applied toward a degree in a
residence program if a student is registered and regularly attending the University for at
least six months in a calendar year and does not reside in a residence hall.

If the student wishes to take a graduate course in cor-
respondence study from another university, he should consult his advisor to determine whether the course may be used for credit toward the degree. If the course is accepted, the student may apply
the course to his degree program.

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, and knowledge of the research
techniques that may be applied to problems in physical education and special education, and at least one year
of work in physical education. A dissertation which will deal with a topic of interest to the student, and which is
accepted by the student's advisor, constitutes the dissertation. The selection of a dissertation su-
pervisor is the responsibility of the student. The dissertation must be submitted for publication to a reputable
journal before the Ph.D. degree 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
attained at this University. The student must have completed at least 90 semester hours of credit in a major
field of study in the field of physical education, and have had at least one year of graduate study in physical
education. A dissertation which will deal with a topic of interest to the student, and which is
accepted by the student's advisor, constitutes the dissertation. The selection of a dissertation su-
pervisor is the responsibility of the student. The dissertation must be submitted for publication to a reputable
journal before the Ph.D. degree is granted.

If the student is admitted to the program leading to the Ph.D. degree, the student must have earned a grade-point average of 3.0 or higher in all graduate work attempted.

Financial support. The student is eligible for financial support in the form of teaching assistantships, research assistantships, and fellowships. The student may be eligible for teaching assistantships, research assistantships, and fellowships.
PHYSICAL EDUCATION FOR Men

For Undergraduates and Graduates

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.

27:105 Adapted Physical Education 2 s.h.
Prerequisite: 27:103. 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 Kinetology 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: 27:150 or equivalent. First semester.

27:159 Physical Education for Elementary Schools 3 s.h.
Same as Education 72:261.

27:167 Advanced Measurement in Physical Education I 2 s.h.
First semester.

27:180 Scientific Foundations of Physical Education I 4 s.h.
Psychology, exercise physiology, and growth and development.

27:181 Scientific Foundations of Physical Education II 4 s.h.

27:183 Laboratory in Athletic Training I 1 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 72:261.

Primarily for Graduates

27:201 Problems cr.arr.
Consult Mr. Altman before registering. Both semesters.

27:105 Adapted Physical Education and Rehabilitation 4 s.h.
Prerequisites: 27:58 and 27:105. First semester.

27:307 Advanced Administration of Physical Education 2 s.h.
First semester.

27:311 History of Physical Education 2 s.h.
First semester.

27:313 Advanced Theory of Athletics 3 s.h.
Advanced theoretical study of coaching football, basketball, baseball, and track and field athletics for graduate students who are well-grounded in coaching methods. Summer session only.

27:334 Applied Anthropometry 2 or 3 s.h.
27:337 Public School Curriculum in Physical Education 3 s.h.
Same as Education 72:347.

27:340 Professional Preparation in Physical Education 2 s.h.
Critical analysis of current undergraduate and graduate programs in physical education.

27:341 Scientific Principles of Physical Conditioning 3 or 4 s.h.
27:347 Philosophy of Physical Education 2 or 3 s.h.
Prerequisite, consent of instructor.

27:357 Seminar: Mechanical Analysis of Human Movement cr.arr.

27:367 Advanced Measurement in Physical Education II 3 s.h.
Second semester.

27:368 Seminar: Nonthesis 3 s.h.
Required of students enrolled in 22-semester-hour program leading to M.A. without thesis.

27:398 Motor Learning I 3 s.h.
Major learning principles and practical implications for teaching.

27:310 Colloquium no cr.
Special lectures. Enrollment session only.

27:321 Orientation to Graduate Study no cr.

27:312 Seminar: Motor Learning II 3 s.h.
Students not having completed previous courses in motor learning should first complete 27:308. Evaluation of research literature in motor learning and motor performance.

27:334 Learning and Performance of Motor Skills Laboratory 3 s.h.
Construct, evaluate, and utilize research equipment specifically related to the learning and performance of motor skills. May substitute and apply skills obtained from experiments in the learning and performance of motor skills.

27:337 Seminar: Research in Physical Education Curriculum 3 s.h.


Required of candidates for M.A. with thesis. Should be completed during first 6 semester hours of graduate study. Guidance in selection of topic for research and in research procedure. Both semesters.


27:403 Seminar: Thesis III (Ph.D.) cr.arr.

27:404 Seminar: Thesis IV (Ph.D.) cr.arr.

138
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 all fields of the discipline. It combines with the pre-professional work. It also cooperates on an inter-departmental level for 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 electives. This graduate of the department must teach 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 selected.

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. Currents 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

<table>
<thead>
<tr>
<th>28:119 Methods and Principles of Physical Education</th>
<th>3 h.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives of 5 to 8 semester hours should be taken from the following:</td>
<td></td>
</tr>
<tr>
<td>28:120 Orientation</td>
<td>1 h.</td>
</tr>
<tr>
<td>28:26 Social Sciences of Dance</td>
<td>3 h.</td>
</tr>
<tr>
<td>28:21, 28, 29, 34 Techniques</td>
<td>3 to 9 h.</td>
</tr>
<tr>
<td>28:120 Organization and Administration of Physical Education</td>
<td>2 h.</td>
</tr>
</tbody>
</table>

Physical Education Teaching Concentration for Secondary Education Majors

| 28:121 Structural and Applied Anatomy | 3 h. |

Kinesiology

| 28:16 Kinesiology | 2 h. |
| 28:17 Kinesiology | 2 h. |
| 28:21, 28, 29, 34 Techniques | 3 to 9 h. |

Social Sciences of Dance

| 28:26, 28, 32 Teaching and Officiating Sports 4 to 6 h. |

Dance Concentration

| 28:27 First Aid (or Red Cross certification) | 2 h. |
| 28:28, 29, 30, 28:120 Orientation | 1 h. |

Organization and Administration of Physical Education

| 28:120 Organization and Administration of Physical Education | 2 h. |

Dance Curriculum

| 28:4, 5 Beginning and Intermediate Modern Dance | 5 or 6 h. |
| 28:11 Ballet | 1 or 2 h. |
| 28:12 Structural and Applied Anatomy | 3 h. |
| 28:12, 28:13 Ballet Technique | 3 h. |
| 28:30 or 28:122 rhythmic Analysis | 1 h. |
| 28:126 Dance Accompaniment | 2 h. |
| 28:8, 11, 12, 14 History of Dance | 4 h. |
| 28:125, 126 Beginning Chorography | 4 h. |
| 28:127 Advanced Modern Dance | 4 h. |

Dance Concentration for Music Majors

| 28:123 Dance Accompaniment | 2 h. |

In addition, the student must elect 15 semester hours from the following courses, or from others which may be offered later by the department or transferred from another institution, and approved by the advisor for the student’s program.

| 28:12, 13 Ballet(s) (in addition to first course required above) | 1 or 2 h. |
| 28:11 Stage Movement | 1 h. |
| 28:12 Social Sciences of Dance | 1 h. |
| 28:27 Folk Dance | 1 h. |
| 28:127 Teaching of Social Sciences of Dance | 1 h. |
| 28:12 Dance in Education | 1 h. |
| 28:112 Children's Dance | 1 h. |
| 28:113 Dance in Education | 1 h. |
| 28:121, 122 Dance Production | 4 h. |
| 28:114, 124, 125, 126, 127, 128, 129 Laboratory Practices | 6 to 8 h. |

Students desiring to teach in elementary or secondary schools must satisfy certification requirements in education, and must take 28:27 First Aid or hold Red Cross certification in the Red Cross. 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

| 28:12 Structural and Applied Anatomy | 3 h. |
| 28:16 Kinesiology | 3 h. |
| 28:21, 28, 29, 34 Techniques | 3 h. |
| 28:126 First Aid (or Red Cross certification) | 1 h. |
| 28:127 General Zoology | 1 h. |
| 28:14 General Chemistry | 1 h. |
| 28:1, 28, 121 College Physics | 3 h. |
| 28:12 Elementary Psychology | 3 h. |
| 28:17 Principles of Nutrition | 1 h. |
| 28:14 Introduction to Sociology | 1 h. |
| or two of the following three courses: |
| 28:132 Introduction to Anthropology | 1 h. |
| 28:121 Health Science | 1 h. |
| 28:112 Mental Hygiene of the Normal Child | 1 h. |

139
PHYSICAL EDUCATION FOR WOMEN

In addition, the student must take 6 semester hours of advanced courses in one science. It is recommended that some of the electives be taken from the following:

26:7 Techniques 3-4 h.
26:17 Correctives 3 h.
106:43 Recreational Craft 3 h.
106:45 Recreation Leadership 3 h.
106:113 Measurement 3 h.
106:125 Recreation for the Ill and Handicapped 3 h.

General Studies in Health, Physical Education, and Recreation

The purpose of this program is to give a background in health, physical education, and recreation, not as a preparation for a career in this field but as a broad and satisfying 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:
26:10, 12, 15, 17, 19, 20, 22 7-8 h.
104:51, 52, 53 3 h.

Supplementary courses of 30 to 32 semester hours may be elected to complete a major of 50 semester hours. These elective hours should be from the following fields: art, dramatic arts, environmental health, home economics, music, physical education, psychology, recreation, or sociology. At least 10 of the 30 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 Readings, 26:34 Honors Project, or 26:35 Honors Seminar and include the presentation of a creative or experimental "Honors Thesis" as part of 26:34 or 35.

Graduate Study Requirements

M.A. degree. Awarded on completion of at least 30 semester hours of graduate work including thesis and in addition must satisfy the prerequisites for this degree. For the M.A. degree, there should be a record of previous education and anticipated future career. The curriculum may lead to teaching, administration, or supervision in the schools.

Prerequisites: Background in anatomy, kinesiology, physical education, social, and educational methods and theories, physical education, organization and administration of physical education, and physical education technique.

General Field Requirements

Techniques 2-4 h.
History of Physical Education 3 h.
Analysis of Human Motion 3 h.
*Measurement in Physical Education 1 or 2 h.
History of Physical Education 3 h.
Measurement in Physical Education 2 h.

Electives. The remainder of the program is planned according to the needs and interests of the student, subject to the approval of the advisor and the head of the department.

In very exceptional cases a student may be permitted to take a non-major M.A. Such a curriculum requires a minimum of 28 semester hours, a project instead of thesis, and other specified courses. Permission must be received from the graduate staff of the department and from the head of the department.

Ph.D. degree. Awarded on completion of approximately 30 semester hours of graduate work, including general requirements for the master's degree and credit for the dissertation.

Prerequisites. Background in anatomy, kinesiology, physiological, health education, social science methods in physical education, organization and administration of physical education, and physical education technique.

Tools of research. Certain abilities are required as a basis for research. The requirements for the Department of Physical Education for Women are:
1) Reading ability in one foreign language. Must be passed by course at The University of Iowa or by passing the GRE language test.
2) Statistical methods. May be satisfied by passing a graduate course in statistical methods at The University of Iowa.

General Field Requirements

Techniques of Research 5 or 6 h.
M.A. Thesis or Problem 10 or 11 h.
Seminar in Research 2 h.
Dissertation 10 h.
Analysis of Human Motion 3 h.
Hygiene or Physiology (any graduate course) 2 h.
Advanced Administration 5 h.
Principles of Physical Education 4 h.
History of Physical Education 1 or 2 h.
*Corrections 3 h.
*Measurement in Physical Education 2 h.
Specializations. At least 30 semester hours required in one area or in two related areas at the discretion of the advisor. Suggested areas:
Anatomy Outdoor Education and Administration
Correctives (Adaptive) Camping
Curriculum Physiology and History
Elementary School Psychology of Sport and Program
Physical Education Motor Learning
Psychology Physiology
Recreation Sociology of Sport
Rheumatology Measurement
Supervision Statistic and Research
Motor Skills Supervision

The dissertation should deal with some problem in the area of specialization.

Related field requirements. The student is required to take 6 hours of coursework in a related field which will be accepted jointly by the Department of Physical Education and the Department of Recreation. This may be in the form of a minor of approximately 30 semester hours which will be accepted jointly by the Department of Recreation or in the form of a minor of approximately 30 semester hours which will be accepted jointly by the Department of Recreation and the Department of Physical Education. The area of specialization will be represented by a major or field of concentration.

STAFF

Professors: Margaret G. Foss, M. Gladys Scott.
Assistant Professors: Horace F. Burke, Mary Dee Leslea, Esther L. Stock, Elizabeth Habery.
Assistant Professor Emeritus: Miriam Taylor.

COURSE DESCRIPTIONS

Primarily for Undergraduates

28:5 Intermediate Physical Education 2 h.
Elective. Open to those who have completed the requirements for physical education skills. May be repeated.

28:6 Modern Dance 1 or 2 h.

28:7 Advanced Physical Education 1 h.
Elective. Open to those who have completed the requirements in physical education skills. May be repeated.

28:8 Intermediate Modern Dance 1 or 2 h.
Elective. Open to those who have completed the requirements in physical education skills.

* A maximum of 5 semester hours may be counted for credit graduation. Not required of those having undergraduate courses.
PHYSICAL EDUCATION FOR WOMEN

28:10 Ballet 1 or 2 s.h.
Prerequisitc: 28:9 or equivalent experience.

28:11 Stage Movement 2 s.h.
Same as Speech 28:11. Theory and practice in movement for dramatic and other stage performances. Dance from Renaissance to the present time.

28:13 Intermediate Ballet 2 s.h.
Open to those who have completed 28:9 and 28:10 or the equivalent.

28:13 Advanced Ballet 2 s.h.
Open to those who have completed 28:12 or the equivalent.

28:15 Structural and Applied Anatomy 3 or 4 s.h.
Required of all students majoring or Minorizing in physical education. General human anatomy with emphasis on framework and factors influencing movement.

28:16 Kinesiology 3 s.h.
Prerequisites: 28:15. Mechanics of motor skills and posture.

28:17 Corrections 3 s.h.
Prerequisites: 28:15. Common abnormalities of spine and feet, developmental and prehensile problems. Remedial work for functional conditions and athletic injuries.

28:18 Senior Life Saving and Water Safety Instructor’s Course 1 or 2 s.h.
Leads to Red Cross Senior Water Safety Certificate or Instructor’s Certificate. Register after consultation with instructor.

28:19 Movement Fundamentals 2 s.h.

28:20 Social Forms of Dance 1 or 2 s.h.
Folk, square, and social dance.

28:21 Technique 3 s.h.
Sports and aquatic.

28:22 Technique 3 s.h.
Gymnastics and sports techniques.

28:23 Technique 2 or 3 s.h.
Sports, aquatic, and dance.

28:24 Technique 2 or 3 s.h.
Track, and elective activities.

28:25 Teaching of Sports 2 or 3 s.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 2 s.h.
Materials, methods, curriculum planning for dance in the secondary schools.

28:28 Teaching of Modern Dance 2 s.h.
Teaching of modern dance in the secondary school and at college level.

28:30 Recreational Physical Education no cr.
Varied activities open to all students.

28:31 Officiating 1 or 2 s.h.
Officiating techniques for team sports.

28:32 Officiating 1 or 2 s.h.
May follow 28:31 or may be taken as an independent unit.

28:37 First Aid 2 s.h.
Standard and Advanced Red Cross courses. Leads to first aid certification on completion of requirements.

28:46 Problems in Weight Control 2 s.h.
Prerequisites: consent of instructor.

28:50 Rhythmic Analysis 2 s.h.
Form and analysis of music with application to movement.

28:71 Methods and Materials in Elementary School Physical Education 2 or 3 s.h.
Same as Education 28:141. For physical education majors only.

28:72 Methods and Materials in Elementary School Physical Education 2 or 3 s.h.
Emphasis on dance in the school program. Continuation of 28:71, but may be taken for credit with permission of instructor. Same as Education 28:142. For physical education majors only.

28:75 Laboratory Practice 3 s.h.
Required of major students in senior year. May be repeated. Same as Education 28:75 or Education 28:145 or 146.

28:76 Laboratory Practice 3 s.h.
Continuation of 28:75, but may be taken as an independent unit. May be repeated. Same as Education 28:148 or Education 28:149.

28:91 Independent Study cr.arr.

28:94 Honors Projects 3 s.h.

28:95 Honors Seminar 3 s.h.

28:96 Readings in Kinesiology 2 s.h.

For Undergraduates and Graduates

28:104 Health Education Workshop 2 s.h.
Same as Preventive Medicine 28:104.

28:105 First Aid and Care of Athletic Injuries 2 s.h.
Safety programs in sports. Scientific backgrounds for first aid and athletic training.

28:106 Fitness for the Individual 2 or 3 s.h.
Physiological principles in conditioning, methods of achieving fitness, and adult needs.

28:107 Corrections 2 or 3 s.h.
Mechanics of posture and common abnormalities of spine and feet. Remedial work for functional conditions and athletic injuries. Prerequisites: 28:15 or 28:16 or equivalent.

28:108 Advanced Coaching 2 s.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 s.h.

28:110 Workshop: Methods of Teaching Sports 1 to 3 s.h.
Emphasis on analysis of skill and teaching methods of selected sports, aquatic, or gymnastics.

28:111 Children’s Dance 2 s.h.
Dance for children of preschool to high school age.

28:112 Rhythmic Analysis of Dance 2 s.h.
Rotation, analysis, and compositional uses of rhythm, and composition of percussion scores for dance. Style and techniques of baroque, romantic, and modern music for the choreographer.

28:113 Measurement 2 s.h.
Selection and administration of physical measurements and motor tests. Use of data.

28:114 History and Appreciation of Dance 3 s.h.
Origins and development of dance. Emphasis on changing
28:115 History and Appreciation of Dance 3 s.h.
Continuation of 28:114.

28:116 Dance in Education 2-3 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 education, 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.
Philosophical basis of teaching and learning. Same as Education 13:148.

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 Choreography 2 s.h.

28:124 Beginning Choreography 2 s.h.

28:125 Advanced Modern Dance 1 or 2 s.h.
Comprehensive reading in theory and philosophy of dance as an art. Practical study of technique. 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 choreography, 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.
Musical 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.

28:138 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 78:138.

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 78:149.

28:150 Movement Exploration 2 s.h.
A problem-solving approach to the teaching of fundamental movement, rhythm, and activities included in the elementary school physical education program.

28:151 Seminar: Leadership in Extracurricular Activities 2 s.h.

28:160 Workshop: Elementary Physical Education 1 s.h.

28:170 Readings in Dance 1 s.h.
By permission only.

28:171 Dance Theatre 0 or 3 s.h.
Experiences in a performing group.

28:172 Dance Theatre 0 or 1 s.h.
By permission only.

28:173 Advanced Choreaography 2 s.h.

28:174 Advanced Choreaography 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 Aristotle.

28:178 Theory and Criticism of Dance 3 s.h.
Continuation of 28:175.

28:201 Problems in Physical Education cr.arr.
Prerequisite, consent of instructor.

28:203 Seminar: Current Issues 2 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, 28:200 or equivalent.

28:208 Motor Learning for theMusically Retarded 3 or 2 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.

28:213 Seminar in Evaluation 2 s.h.

28:215 Analysis of Human Motion 3 s.h.
Advanced biomechanical study with application to teaching methods and problems in sports, dance, body mechanics, and conditioning.

28:219 Advanced Administration 3 s.h.
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.

28:243 Seminar: Interrelationships of Physical Education and Health 3 s.h.
Health and safety aspects of physical education; research on health/education currents, factors, and misconceptions on conditioning regimens, weight control, and school and public health 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.
Sociology of Sports 2 or 3 a.h.

Role and meaning of organized sports and individual sport participation in primitive and in contemporary cultures around the world.

Seminar: Improvement of Instruction in Elementary School Physical Education 2 s.h.

Current Developments in Physical Education 1 s.h.

Individual Differences in Activity Cluster 2 s.h.

Modification of the activity curriculum to accommodate atypical students. Includes discussion on four cases in swimming, methods of teaching for the slow-motor individual and the physically disabled.

Professional Writing 3 s.h.

Critical review of physical education and related writing of all types. Individual projects on writing for publication or presentation at professional meetings.

High School Physical Education Program 3 s.h.

Curriculum design for the high school girl.

Seminar in Research 2 or 4 s.h.

For Ph.D. candidates.

Advanced Kinesthetics 2 s.h.

Advanced study of muscle action and laboratory techniques for analysis of muscular action and motor performance. Prerequisites: kinesiology, college physics.

Neuromuscular Basis of Motor Function 3 s.h.

Research in perception and kinesthetics involved in motor learning and skilled performance.

Gross Motor Learning 2 s.h.

Thesis 2 or 4 s.h.

Prerequisite: consent of instructor.

PHYSICAL THERAPY

(See Interdisciplinary Programs and General Science)

PHYSICS AND ASTRONOMY

Head of Department, James A. Van Allen

Office, 203 Physics Research Center

Associate Head of Department and Undergraduate Adviser, Edward B. Nelson

Office, 157 Physics Research Center

The Department of Physics and Astronomy provides an opportunity for comprehensive study of all basic aspects of natural phenomena and for individual scholarly work in an area of special interest.

Students pursuing a major of physics and astronomy are in demand as teachers in universities and colleges and as research workers in government and industrial laboratories. In addition, with adequate working knowledge of these subjects the B.A. level and many opportunities in high school teaching and in a variety of administrative and technical pursuits.

Undergraduate Major in Physics

The following courses or their equivalents are required for the Bachelor of Arts degree with a major in physics:

- 20:36, 37, 38 Engineering Mathematics I, II, III
- 20:11, 12, 13, 14 Introduction to Linear Algebra 16 s.h.
- or
- 20:33, 34, 35, 36, 37, 38 Engineering Mathematics I, II, III, IV 16 s.h.

PHYSICS AND ASTRONOMY

29:17, 18, 19

- Introductory Physics I, II, III 12 s.h.

29:118

- Kinetic Theory and Thermodynamics 3 s.h.

29:129, 130

- Electricity and Magnetism 9 s.h.

29:127, 128

- Atomic Physics Laboratory 9 s.h.

29:125, 126

- Elementary Theoretical Mechanics 7 s.h.

4:5, 4:6

- Principles of Chemistry in an Interdisciplinary Chemistry Laboratory 5 s.h.

or

4:5, 4:6

- General Chemistry II and General Chemistry Laboratory 5 s.h.

Undergraduate majors who plan to pursue graduate study in physics are advised to:

1. Take 23:117, 118 Methods of Theoretical Physics
2. Acquire reading facility in either Russian or German; and
3. Go beyond the minimum requirements listed above to the greatest feasible extent.

Undergraduate Major in Astronomy

Astronomy includes the subdisciplines of astrophysics, celestial mechanics, radio astronomy, and space astronomy. A balanced and integrated program of astronomy, physics, and mathematics is required for the Bachelor of Arts degree in astronomy. The purpose of this program is to prepare the student for a career in advanced study in astrophysics, radio astronomy, or space astronomy.

The following courses or their equivalents are required for the Bachelor of Arts degree with a major in astronomy:

- 23:118, 119, 120, 121
- 23:118, 119, 120
- 23:117, 118
- 23:118, 119, 120

- Introduction to Theoretical Physics 1, 2
- Introduction to Theoretical Physics 2
- Astronomy Laboratory

- or

- Theoretical Mechanics 3 s.h.

Undergraduate majors in astronomy who plan to pursue graduate study in astrophysics are advised to:

1. Go beyond the minimum requirements listed above to the greatest feasible extent.

2. Take 23:117, 118 Methods of Theoretical Physics

- Acquire reading facility in either Russian or German.

- Honors Work in Physics or Astronomy

- Select junior and senior majors take 6 to 8 semester hours of 23:118 Honors Credits and prepare an undergraduate thesis as part of their program for the degree Bachelor of Arts with Honors in Physics or in Astronomy.

For the general requirements of the College of Liberal Arts see College of Liberal Arts.

Graduate Program

Two advanced degrees are offered in physics, the Master of Science (with or without thesis) and the Doctor of Philosophy; and one in astronomy, the Master of Science (with or without thesis). An undergraduate or graduate student who wishes to pursue a program in astronomy beyond the M.A. level may qualify for a Doctor of Philosophy degree in physics with specialization and a dissertation in astronomy or astrophysics.

An interdepartmental program leading to the M.S. and Ph.D. degrees in chemical physics is also available.
Each entering graduate student is assigned to a faculty adviser who will assist him in preparing a plan of study and in guiding his progress. A graduate student becomes a candidate for an advanced degree in physics or astronomy only after he has passed a qualifying examination in all principal areas of the subject at the level of advanced undergraduate work. The examination is given in February of each year and must be taken by all first-year graduate students. Ordinarily, a candidate for an advanced degree should begin research in his chosen specialty during the second year of graduate study. His faculty adviser then becomes his general adviser and the chairman of his final examination committee.

For the general requirements for admission to the Graduate College and for advanced degrees, see Graduate College. Master of Science degree in physics. The M.S. degree is offered with thesis or without thesis. Either degree may be an intermediate step toward a Ph.D. degree, or it may be a terminal degree. The final examination in the latter case is the same as for the Ph.D. degree. There will be a minimum of three members of the Faculty appointed by the Dean of the Graduate College.

The program for the M.S. degree with thesis requires 30 semester hours of graduate work and a thesis based on an original experimental or theoretical investigation by the candidate. No more than 3 of the minimal 30 semester hours may be for research.

The program for the M.S. degree without thesis requires 38 semester hours of graduate work, an independent study of the literature on a chosen topic, and the preparation of a critical essay on that topic. No more than 4 of the minimal 30 semester hours may be for research.

Up to one-third of the graduate program may be in related scientific fields other than physics and mathematics, e.g., chemistry, astronomy, engineering, etc.

The candidate for either of the M.S. degrees must have satisfactorily completed the following courses or their equivalents as an undergraduate or a graduate:

- 25127 Optics
- 25138 Relativistic Theory and Thermodynamics
- 25233-25234 Statistical Mechanics
- 25238 Electricity and Magnetism
- 25239 Theoretical Mechanics
- 25240 Advanced Atomic Physics
- 25241 Nuclear Physics
- 25242 Atomic Physics
- 25243 Spectroscopy
- 25249 Scientific Research

His plan of study should provide for as much advanced work as possible in the field of his interest and for previous preparation. Master of Science degree in astronomy. The M.S. degree in physics with thesis or without thesis. The requirements for the two degrees are the same as for the corresponding degrees in physics (see above), with the following exceptions:

- 25238 Astronomy
- 25249 Scientific Research

- 25218 Introduction to Stellar Astronomy

- 25219 Stellar Physics

- 25220 Galactic Astronomy

- 25221 Radio Astronomy

- 25222 Theoretical Astrophysics I and II

- 25223 Theoretical Astrophysics III

- 25224 Stellar Structure and Evolution

- 25225 Spectroscopy in Astronomy and Space Science

- 25226 Stellar Astrophysics

An individual plan of study must be worked out by a candidate early in his graduate study.

Degree of Doctor of Philosophy in Physics. The program of study for the Ph.D. degree with major in physics includes:

1. Thorough coursework in both classical and modern theoretical physics for all candidates, whether their special-ized research is to be in an experimental or a theoretical area.

2. Comprehensive examinations.

3. Participation in advanced seminars.

4. Original research in experimental physics, theoretical physics, or astrophysics; and the preparation of a written dissertation based on this work.

5. Successful defense of the dissertation in a final oral examination conducted by a committee of five members of the Graduate Faculty appointed by the Dean of the Graduate College.

Emphasis is on the capabilities developed and knowledge gained rather than on the particular courses taken, credits acquired, or other amount of time means to the end. Although no specific courses are required, the following are recommended as preparation for the comprehensive examinations:

- 25218, 25221, 25222 Atomic Physics, Nuclear Physics, and Introduction to Solid State Physics
- 25223 Classical Mechanics
- 25234 Electromagnetism
- 25241 Classical Electrodynamics

- 25242 Quantum Mechanics I, II

Ad advanced mathematics such as the theory of functions of a complex variable and vector and tensor analysis is used freely in these courses. An introduction to these fields is given in M140 Methods of Theoretical Physics. The selection of some advanced courses will depend on the adequacy of the student's background in the graduate work of his choice, on more advanced and specialized courses will depend on the direction in which his thesis work may be carried out.

Before a Ph.D. candidate is admitted to the comprehensive examinations, he must demonstrate a reading competence in French, German, or Russian by reading a grade of 90 or better in the Reading Testing Service foreign language examination or by passing the reading examination administered by the appropriate language department; or by having satisfactorily completed 12 or more semester hours of college coursework (or the equivalent) in any one of the above three foreign languages. Students whose native language is not English will be considered as special cases.

A candidate for the Ph.D. degree will not be recommended for the degree until he has written his disserta- tion, passed his final oral examination, and has been admitted to the Graduate College. He will be evaluated, in addition to the written examination, as having satisfactorily completed his degree requirements.

Research

The department has an excellent library and a number of excellent facilities and laboratories. The department is one of the few such departments in the United States that has an IBM 205B Scientific computer and the associated facilities. The computer will be available for graduate research by graduate and staff of the department. Several of the research laboratories are available within the depart- ment. The central machine shop is fully equipped and staffed with skilled workmen and skilled machinists; and there are several electronics and machine shops for the use of advanced graduate students and research staff.

Experimental research is conducted in the fields of nuclear structure physics, ionosphere and space physics, astrophysics, solar and planetary physics, chemical physics, and solid state physics.

Theoretical research is devoted to atomic and nuclear theory, quantum fluid mechanics, fluid dynamics, plasma physics, theory of solids, theory of elementary particles, and general physics.

Persons qualified for graduate study are invited to apply for scholarships and assistantships. Enquiries should be directed to the Head of the Department.

STAFF

Professors: Richard R. Carlson, Fries Cooper, Edward H. J. Elsasser, Norberto Venturi, Paul Yntema


Associate Professors: Raymond T. Carpenter, Les A. Pappas, Del A. Garwood, George W. Lucas, Donald K. Hirst

Assistant Professor: Raymond T. Carpenter, Les A. Pappas, Del A. Garwood, George W. Lucas, Donald K. Hirst, John A. Hoff, William R. Savage, Margaret A. Whipple

146
29:1 College Physics 4 a.h.
29:2 College Physics 4 a.h.
29:17 Introductory Physics I 4 a.h.
29:18 Introductory Physics II 4 a.h.
29:19 Introductory Physics III 4 a.h.
29:83 Physics I 3 a.h.
29:83 Physics II 3 a.h.
29:93 Reading in Physics 1 cr. av.
29:95 Undergraduate Seminar 1 a.h.
29:99 Honors Thesis 1 a.h.
29:103 Reading in Physics 1 cr. av.
29:255 Seminar: Theoretical Physics cr. Sty.
Discussion of current research.

29:256 Seminar: Space Physics cr. Sty.
Discussion of current research.

29:257 Seminar: Nuclear Physics cr. Sty.
Discussion of current research.

29:259 Special Topics in Nuclear Physics cr.
Advanced lectures on one or more of the following topics: nuclear models, theory of nuclear reactions, weak interactions, and heavy ion reactions. Prerequisite: 29:245, 550. May be repeated.

29:271 Theoretical Solid State Physics cr.
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. Prerequisite: 29:198, 340, 350.

29:272 Theoretical Solid State Physics cr.
Continuation of 29:271. May be repeated.

29:273 Relativity cr.
Relativistic formulation of mechanics and electrodynamics; Einstein's theory of gravitation. May be repeated.

29:274 Statistical Mechanics II cr.
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 cr.
Contemporary topics in quantum theory: field theory, dispersion relations, group theoretical analysis of fundamental particle classification schemes, Bose and many-body problems. The topics discussed will vary from year to year. Prerequisite: 29:245, 246. May be repeated.

29:281 Research in Physics cr.
Prerequisite, consent of dean of department.

29:300 Physics and Chemistry of the Upper Atmosphere cr.
Physics of neutral and ionized gases; absorption of solar radiation in relation to the thermal balance of the earth's surface; water vapor; electric currents associated with daily magnetic variations and magnetic storms. May be repeated.

29:254 Advanced Plasma Physics I cr.
Statistical mechanics of plasmas; Liouville equation; HBBK hierarchy; Fokker-Planck equation and relaxation processes; Balbans-Landau equation; Vlasov equation, relativistic wave equations; shock, nonlinear plasma waves, instabilities, fluctuations and radiation processes; magnetohydrodynamics, recent papers. Prerequisites: 29:213, 215 or consent of instructor. May be repeated.

29:255 Advanced Plasma Physics II cr.
Continuation of 29:254. May be repeated.

Astronomy

See explanatory notes under Physics section.

Primarily for Undergraduates

29:11 General Astronomy cr.
Open to undergraduates. Descriptive lectures and laboratory work in elementary astronomy; study of all components...
of the solar system; astronomical techniques. One labor.
atory per week for observation with the telescope and pro"luction work. Prerequisite, at least one year each of high school algebra and geometry.
29:53 General Astronomy 4 s.h.
Continuation of 29:52. The astronomy, motions and
physical (the stars, systems of stars, interstellar matter, and
Planets). Prerequisite, same as 29:52.
29:94 Reading in Astronomy cr.arr.
Consult head of department before registering.
29:94 Undergraduate Seminar cr.arr.
See Physics.
29:99 Honors Thesis cr.arr.
See Physics.
For Undergraduates and Graduates
28:104 Reading in Astronomy cr.arr.
Consult head of department before registering.
28:105 General Astronomy 4 s.h.
Abridged course offered only in the summer session and
on Saturdays during the academic year. Prerequisite, same as 29:51. Primarily for secondary school and high
school teachers of science.
29:119 Introduction to Stellar
Astrophysics I 3 s.h.
Fundamentals of astronomy and stellar spectroscopy;
properties of visual, spectroscopic, and eclipsing binary
stars; stellar atmospheres and interiors; stellar kinem.
atics and dynamics; distance indicators and their ap.
plication to the investigation of the structure of the
galaxy and extragalactic systems. Prerequisites, 26:18
and Mathematics 23:28 or 23:26 or equivalent. Al.
ternate years; will be offered 1971-72.
29:120 Introduction to Stellar
Astrophysics II 3 s.h.
Continuation of 29:119. Prerequisites, 26:19 and Math.
ematics 23:28 or 23:26 or equivalent. Alternate years
will be offered 1972-73.
29:131 Solar System Astrophysics 3 s.h.
Planetary surfaces, interiors, and atmospheres; comets,
novae, and asteroids; the interplanetary environment;
the moon; the origin and evolution of the solar system.
Prerequisites, 26:19 and Mathematics 23:28 or 23:26 or
equivalent. Alternate years; will be offered 1971-72.
29:132 Radio Astronomy 3 s.h.
Current developments in radio astronomy; radio-fre.
cuency radio; special radio techniques; the radio
sky; the distribution of radio sources; radio and radar
techniques. Prerequisite, 26:19 or Mathematics 23:28.
Alternate years; will be offered 1971-72.
29:137 Astronomical Laboratory 3 s.h.
Advanced laboratory work and observing with the 24-
inch Paul van de Graaff. Astronomical photography,
photometry, and spectroscopy; laboratory work in data
reduction, instrument calibration, and numerical com-
putation. Prerequisites, 29:29 and consent of instructor.
May be repeated.
29:230 Individual Critical Study cr.arr.
See Physics.
29:232 Theoretical Astrophysics I 3 s.h.
Theory of stellar structure and evolution of stars; for.
mation of absorption lines in the spectra of stars; Prerequisite, same as Mathematics 23:28. Alternate
years; will be offered 1973-71.
29:233 Theoretical Astrophysics II 3 s.h.
Intergalactic matter, nebulae, novae, and galactic radia-
tion. Continuation of 29:232, which is prerequisite. Al-
termate years; will be offered 1971-72.
29:234 Stellar Structure and Stellar
Evolution 4 s.h.
Structure of stellar interiors; nuclear-generate and chemis-
tical synthesis in stars and the evolution of stars. Prereq-
usite, consent of instructor. Alternate years; will be
offered 1971-72.
29:235 Special Topics in Planetary and
Space Science 2 s.h.
Will include one or more of the following topics: the
solar interior; micrometeorites, comets, and asteroids;
planetary magnetism and corpuscular emissions of the
sun; terrestrial magnetism; atmospheric, terrestrial, and
electromagnetic properties of planets; moons; and comets.
May be repeated.
29:283 Seminar: Astrophysics cr.arr.
Discussion of current research.
29:283 Research in Astronomy cr.arr.
Prerequisite, consent of head of department.

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 situa.
tions, events, and problems in the world around us. Both
the theoretical and descriptive aspects are emphasized and
the graduate programs, which lead to the M.A. and the
Ph.D. degrees, emphasize both the formal and descriptive
rather than narrow specialization on restricted aspects of
the subject. The facilities of its Laboratory for Political
Research and the Regional Social Science Data Archive
afford a unique opportunity for both undergraduate and
graduate students to carry on research. Work with coders
is available at the undergraduate level; the methodological
of the department's program provides opportunities for acquir.
ing expertize in expertise and experience which are matched by very
few other institutions.

At the undergraduate level the program is general and
not vocational. Political science majors often enter ca.
reers in law, public service, or teaching, but many also
enter careers in business, journalism, medicine, and
other fields. At the graduate level the department emphasizes
the general Ph.D. program, which is particularly re.
spective for students planning a scholarly career. It is also
acceptable for entry into the executive ranks of the
civil service of federal, state, and city governments.
There is a special M.A. program in municipal administra.
tion, designed to prepare students for careers as city
managers. The political science program frequently leads to
careers in civil service and in municipal or other govern.
mental research bureaus, as well as to careers in teaching.

Requirements for a Major
The department offers a standard major (Plan A) and a
special teaching major (Plan II). 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.
gram in liberal arts and law.

Plan A: The Standard Major
An undergraduate student majoring in political science must meet the following requirements:
A. Complete at least semester hours of work in politi.

Plan B: The Special Major
An undergraduate student majoring in political science must meet the following requirement:
A. Complete at least semester hours of work in politi.

1. 29:1 American Government
2. Two of the following four introductory courses c.
3. 29:13 Introduction to Political Theory d.
4. 29:11 Introduction to Political Theory e.
5. 29:13 Introduction to Political Theory f.
6. 29:13 Introduction to World Politics
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 graduate 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, a student is required to hold a bachelor's degree from a college or university accredited by the appropriate regional agency. A student seeking the award of an M.A. degree must maintain a grade-point average of at least 3.0 and submit a thesis. A student seeking a Ph.D. degree must show promise of scholarly distinction and achievements beyond that indicated by a minimum 3.0 grade-point average.

Graduate study consists of work in courses, seminars, research, and reading. Graduate students in political science may take for credit only those graduate courses offered specifically for graduate students; i.e., those courses numbered 300-500 and above.

The M.A. Program

To obtain a master's degree, the student must complete at least 30 semester hours of work with a grade-point average of at least 3.0 and submit a thesis. New Graduate College requirements 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 15 semester hours of credit each semester. He may register for 6 to 9 semester 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 not take more than 3 semester hours of work in fields other than those described above without the written approval of the department chairman and the department advisor. The student must receive grades of C or better in all work transferred from other departments. A grade of C is acceptable in the advanced Honors Seminar (30-582) when the student receives a grade of B or better in the advanced Honors Seminar at another institution.

Honors in Political Science

Honors sections of some courses are scheduled for limited groups of outstanding students. Those interested should consult their major advisor at the time of registration or before classes begin.

In addition, the student should be aware that the political science department has a number of special honors programs, including the following three departments: Economics, Geography, and Sociology.

Admissions 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 must submit a Plan of Study, using forms obtainable from the departmental secretary and submitted to the department chairman and the department advisor. The department must approve the Plan of Study prior to the student's registration for the first semester of the summer session at which the degree will be conferred. The necessary forms are obtained at registration or at the registrar's office.

Application for a degree. The student who has been advanced to candidacy must apply for the degree during the semester in which he intends to graduate and at least thirty days after registration at which the degree will be conferred. The necessary forms are obtained at registration or at the registrar's office.

Master's thesis. The student beginning graduate work in political science will be required to register for, at least during the spring semester in consultation with his advisor and will ordinarily register for 6 semester hours of credit during the spring semester or fall session to complete the thesis. The student may have in the summer session at which the degree will be conferred. The necessary forms are obtained at registration or at the registrar's office.

The advising the completed thesis at the Graduate College, the candidate for a master's degree must submit a thesis and pass an oral examination covering both thesis and coursework, by a thesis commit-
Political Science

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 program. The M.A. degree is normally prerequisite to work toward a Ph.D. Students who have had significant prior graduate work will not be considered Ph.D. candidates unless they have completed M.A. degree courses. The student should apply to his advisor for 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. The examining committee will be approved by the department chairman.

Within the first month of his Ph.D. work, the student must consult with the chairman of the department concerning his Ph.D. thesis advisor and Ph.D. examining committee. The doctoral examining committee is selected by the chairman of the department. It consists of one member of the graduate faculty for each of the four college areas within which the student is to be examined. The member normally, but not always, will be a professor with whom the student has had work. The student's thesis advisor is the chairman of the committee.

Requirements. Ph.D. programs will include a maximum of semester work. This will include 1 semester hour in the philosophy and methods of political inquiry. This requirement is accomplished by taking 3000 methods of Political Research and 30300 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 give proof through a special examination of a reading knowledge adequate for his purposes. This requirement is normally the foreign language examined administered by the Educational Testing Service, or an equivalent examination arranged with the relevant language department of the University of Texas. In addition, an examination by a member of the departmental faculty will be required for the student's ability to demonstrate the student's reading knowledge of languages in the specific areas of political science. In addition to the other requirements, the student's doctoral committee will specify the criteria for the examination. The total examination must be minimum of 6 semester hours. The examination will be held in the student's last semester.
local levels. Formulation, enactment, and execution of governmental budgets. Sources of revenue, debt administration, and intergovernmental fiscal relations. Prerequisite, 2213 or junior-senior standing.

30:131 Foundations of Political Theory 3 s.h. The major writers and intellectual trends in political thought from the pre-Socratic to the Information. Prerequisite, 2213 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, 2213 or junior-senior standing.

30:133 Contemporary Political Theory 3 s.h. Current thought 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 consideration, 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.

30:141 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. Comparative legislative processes and behavior focusing especially upon legislative systems analysis, legislative institutionalization, the legislature and its environment, and governmental 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 contact course scheduler. May be repeated with the consent of the instructor.

30:160 International Politics 3 s.h. Contemporary problems of analysis of international politics; forms and determinants of the interaction of states.


30:162 American Foreign Policies 3 s.h. Basic problems, issues, and events that shaped U.S. foreign policy since the United States entered into World War II. May be repeated with the consent of the instructor.

30:163 Inter-American Relations 2 or 3 s.h. Development and application of the Monroe Doctrine, especially with regard to selected Latin American nations; 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 of analysis of international politics. For specific subject consent contact course scheduler. 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 6 s.h. cr. arr. Individually supervised special projects. Registration permitted only with the consent of the faculty member concerned.

30:187 Honors Seminar 6 s.h. cr. arr. An intensive examination of the major ideas and problems of a particular area of political science. Only to honor candidates in political science and others with consent of instructor.

30:188 Honors Seminar 6 s.h. cr. arr. Continuation of 30:187.

Core Graduate Courses

30:200 Introduction to Political Analysis 5 s.h. cr. arr. Conceptual problems of political analysis. Types of explanation in contemporary political science.

30:201 Methods of Political Research 3 s.h. cr. arr. Techniques of investigating selected questions of interest to political scientists. Uses of qualitative and quantitative data.

30:230 Administrative Theory and Behavior 3 s.h. Literature and research on organizational and administrative theory, behavior, and policy.

30:230 Political Theory 3 s.h. An intensive examination of major political theory with emphasis on its relevance for the understanding and evaluation of contemporary politics.

30:230 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 literatures of American politics, stressing comparative, systematic, and behavioral approaches in the study of international politics.

30:250 International Politics 3 s.h. An introductory graduate-level course stressing various approaches in the study of international politics.
30:300 Philosophy of Political Inquiry 4 s.h.
30:301 Advanced Research Methods 4 s.h.
30:302 Fall semester: logical basis of research design; measurement, including data collection and the reliability and validity of data; procedures for preparing data for analysis. Spring semester: analytical techniques; the model implicit in statistical techniques and the relationship of this model to the hypotheses to be tested. May be repeated with the consent of the instructor.
30:320 Administrative Theory and Behavior 4 s.h.
The literature of political theory, political and organizational behavior, and complex organizations as they apply to the study of the administrative agencies of government.
30:323 Financial Administration 2, 3, or 4 s.h.
Budgetary and nonbudgetary aspects of governmental financial operations at national, state, and local levels. Formulation, enactment, and execution of governmental budgets. Sources of revenue, debt administration, and intergovernmental fiscal relations.
30:323 Administrative Management 4 s.h.
Problems and issues in public administration at various levels of government; influences operating on administrators in shaping the content and execution of public policy.
30:323 Problems in Public Administration 4 s.h.
Selected issues in public administration. May be repeated with the consent of the instructor.
30:330 Problems in Political Theory 4 s.h.
Selected problems of prescriptive and explanatory political theory. May be repeated with the consent of the instructor.
30:341 Political Systems of Western Europe 4 s.h.
Selected Western European political systems or political phenomena common to several Western European systems.
30:342 Soviet and Eastern European Political Systems 4 s.h.
Research seminar on selected topics of Soviet and East European political systems. May be repeated with the consent of the instructor.
30:343 Far Eastern Political Systems 4 s.h.
Comparative study of democratic, transitional, and totalitarian types of government in the Far East, with special emphasis on leadership recruitment, social control, and political parties.
30:344 Latin American Political Systems 4 s.h.
Major political forces in Latin America (political parties, the Church, students, the military, etc.); intended primarily for graduate students with little or no previous knowledge of Latin American politics.
30:348 Comparative Electoral Politics and Party Systems 4 s.h.
Political parties in the study of comparative politics and governmental systems. Comparisons and contrasts in traditional, functional, representative, and sectarism of parties throughout the world.
30:349 Comparative Judicial Processes 4 s.h.
Roles of courts, lawyers, judges, and interest groups in the American and selected foreign political systems.
30:350 Problems in Constitutional Law and Politics 4 s.h.
Selected groups of Federal Supreme Court cases and landmark material clarifying the role of the Court in the American political system. May be repeated with the consent of the instructor.
30:352 Problems of Comparative Politics 4 s.h.
Selected problems in the comparative analysis of political systems. May be repeated with the consent of the instructor.
30:353 Community Political Systems 4 s.h.
Comparative analysis of community decision-making with special emphasis on the political institutions within the local community.
30:361 Problems of International Politics 4 s.h.
Intensive examination of selected issues of international politics, emphasizing problems of theoretical analysis. May be repeated with the consent of the instructor.
30:365 Human Rights and World Community 4 s.h.
The nature of human rights; international obligations relating to them; problems of implementation. An individual seminar. May be repeated with the consent of the instructor.
30:380 Readings cr.arr.
Consent of supervising faculty member required.
30:381 Research cr.arr.
Consent of supervising faculty member required.
30:382 Master's Thesis cr.arr.
Consent of supervising faculty member required.
30:383 Internships cr.arr.
Consent of supervising faculty member required.

Advanced Research Seminars

30:420 Public Administration 4 s.h.
Selected issues in public administration. May be repeated with the consent of the instructor.
30:421 Urbanization 4 s.h.
Urban and regional consequences of the urbanization process. Political, economic, and social study of metropolitan areas. An interdisciplinary seminar. May be repeated with the consent of the instructor.
30:430 Political Theory 4 s.h.
Comparative study of political theory. Prerequisite: 26:200 or its equivalent. May be repeated with the consent of the instructor.
30:440 Comparative Politics 4 s.h.
Selected problems, systems, or areas. Permission of the instructor is required. May be repeated with his consent.
30:441 Political Parties 4 s.h.
Systematic investigation of roles, organization, competition, leadership, and functions of parties in either American or European systems. May be repeated with the consent of the instructor.
30:442 Legislative Behavior 4 s.h.
Consent of instructor required for admission. May be repeated with his consent.
30:443 Judicial Behavior 4 s.h.
Particular emphasis on noncase law approaches to the study of the judicial process. May be repeated with the consent of the instructor.
30:444 Political Elites and Leadership 4 s.h.
Consent of instructor required for admission. May be repeated with his consent.
30:445 Political Integration 4 s.h.
Selected problems in the development and unification of selected communities or subcultures at the international level. May be repeated with the consent of the instructor.
30:446 Political Socialization 4 s.h.
Development of political attitudes, values, and orientations. Emphasis on theoretical and comparative approaches. May be repeated with the consent of the instructor.

152
PSYCHOLOGY

Chairman of Department, Rudolph W. Schulz
Office, 112 East Hall

The undergraduate major in psychology is primarily aimed at providing a broad general education rather than specialized professional training in psychology. For the general liberal arts student, courses that provide a foundation for advanced training in psychology and related areas such as law, medicine, education, and personnel research are offered. Within psychology, courses are available in the areas of learning and motivation, clinical, physiological, and social psychology, and related disciplines. Often these areas in which work may be taken are educational psychology and speech pathology. In addition, the department cooperates with the Institute of Child Behavior and Development to provide training in child psychology.

Undergraduate Requirements

Two bachelor's degrees, B.A. and B.S.E., are available for students in psychology. The B.A. degree is associated with a program for students desiring a general cultural major in psychology. The program for the B.S. degree is a more extensive one specifically designed to meet the needs of students contemplating graduate study in psychology and of Honor students.

Program for the B.A. Degree

In addition to satisfying the general graduation requirements, including at least two years of one foreign language, a student must take a minimum of 21 semester hours in the Department of Psychology. The following departmental courses are required:

311 Elementary Psychology
313 Psychology of Adjustment
323 Introduction to Social Psychology
543 Psychological Measurement (or 5243 Statistical Methods)

Program for the B.S. Degree

In addition to satisfying the general graduation requirements, including at least two years of one foreign language, a student must take a minimum of 24 semester hours in the Department of Psychology, and one year of courses in the physical or a combination of one semester each of chemistry and of zoology. In addition, a student must take the following two combinations of mathematics and foreign language: the student must select either a combination including one semester each of calculus or the equivalent and at least six semester hours of one foreign language; or a combination including at least one year of college mathematics (college algebra and analytic geometry or equivalent) and at least two years of one foreign language. Under ordinary circumstances, the mathematics and science courses taken at The University of Iowa by B.S. majors in the general departmental requirements in these areas are not to be taken for pass-fail credit under special circumstances, permission from the department for such credit may be given.

The following departmental courses are required:

313 General Psychology (or 313 Elementary Psychology)
3243 Statistical Methods
3249 Experimental Psychology I
3201 Experimental Psychology II (any one section)
4253 Abnormal Psychology

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 3.0 in all other work. Students interested in pursuing such a program should consult the department's junior advisor 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 four 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., sensation, 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 student training in the areas of learning and motivation, physiological, and social psychology encompasses much of what has traditionally been described as experimental psychology. The clinical program also places considerable emphasis upon laboratory research and carefully controlled experimentation.

Admission requirements. It is recommended that students 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.

Degree program. The graduate program follows by students training for the doctoral degree is best described as a joint program for the master's and doctorate degrees. All students desiring to obtain the Ph.D. at Iowa are required to obtain an M.A. with thesis generally at the end of the fourth semester. The model time required to complete the Ph.D. degree is four years (or five years in the case of clinical students who elect to take a preclinical intermeule). Usually, during their first year in residence, candidates take the doctoral courses designed to acquaint them with a wide range of psychological topics. Advanced students in the second year are assigned to a faculty member who has been chosen as a suitable advisor in view of the student's qualifications and interests. The advisor approves a tentative program of study which can be modified on a case-by-case basis as a result of the student's progress in the program. The general departmental requirement for the doctor's degree is constraint on the receipt of the Ph.D. degree in the year in which the degree is satisfactory performed. Part of the third year is devoted to the examination over subject matter areas in which the student has chosen to specialize. During his final year the student designs and conducts his doctoral investigation and takes written examinations at the conclusion of which he is considered to have completed his Ph.D. program. Students are accepted into the doctoral program only in the fall of the academic year. After meeting the requirements of the basic program, a student proceeds to complete the dissertation under the direction of a member of the department.

Doctor of Arts without thesis. More limited training terminating in the M.A. degree is also provided under certain conditions. The purpose of this program is to prepare the student for service and administrative positions in various industrial, commercial, clinical, governmental, or educational/psychological facilities where he would work without the supervision of a current psychologist or personnel director. The student is expected to achieve a broad base of theoretical and practical skills for positions of an intermediate level of responsibility.

153
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 curriculum for all graduate students, while the electives are chosen in the light of the student's vocational objectives in consultation with his advisor.

Exemptions: no exemptions are available. The 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 University Counseling Service, Office of Student Affairs, University Hospital, Graduate School of Social Work, Speech and Hearing Clinic, Reading Clinic, VA Hospital, Child Development Center, and the University's mental health clinics. In addition, the department operates a psychology laboratory for the training of students and for the conduct of research.

STAFF

Professors Emeriti: Don Lewis, J. B. Stroud.


Affiliated Staff: John K. Krott.

Clinical Assistant Professor: Arthur Carter, Eugene Geenen.

Clinical Assistant Professors: Jane R. Anderson, Patrick A. Boudreau.


COURSE DESCRIPTIONS
For Undergraduates Only

31:1 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 31:3 is a prerequisite to all other courses in psychology except 31:17 and 31:43. (Either but not both 31:1 and 31:3 are acceptable courses for the social science core requirement of students.

31:3 General Psychology 4 s.h.
Required for the B.S. major in psychology. Also open to all honors students and students who have permission of instructor. Only one of the two courses 31:1 or 31:3 may be offered for a degree. Same topics as 31:1, but with greater emphasis on research methodology and greater emphasis on the manner in which the experimental method is applied to the analysis of behavioral events. Either this course or 31:1 is a prerequisite to all other courses in psychology, except 31:17 and 31:43.

31:13 Psychology of Adjustment 3 s.h.
Basic principles of psychology in relation to the development, maintenance, and modification of personality adjustment.

31:15 Introduction to Social Psychology 3 s.h.
Research relating the behavior of individual human organisms to factors in the social environment. Socialization, identification, attitudes and development, social influence on perceptual and conceptual processes, and social interaction. Contributions by sociologists and anthropologists.

31:17 Educational Psychology and Measurement 3 s.h.
Same as Education TP75.

31:19 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.

31:43 Psychological Measurement 3 s.h.
Concepts and procedures basic to the definition and assessment of behavioral variables considered in the context of standardized psychological test procedures.

31:85 Current Research in Psychology 3 s.h.
Representative research recently reported in psychological journals or now in progress in major psychological laboratories. The research studies employing new or improved methods of obtaining and analyzing experimental data.

31:91 Special Readings and Projects cr.arr.
For undergraduate majors in psychology. Prerequisites: permission of staff member and approval of head of the department.

31:95 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 department Honors advisor.

31:99 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

31:103 General Semantics 3 s.h.
Same as Speech Pathology and Audiology 310.

31:131 General Psychology 4 s.h.
Same as 31:3. 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 a.h.
Major systematic views and theoretical issues in psychology.

31:141 Differential Psychology 3 a.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 3 a.h.
Review of major conceptual and perennial problems identified with diverse strategies and behavioral inquiry. 31:243 History and Systems of Psychology 3 a.h.
Structuralism, functionalism, behaviorism, Gestalt, and psychoanalysis. Same as Philosophy 26:205.

31:233 Foundations of Operationism and Measurement 3 a.h.
Philosophy and methodology of psychology.

31:234 Philosophical Problems of the Social Sciences 2 a.h.
Same as Philosophy 26:202.

31:235 Laboratory Techniques I 3 a.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 a.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 electromechanical and solid state switching devices. Following a general introduction to real-time computing principles, specific instruction and guidance is provided in the programming and operation of the PDP-8 a-family of computers for use in behavioral laboratories. Prerequisite, 31:235.

31:250 Seminar: Symbolic Processes 2 a.h.
Same as Speech 36:321, Speech Pathology 3:531, Prerequisite, 31:202 or equivalent.

31:424 Seminar: History of Neuropsychology 3 a.h.
Selective review of development of knowledge and concepts and their application to behavior relations from antiquity to the present day.

Quantitative Methods and Psychometrics

31:124 Mathematical Approaches in Psychology 3 a.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. Prerequisites: one semester of calculus; recommended, 31:118.

31:143 Introduction to Statistical Methods 3 a.h.
Same as Education TP:143 and Statistics 225-15.

31:144 Statistical Inference in Behavioral Science 3 a.h.
A second course in statistics emphasizing concepts and techniques of statistical inference relevant to research in the behavioral sciences. Topics include data design and an introduction to the analysis of variance, Chi-square applications, correlation and regression techniques, and an introduction to multiple correlation and regression analysis.

31:147 Techniques of Attitude Scaling 3 or 4 a.h.
Individual projects optional. Prerequisites, 21:12 and 31:143.

31:543 Statistical Analysis I 4 a.h.
Theory and practice of statistical concepts and techniques as used in the interpretation of research data. Prerequisites, 31:143 and 31:234 or equivalent and consent of instructor.

31:544 Correlation Methods 3 a.h.
Same as Sociology TP:294 and Statistics 225-157. Prerequisites, 31:143 and Education TP:294 or equivalent.

31:245 Quantitative Methods in Psychology 3 a.h.
Mathematical methods necessary for the understanding and analysis of behavior. Applications will be considered; short review of calculus.

31:246 Statistical Analysis II 4 a.h.
Study of analysis of variance; multiple regression; analysis of covariance; and the applications of linear models to the study of behavior and other empirical problems. Prerequisites, 31:234 or consent of instructor.

31:247 Applications of Multivariate Analysis 3 a.h.
Applications of theory of multivariate analysis emphasizing convolutional matrices using elementary matrix algebra and geometrical concepts in interpreting psychological problems. Prerequisites, 31:246 or consent of instructor.

31:254 Mathematical Models in Psychology 3 a.h.
Stimulus sampling theory and linear operator theory. Emphasis on application to problems in learning, motivation, and related areas. Involves concept identification, retention, and impression formation.

31:248 Psychophysics and Scaling 3 a.h.
Review and analysis of various statistical models in perception and psychophysics. Both contemporary and historical psychophysical phenomena are considered, with special emphasis on signal detection theory.

31:550 Computer Simulation of Psychological Processes 3 a.h.
An introduction to the rationale, techniques, and evaluation of computer simulations as applied to behavioral problems. Includes a survey of existing simulations and experiences in simulator development. Prerequisite, Computer Science 225-7 and 31:247.

31:328 Seminar: Real-World Psychology 3 a.h.
Selected problems in application of mathematical models to animal and human behavior.

Various mathematical models in perception and psychophysics. Detailed study of literature and models in signal detection theory.

31:342 Seminar: Statistical Analysis II 3 a.h.
Prerequisite, consent of instructor.

Experimential Methods

31:120 Experimental Psychology I 3 a.h.
The logic and application of experimental methods and procedures to the study of behavioral phenomena. Includes an overview of some of the major problems areas of experimental psychology. Prerequisites, 31:143.

31:121 Experimental Psychology II 3 a.h.
Detailed study of a major problem area in experimental psychology. Various sections under the course number deal with different problem areas, such as learning and memory, social behavior, sensory processes, and individual behavior. May be repeated for credit when topics vary. Prerequisite, 31:120.
Psychology

31:127 Research Methods and Research Reports 3 s.h.
Methodological aspects of psychological research. Writing and critical evaluation of research reports.

Learning, Motivation, and Somatic Functions

31:125 Psychology of Learning 3 s.h.
Theoretical and experimental bases of learning in animal and human behavior. Prerequisite: 31:125 or consent of instructor.

31:128 Motivation 3 s.h.
Recent contributions to motivational research with a critical examination of their methodologies and implications of contemporary theory.

31:131 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 behavior analysis in the experimental analysis of behavior in laboratory and clinical settings. Prerequisites: 31:125, 31:128, or equivalents.

31:221 Motivation and Emotion 3 s.h.
Concepts of motivation and emotion and 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.
Modularity 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.

31:231 Contemporary Theories of Behavior 3 s.h.
A brief review of the history of learning theories followed by a critical examination of the attitudes, methodology, concepts, problems, and representative results from such contemporary approaches to human behavior as neo-Montessori, behavior analysis, ethology, information processing, and behavior genetics. Prerequisites: 31:125.

31:271 Psychometrics 3 s.h.
Same as Speech Pathology and Audiology 5:584.

31:272 Psychometrics Laboratory 2 s.h.
Same as Speech Pathology and Audiology 5:585.

31:330 Seminar: Motivation 2 s.h.
Theoretical and experimental treatments of selected topics in the areas of reinforcement, punishment, conflict, emotion, and frustration.

31:331 Seminar: Behavior Theory 2 s.h.
Selected theory and data concerning systematic problems in infrahuman behavioral analysis. Prerequisites: 31:227 and consent of instructor.

31:332 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 relations to instrumental learning.

31:338 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.

31:228 Neuroendocrinology and Behavior 3 s.h.
Development of behavioral concepts as they relate to neuroendocrinology and neuroendocrine aspects of thirst, hunger, and sex. Prerequisite, 31:227.

31:229 Neural Mechanisms and Learning 3 s.h.
Information processing in brain, electrophysiology, sensory and motor coding, integrative functions, sleep, waking, and attention as related to behavior. Prerequisites, 31:227 or consent of instructor.

31:230 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, 31:228, or consent of instructor.

31:320 Behavior 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.

31:321 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. Prerequisites: 31:335, 31:336.

31:336 Seminar: Physiological Psychology 3 s.h.
Selected topics on the anatomical and neurochemical bases of behavior. Prerequisite, consent of instructor.

31:337 Seminar: Neuropsychology 3 s.h.
Afferent, central, and efferent processes. Prerequisites, consent of instructor.

Social Psychology

31:101 Advanced Social Psychology 3 s.h.
Current research activities in social psychology with
primary emphasis on the laboratory study of social behavior. Critical evaluation of contemporary theories and methodologies.

31:104 Experimental Social Psychology 3 a.h. Experimental approaches to attitude modification, social perception, judgment, and related social processes. Theory and critical evaluation of methodology in representative types of problems.

31:105 Attitude Development and Change 3 a.h. Review of research involving attitude measurement, the experimental analysis of variables influencing the formation and modification of attitudes.

31:204 Group Dynamics 3 a.h. Theoretical and experimental analysis of social power, social norms, social roles, interpersonal exchange, and bargaining.

31:203 Social Influences on Behavior 3 a.h. Methodology, results, and interpretation of studies of the influence of social variables on learning, judgment, attitude development and modification, group process, and perception.

31:207 Personality Factors in Social Behavior 3 a.h. Examination of research investigating the relations between personality attributes (extraversion, authoritarianism, achievement, etc.) and social behavior (conformity, social perception, intragroup processes, etc.).

31:205 Psychology of Group Behavior 3 a.h. Methodology, results, and interpretation of studies of the structural properties of groups, leadership, group problem-solving and communication, public opinion, and intergroup relations.

31:303 Seminar: Social Psychology 2 a.h. Review of selected topics. Prerequisites: consent of instructor. May be repeated.

Educational and Child Psychology

31:113 Child Development 3 a.h. Same as Child Behavior 5:100, Education TP-105. Not open to students who have completed 31:112.

31:114 Introduction to Child Psychology 4 a.h. Same as Child Behavior 5:111. Prerequisites: 31:11 and consent of instructor: 31:14 recommended. Three lectures and one laboratory weekly.

31:115 Educational Psychology 3 or 4 a.h. Same as Education TP-115.

31:117 Exceptional Children 3 a.h. Same as Education TP-117.


31:320 Counseling, Personnel, and Industrial Psychology

31:154 Personnel Psychology 3 a.h. Psychologist principles in personnel development and evaluation of technical skill in selection, placement, and morale of personnel; psychological techniques in worker efficiency. Prerequisites: 31:153 or its equivalent and senior standing.

31:155 Human Engineering 3 a.h. Same as Industrial and Management Engineering 5:155.

31:156 Psychology in Management 3 a.h. Application of psychological principles in human relations and production. Discussion of motivation, leadership, communication, group pressures, and other topics. Same as Industrial and Management Engineering 5:156.

31:223 Introduction to Rehabilitation Services 2 a.h. Same as Education TC-223.

31:351 Seminar: Personnel Research Techniques 2 a.h. Application of statistical and measurement techniques and experimental design in research in the field of psychology. May be repeated. Prerequisites: 31:154 or equivalent and advanced graduate standing.

31:352 Seminar: Psychological Aspects of Disability 1 a.h. Same as Education TC-352. May be repeated.

31:353 Seminar: Placement in Vocational Rehabilitation 1 a.h. Same as Education TC-353. Prerequisite: consent of instructor.

31:451 Supervised Practice in Rehabilitation Procedures 2 a.h.

31:454 Supervised Field Work: Rehabilitation Procedures 2 a.h. Same as Education TC-454. May be repeated. Prerequisite: consent of instructor.

31:455 Rehabilitation Counseling 2 a.h. Same as Education TC-455. Prerequisite: consent of instructor.

Clinical Psychology and Personality

31:105 Personality and Adjustment 3 a.h. Determination, correlation, and consequences of adjustment functions and personality development.

31:160 Abnormal Psychology 2 a.h. Behavior deviations and mental disorders occurring in infancy, childhood, maturity, and senility; basic concepts employed in psychiatry, mental hygiene, and psychotherapy. Prerequisite: junior standing.

31:164 Introduction to Clinical Psychology 3 a.h. The field of clinical psychology and consideration of the clinical method, intellectual training in the administration of individual intelligence tests. Prerequisites: 31:14 and consent of instructor.

31:165 Stuttering 3 a.h.

31:340 Speech Pathology and Audiology 3:160. Prerequisites: 31:164 and consent of instructor.

31:346 Behavioral Disorders in Children 3 a.h.

31:348 Survey of the major types of maladjustment in childhood. Prerequisites: 31:164.

31:167 Introduction to Speech and Hearing Process and Disorders 3 a.h. Same as Speech Pathology and Audiology 5117.

31:168 Applications of Psychological Tests 3 a.h. Survey of test applications (general behavioral, developmental, intelligence, personality adjustment, vocational and special disabilities).

31:201 Theories of Personality 3 a.h. Contemporary theoretical formulations concerning personality and their evaluative tasks.

31:203 Experimental Approaches to Personality 3 a.h. Critical survey in the areas of perception and defense, anxiety, conflict and frustration. Prerequisites: 31:200, 31:201, and consent of instructor.

31:300 Psychopathology 3 a.h. Detailed consideration of psychiatric syndromes, including description, etiology, and experimental and clinical...
31:361 Seminar: Clinical Psychology 2 a.h.
31:461 Psychodiagnostic Practicum 2 a.h.
31:463 Psychodiagnostic Practicum 2 a.h.
31:463 Psychodiagnosis in the Psychology Clinic for Training and Research under supervision of clinical psych- education faculty. Prerequisite, permission of Clinical Training Committee.
31:463 Practicum in Psychopathology 2 a.h.
31:465 Practicum: Stressing 2 a.h.
31:466 Practicum: Stuttering 2 a.h.
31:467 Seminar: Speech Pathology and Audiology 2 a.h.
31:475 Thesis Research in Psychology 1 a.h.
31:477 Research Projects 2 a.h.
31:478 Seminar: Research Principles and Methods 2 a.h.
31:478 Seminar: Research Principles and Methods 2 a.h.
31:525 Clinical Neurophysiology 3 a.h.
31:526 Mental Deficiency 3 a.h.
31:527 Seminar in Advanced 3 a.h.
31:529 Child Clinical Psychology 3 a.h.
31:529 Theory and Techniques of 3 a.h.
31:529 Survey course in major psychological techniques. 3 a.h.
31:529 Systems. 3 a.h.
31:529 Systematic review of selected topics. Prerequisite, consent of instructor. May be repeated.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
31:529 Seminar: Clinical Psychology 2 a.h.
RECREATION EDUCATION

Semester Hours

54.113 Methods of Social Research 3
54.205 Techniques of Research 3
54.211 Elementary Social Statistics 3
75.145 Introduction to Statistical Methods 3
104.201 Seminar: Organized Recreation 2
104.202 Seminar: Trends in Recreation 2
104.402 Seminar: Thesis I 1-2
104.405 Seminar: Thesis II 2
104.406 Seminar: Thesis III 2

STAFF
Associate Professor: Merille M. Ford.
Assistant Professors: Murtha M. Glazosco, Donald D. Lindsey.
Instructor: Donald G. Robb.
Lecturers: Lena Rutten, Ronald Lough.

COURSE DESCRIPTIONS

Primarily for Undergraduates

104.20 Foundations of Recreation 3 h.
Basic philosophical, historical, and scientific foundations and developments in leisure and recreation. The function and setting of organized recreation and a survey of the organizations and agencies concerned with recreation.

104.81 Recreation Leadership 3 h.
Leadership principles and techniques; program administration.

104.82 Social Recreation 3 h.
Practical application of the techniques in planning, directing, and conducting activities and programs designed for a broad variety of social events.

104.83 Recreational Crafts 3 h.
Crafts for camp, playground, club, family, and personal leisure interests. Emphasis on crafts from inexpensive raw materials, and active participation in laboratory practice.

104.84 Advanced Recreational Crafts 3 h.
Continuation of 104.83, but may be taken as an independent unit.

104.85 Camp Leadership 3 h.
Counselor skills and techniques for the camp counselor. ACA Certification program.

104.86 Orientation to Rehabilitation 3 h.
Institutional and community rehabilitation programs encompassing the following: psychopharmacology, retarded, physically handicapped, correctional, aging, and the aged.

For Undergraduates and Graduates

104.103 Readings in Leisure 3 crv.
Convocational readings, conferences, and written reports related to a specific area or field of leisure in which the student has a special interest.

159
104:110 Field Work in Recreation cr.arr.
Practical 3-1 credit experience arranged to include direct leadership, program planning, and administrative procedures. Prerequisite: 104:125.

104:111 Field Work in Recreation cr.arr.
Continuation of 104:110.

104:122 Colloquium cr.
Exploration of current issues. Required of all senior and graduate students majoring in recreation. Meets one time a month; each senior must register for the entire year.

104:210 Introduction to Therapeutic Recreation 4 s.h.
Basic concepts of recreation's role in rehabilitation; organization and development of programs, approaches to understanding the behavior of patients, and the adoption of activities in the basic disability areas.

104:212 Role of Therapeutic Recreation in Rehabilitation 3 s.h.
Role of therapeutic recreation in the total institutional and community rehabilitation effort. Specific attention is given to the cooperative role of therapeutic recreation in relation to the total therapy program.

104:199 Administration of Recreation I 3 s.h.
Programming, personnel, finance and budgets, liability areas and facilities, and other administrative aspects of recreation. Prerequisite: 104:134.

104:299 Administration of Recreation II 3 s.h.
A continuation of 104:199, for students specializing in municipal recreation administration.

104:131 School and Community Recreation 3 s.h.
An analysis of the role of the schools in educating for leisure, and a survey of total community involvement in recreation through school, church, voluntary agency, governmental, and private industrial, institutional, military, and municipal programs.

104:194 The Recreation Program 3 s.h.
All phases of the planning and evaluation of the recreation program; organization, promotion, utilization of resources, use of facilities, and leadership. Prerequisite: 104:21.

104:146 Principles of Outdoor Recreation 3 s.h.
The administration 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.

104:141 Camp Administration 3 s.h.
Public relations, personnel, finance and budgets, areas and facilities, ACA standards, administrative structure, legal aspects, evaluation, and other administrative aspects of organized resident camping.

104:142 Principles of Outdoor Education 3 s.h.
Analysis of the development and scope of outdoor education, including principles of recreation, programming, organization, administration, methodology, and content. Pertinent attention to therapeutic programs in ecology for recreation and education majors.

104:140 Practical: Environmental Education 2 or 3 s.h.
Organization, administration, leadership, and programming for the school camp, integration into the school curriculum.

104:150 The Role of the College Union 3 s.h.
Relationship of the college union to higher education; its role in the intellectual, educational, and cultural aspects of campus life; its relationship to other student services.

104:155 Workshop: Camp Program 1 s.h.

104:180 Independent Study cr.arr.
Investigation of a problem related to a specific area of interest. Primarily for Graduates

104:201 Problems cr.arr.
Same as 27:281.

104:230 Seminar: Administration of Recreation 3 s.h.
Problems of administration, supervision, and programming in recreation programs.

104:231 Philosophy and Trends in Recreation 3 s.h.
Historical and philosophical development of attitudes toward leisure and recreation, emerging programs patterns, current issues, and education for leisure living.

104:232 Seminar: Therapeutic Recreation 3 s.h.
A seminar and special project approach to therapeutic recreation in a specific setting such as a psychiatric, physically handicapped, visually retarded, correctional, etc., and administrative techniques and procedures unique to activity therapy programs.

104:233 Seminar: Camping cr.arr.
Special topics camp programs for various types of groups, campsite development.

104:234 Design and Maintenance of Recreation Facilities and Areas 3 s.h.
Principles, terminology, and standards of design, planning, construction, use, and maintenance of areas and facilities for recreation and physical education.

104:235 Seminar: College Union Management 3 s.h.
Management of college union food services, recreation facilities, guest rooms, bookstores, maintenance, etc. Emphasis on administrative problems.

104:301 Seminar: Noveutics 3 s.h.

104:001 Seminar: Thesis 1(M/A.) cr.arr.

104:002 Seminar: Thesis 2 (M/A.) cr.arr.

HElIGION

Director of School, George W. Pother
Office, 307 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 religious experiences 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 co-requisite at both the undergraduate and graduate levels. Programs leading to the B.A. and the Ph.B. degree in religion are described else- where. The School of Religion is not a theological seminary and does not prepare students for ordination.

An undergraduate student majoring in religion is required to complete 12 semester hours in the field of religion and to take two years of a foreign language approved by his advisor. 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 Pros- tenatism. A total of 12 semester hours is required in rel- ated 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. OT in Hebrew
2. New Testament
3. Semitic Philology

Area B—History of Christianity
4. Early (to 1800)
5. Modern (since 1800)
6. American

Area C—Theology and Ethics
7. Biblical
8. Roman Catholic

Area D—World Religions
9. History of Religions

Area E—Religion and Personality
10. Religion and personality development
11. 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 advisor. The formal course requirement is four courses or semesters, at the 200 level or above, in each of three areas, for a total of not less than 10 hours in each area and 30 hours altogether. Four hours of thesis research can be counted toward the total of hours and courses required, in a manner determined by the advisory committee for each case. In each of the three areas the student will be responsible to only 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, too, 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 adviser and the advisory committee, who may 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 his work is sufficiently competent, 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 examinations and to meet for the 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 program of study for the Ph.D. degree. This program, which must be approved by the thesis advisor and the Graduate Committee, shall represent both breadth and depth. It must include the field of religion and shall enable the student to meet the following requirements:

In qualifying examinations, the student will be examined in three out of five areas as 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(s) in which he has failed, but not sooner than the next regularly scheduled qualifying examination. The reexaminations will be repeated once.

Comprehensive examinations, which shall consist of the above examinations, shall be given at least once as an oral examination, to be announced before the dissertation is begun and are held.

a. The student's major field (e.g., Old Testament, Protestant Theology and Ethics).

b. A special topic within the student's major field (e.g., form criticism and the prophetic literature, patristic).
c. Any one of the other 12 fields listed above, or a related field outside the School of Religion, approved by the thesis advisor and the Graduate Committee.

tenant. Registration requirements, each student will be required to take course work at the 100 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 advisor 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 there are languages to serve as basic research students are advised to acquire them as early as possible. Students planning to get a Ph.D. in one of the qualifying examinations, students must have passed the first language, language in 100-level languages. If the nature of the student's specific program of study warrants it, another language may be required, with the permission of the faculty, be substituted for French or German. In addition to French and German several areas have special language requirements. Students in New Testament, for example, must acquire departmental requirements in Greek. All students are advised to consult with their advisors as early as possible concerning the specific 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 less than 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

Professor: David Belz, Jr., Kenneth W. Blauvelt, Richard L. Block.

Associate Professor: Robert D. Baird, James F. McCune, Peter Paul, Chancellor.

Assistant Professor: Reiss T. Goldberg, J. A. Hallock, Harry A. Hunsinger.


Course Descriptions

Primarily for Undergraduates

32:1 Old Testament Survey
2 h.

32:2 New Testament Survey
2 h.

32:3 Prophets through Daniel
2 h.

32:4 Major Figures of the Bible
2 h.

32:5 Principal contributors to the development of biblical life and thought
2 h.

32:6 The Nature and Relevance of Biblical Thought
2 h.

32:7 Structures of biblical thinking developed through a study of central themes within the Old and New Testaments and their bearing upon the present
2 h.

32:8 New Testament Survey
2 or 3 h.

32:9 Literature of the New Testament in its historical setting
2 h.

32:10 Introduction to Catholicism
2 h.

Principal teachings and practices of the Catholic faiths.
32:32 Introduction to Catholicism 2 s.h.
32:35 Religion in Human Culture 4 s.h.
Same as core courses 13:53. For undergraduate religion majors, but cannot be counted for the major and the core course requirement. May be elected as an independent unit.
32:36 Religion in Human Culture 4 s.h.
Continuation of 32:35, but may be elected as an independent unit.
32:45 Living Religions of the West 2 s.h.
Religious thought and practices in the Mediterranean area, Western Asia, North Africa, Europe, and the Americas.
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 28:52.
32:72 Religion in American History, 1607-1800 3 s.h.
Development of religious thought patterns and institutional 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 institutional life in the United States. This is a continuation of 32:72 (18:72), 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, Philo, Blumenau, Spinoza, and Yehuda Kohnstein.
32:101 Biblical Archaeology 2 s.h.
Course consists of in-depth research to the understanding 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 Pufko, Haselvet, and Matzonnies on selected problems.
32:105 Intro to the Intertestamental Period 3 s.h.
32:106 History and theology of Judaism from 100 B.C.E. to 138 C.E. Readings from English translations of sources. Analytical approach.
32:107 The Synoptic Gospels 2 or 3 s.h.
Interpretation of one of the first three gospels with reference to the other two. Spring, 1957. Luke.
32:108 Paul 2 s.h.
Aspects of Pauline theology in their historical context.
32:109 Christian Ethics 3 s.h.
Specific nature of Christian ethics and a survey of ethical theories, according to the directives and dynamics of the Christian kerygma.
32:110 History of Christian Ethics 3 s.h.
History of Christian social and ethical thought tracing 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. Application 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; selected 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 Testament 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 available methodologies (e.g., literary-critical, form-critical, sociological-archaeological, theological) used in approaching the Old Testament in the context of current 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 Reformation 3 s.h.
Scholastic theology; their relation to the theology 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 reformer.
32:125 Prophetic Thought in Ancient Israel 3 s.h.
Classical Israelite prophets from the 9th through the 6th centuries B.C.
32:126 Theology of the Old Testament 3 s.h.
God, man, sin, and salvation as advanced by Old Testament thought.
32:127 Theological Questions 3 s.h.
Treatise of basic questions of religious thought, such as the meaning of "God," the nature of religious symbols, the phenomena of supernaturalism.
32:128 Theological Questions 3 s.h.
Treatise on 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, Hellenism, Jewish religion, gentile society, the Roman Empire.
32:132 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. Its inner development and interrelationships.
32:134 The Catholic Church Since 1500 3 s.h.
Continuation of 32:133. History of Church from Protestant Reformation to present day.
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 interest under whom he works. An extensive reading program with discussions, regular reports, and a seminar paper are 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 is literary, though improvement and refinement of the students' Russian is not neglected. Graduate students therefore study the development of Russian literature, both as a natural phenomenon and as a part of European literature, and are expected to analyze writers' styles, pervasive literary devices, regional 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:

41:115, 41:116 Advanced Composition and Conversational
41:211, 41:212 19th-Century Russian Literature
41:213 20th-Century Russian Literature
41:281 History of the Russian Language
41:283 Readings in Russian Literature in pre-1935 Russian literature.

Special Facilities
The department shares in the facilities of a fully-equipped Laboratory (radio tape recorders, record players, soundproof recording room), where students may have access to material for the preparation of language recordings and also make recordings of their own voices.

STAFF
Professor: Elena Sapina.
Associate Professor: Norman Lusenbug.
Assistant Professors: George Clermont, Harry Weber.
Instructor: T. N. Hamilton Lebedeva.

CORE DESCRIPTIONS
For Undergraduates and Graduates
41:101 Elementary Russian
41:102 Elementary Russian
41:103 Second-Year Scientific Russian
41:104 Second-Year Scientific Russian
41:107 Supplemental Russian Reading
41:108 Special Readings
41:111 Third-Year Russian
41:112 Third-Year Russian
41:113 Advanced Composition and Conversation
41:114 Advanced Composition and Conversation
41:121 Linguistic Analysis of Contemporary Russian
41:125 Russian Pronunciation
41:126 Russian Pronunciation
41:151 Russian Literature in Translation
41:152 Russian Literature in Translation
41:153 Russian Literature in Translation
41:171 Readings in Representative Russian Literature
41:172 Readings in Representative Russian Literature
41:181 Readings in Soviet Literature
41:191 Russian Civilization
41:192 Short Story
41:199 Honors Program in Russian

ESPECIALLY THOSE MAJORING IN SCIENCES, WHO NEED PRIMARILY TO DEVELOP READING ABILITY FOR RESEARCH PURPOSES.

41:102 Scientific Russian
41:103 Scientific Russian
41:107 Scientific Russian Reading
41:108 Special Readings
41:111 Third-Year Russian
41:112 Third-Year Russian
41:113 Advanced Composition and Conversation
41:114 Advanced Composition and Conversation
41:121 Linguistic Analysis of Contemporary Russian
41:125 Russian Pronunciation
41:126 Russian Pronunciation
41:151 Russian Literature in Translation
41:152 Russian Literature in Translation
41:153 Russian Literature in Translation
41:171 Readings in Representative Russian Literature
41:172 Readings in Representative Russian Literature
41:181 Readings in Soviet Literature
41:191 Russian Civilization
41:192 Short Story
41:199 Honors Program in Russian

MAY BE REPEATED TO A MAXIMUM OF 6 SEMESTER HOURS. PRE-REQUISITE, CONSENT OF THE DEPARTMENT.

PRIMARILY FOR GRADUATES
41:201 19th-Century Russian Literature
41:202 Old Russian Literature
41:211 19th-Century Russian Literature

185
SOCIAL STUDIES

41:212 19th-Century Russian Literature 3 s.h.
Continuation of 41:211, but may be taken as an indepen-
dent unit.

41:221 Modern Russian Literature, 1821 to 1930 3 s.h.

41:224 Russian Drama 3 s.h.

41:331 Soviet Literature 3 s.h.
41:241 Russian Phonetics 2 s.h.
41:244 Literary Criticism 3 s.h.

41:251 Seminar: Gorodn 2 or 3 s.h.
41:253 Seminar: Tolstoy 2 or 3 s.h.
41:253 Seminar: Pushkins 2 or 3 s.h.
41:254 Seminar: 20th-Century Literature 2 or 3 s.h.
41:255 Seminar: Turgenev 2 or 3 s.h.
41:256 Seminar: Emigre Literature 2 or 3 s.h.
41:257 Seminar: Dostoevsky 2 or 3 s.h.
41:261 History of the Russian Language 3 s.h.
41:279 Special Work cr.arr.
41:310 Master's Thesis cr.arr.

SOCIAL STUDIES

Advisers: John H. Hazelhoff
Office, 352 University High School
Robert M. McFitch
Office, 359 University High School
Barbara M. Olmo
Office, 413 Jefferson Building

The program of concentration in the area of the social
studies provides a broad, non-professional major. The pro-
gress is primarily intended, however, for those pre-
paring to teach the social studies in public schools and
junior or community colleges. Together with professional
requirements, the social studies major meets the stan-
dards established by the North Central Association of
Colleges and Secondary Schools.

Required of students, tailored to meet indi-
vidual needs and interests and to give breadth of teach-
ing and establish relationship of specific disciplines, are:

Economics, Geography, History, Political Science, and
Sociology serve in an advisory capacity to the staff
members in charge of the area.

The programs lead to the degree Bachelor of Arts
with a major in social studies, Master of Arts with a
major in social studies, and Ph.D. in social studies education.

Bachelor's Degree in Social Studies

Admission requirements. Students wishing to major in
the social studies must have the permission of the adviser.
Normal students will not be permitted to major in this
area unless they have earned a minimum grade-point
average of 3.5 on all work undertaken in the fields of
anthropology, economics, geography, history, political
science, sociology, and in the core areas of the social sci-
ences and the historical and cultural studies.

Degree requirements. A minimum of 30 semester hours constitutes a major in social studies for a bachelor's degree. These 30 semester hours shall be distributed in the five departments of Anthropology, Economics, Geography, History, Political Science, and Sociology. Minimum distribution of work in the five departments shall be as follows:

- Economics: 6 s.h.
- Geography: 4 s.h.
- History: 12 s.h.
- Political Science: 8 s.h.
- Sociology or Anthropology: 6 s.h.

Total: 36 s.h.

The Department of History recognizes the following concentrations, as follows:

Division I: The Ancient World and Medieval Europe
- History: 3 s.h.
- Political Science: 3 s.h.
- Sociology: 3 s.h.

Division II: European History, 1000-1815
- History: 3 s.h.
- Political Science: 3 s.h.
- Sociology: 3 s.h.

Division III: European History, 1815 to the Present
- History: 3 s.h.
- Political Science: 3 s.h.
- Sociology: 3 s.h.

Division IV: British Empire and Commonwealth
- History: 3 s.h.
- Political Science: 3 s.h.
- Sociology: 3 s.h.

The minimum history requirement of 12 semester hours must include at least 6 semester hours in Division IV.

The remaining 12 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 in-
teres of the student, with the advice and consent of the
social studies adviser.

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 3.5 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 de-
partments for the requirements for teaching majors in
anthropology, geography, history, political science, and
sociology.

For the general requirements 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 mini-
mum 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 under-
taken in the social studies program.

After having declared a social studies major, a student
must maintain a 3.5 grade-point average in all work under-
taken in the social studies departments.

Degree requirements. In the master's degree program in social studies, the student must take a degree
with thesis or a terminal degree (without thesis).

A minimum of 28 semester hours is required under either
plan. These 28 semester hours of work are normally
distributed in three of the five departments of Anthro-
pology, Economics, Geography, History, Political Science,
and Sociology, with the advisor's permission and the
adviser's approval. Students are advised to take the re-
maining work in the departments of their choice. If stu-
dents take a terminal degree, they must complete a mini-
mum of 20 semester hours in education will be counted toward the degree
requirements.

A minimum of nine semester hours of the total 28 se-

mester-hour requirement must consist of graduate courses
bearing course numbers of 500 or above.

Comprehensive written and oral examinations are re-
quired of the candidate. The written examination is adminis-
tered by an examination committee of three members, one
from each of the three departments in which the candidate has
undertaken his work. This examination is normally
administered during the fall semester in the three depart-
ments in which the candidate is concentrating his work. 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 must approve the title of the thesis
and the contents of the proposal. The final thesis is to be
read to the committee by the candidate's supervisory
adviser; the other is a member of that department in
which the candidate is writing his thesis.
Approved of candidacy for the M.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 at the graduate level in the social studies departments.

Doctoral Program

Purpose. To prepare secondary departmental chairman, supervisors, curriculum directors, teacher education personnel, and college instructors in the social sciences and pedagogy.

Admission. A candidate for the doctor's degree in the social sciences, master's degree in history, or master's degree in sociology, must satisfy the following requirements.

Degree requirements:

1. Required courses
   - A minimum of 40 semester hours of coursework and dissertation credit beyond the bachelor's degree and not including course requirements established by the College of Education.
   - The 90 semester hours are to be distributed among two of the following disciplines: anthropology, economics, geography, history, political science, and sociology. These must be in the field of education. Work in the two disciplines chosen will constitute between 60 and 75 percent of the total 90 semester hours; work in education, between 25 and 40 percent of the total.
   - Seminars and courses numbered 210 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 rearranged. An oral examination in defense of the dissertation will be conducted by the committee as a whole.

3. Dissertation
   - A research paper in history or the social sciences, in which case the dissertation director will be a faculty member in the department; or a research paper in social studies 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 Kiber, Chester Morgan, James Murray, Harold Semendefer, John Haechter, chairman.

COURSE DESCRIPTIONS

Almost all courses marked in the social studies major consist of courses in the Departments of Anthropology, Economics, or other 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. Inquiries provided by these books are used for understanding the contemporary scene and relating the points of view of the social science disciplines.

98:202 Seminar: Readings in Social Science 1 or 2 s.h.
Continuation of 98:201, but may be elected as an independent 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 also offers a graduate program leading to a B.A. degree in the College of Liberal Arts. The basic objective of the Iowa School is to give each graduate a

S O C I A L  W O R K

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 positions exceeds the number of available people. Therefore, a graduate in social work has no difficulty in securing employment.

Many agencies have positions open to B.A. degree graduates. Among these are local public welfare, some children's institutions, and some police stations.

For more information regarding career possibilities consult the School or request a special bulletin from the school or the registrar's office.

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. His declaration should be made to the Liberal Arts Advisory Office, whereupon he will be assigned to an undergraduate advisor on the faculty of the School of Social Work.

Hons in Social Work

The School of Social Work has an Honors program leading to a Bachelor of Arts with Honors in Social Work. Honors 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 fulfill the general requirements of the Liberal Arts, choice of course, core, and foreign language requirements, excluding the social science core.

II. The following specific courses are required:

4:101 Introduction to American Politics 3 s.h.
30:100 American Political System 3 s.h.
31:1 Elementary Psychology of Society 3 s.h.
31:3 General Psychology 3 s.h.
42:1 Introduction to Social Science Research Principles 4 s.h.
46:6 Principles of Economics (or E6:1) 4 s.h.
46:16 The Field of Social Work 4 s.h.
30:151 Social Welfare Practice and Policy 4 s.h.
30:171 Social Welfare Practice and Policy 4 s.h.
42:171 Introduction to Social Work Methods 4 s.h.
42:175 A minimum of 15 semester hours of coursework is required in one department in group A or B and a minimum of the 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

American Civilization

English

European Literature and Thought

Geography

History

Philosophy

Religion
IV. Any of the following courses are recommended: 2 a.h.
3:190 Biological and Psychological Aspects of Aging
2 a.h.
3:190 Child Development
2 a.h.
7:115 Principles of Guidance 2 a.h.
7:129 Introduction to Group Counseling 2 a.h.
7:135 Educational Psychology and Measurement 2 a.h.
7:136 Exceptional Children 2 a.h.
7:138 Teaching the Exceptionally Disabled a.h.
7:139 Social Education 2 a.h.
7:139 Orientation to Rehabilitation of the Mentally Retarded 2 a.h.
7:139 Principles of Nutrition 2 a.h.
7:136 Administration of Family Resources 2 a.h.
7:136 Marriage and Family Interaction 2 a.h.
7:136 or 322 Seminar: Parent-Child Relationships 2 a.h.
19:29 Communication: Concepts and Perspectives 2 a.h.
19:30 Communication 2 a.h.
33:35 Psychology of Adjustment 2 a.h.
33:45 Personality in Social Psychology 2 a.h.
33:45 Psychological Measurement 2 a.h.
33:45 Introduction to Educational Methods 2 a.h.
33:45 Abnormal Psychology 2 a.h.
38:36 Schools and Their Cultures 2 a.h.
38:36 Problems of Christian Ethics 2 a.h.
38:45 The Pursuit of Happiness 2 a.h.
38:111 Myths and Rituals 2 a.h.
38:121 The Good Society 2 a.h.
38:132 Values in the Contemporary World 2 a.h.
38:132 Science and the Future of Man 2 a.h.
38:13 Introduction to Sociology: Problems 2 a.h.
38:30 Introduction to Social Science 2 a.h.
38:41 Introduction to Field Study 2 a.h.
38:30 Principles of Social Psychology 2 a.h.
38:30 Criminology 2 a.h.
38:31 Juvenile Delinquency 2 a.h.
38:122 Race and Ethnic Relations 2 a.h.
38:122 Societal Aspects of the Family 2 a.h.
38:122 Sociology of Family Formation 2 a.h.
44:121 Adult Education 2 a.h.
72:101 Psychiatry for Related Professions 2 a.h.
122:105 Planning 2 a.h.
122:105 Recreation Leadership 2 a.h.
122:105 Recreation and Rehabilitation Settings 2 a.h.
122:105 Introduction to the Study of Culture 2 a.h.

133:10 The World's Peoples 2 a.h.
V. The following programs are offered in social work: 4 a.h.
42:191 Individual Study cr.arr.
42:191 Field Work cr.arr.
42:191 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 selected. In this selection, consideration is given to the undergraduate record and individual qualities revealed 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 if conditions that they take the GRE at the first subsequent test date.

Graduate Curriculum

Under the Iowa plan the student begins his M.S.W. program in September and remains continually in school until all work is completed. He is s it through the summer, and he finishes correspondingly early the next spring. The three general content areas of the curriculum are: social welfare programs and policies, human behavior in the social environment, and methods used in practice. The program of instruction aims to provide the basic and technical preparation needed for professional practice in almost any setting today. In keeping with this, the program is now, and increasingly will be, designed to take account both of what the entering student brings with him and the 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 campus in Iowa City spending full time in academic work. Social work education begins from about February first until near the end of the calendar year—the student is in the field and having significant experiences in the representative social agencies and social work departments in the Iowa City and Des Moines areas are utilized. The consent courses meet both in the Iowa City and Des Moines Edu- cational Centers, and each student attends the ones 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 24 semester hours in graduate social work study, including a research requirement. Consent upon approval by the graduate faculty, the 24-credit requirement may be met by some reduction in cases where 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
Professor: Frank E. Glick, Associate Professors: Ralph B. Anderson, W. Stanley Goldman, Wayne Johnson, A. Kaase, Mildred B.
Instructor: Ir. Carter.

COURSE DESCRIPTIONS

Primarily for Undergraduates
42:126 Elementary Statistical Concepts cr.arr.
A minimal course for entering graduate students demonstrating gaps in this area. Consideration of the rationale and use of various descriptive statistical methods including measures of central tendency, variability, and correlation. Introduction to selected inferential statistical concepts most frequently used in social work research.
42:148 The Field of Social Work 3 a.h.
B.S. Social welfare as a social institution; historical development; settings of social work practice; the profession of social work. Same as Sociology 34:18.
Processes of social work treatment use by social workers with individuals, groups, agencies; principles and techniques in all social work practice. Pre- requisite: 42:126 or consent of instructor.
42:181 Individual Study cr.arr.
A project related to the student's interest is carried out under direction of a faculty member.
42:193 Honors in Social Work cr.arr.
Supervised individual research. Prerequisite, admission to Honors program in social work.
SOCIETY

43:159 Field Experience cr.arr. Supervised observation and experience with the activities of selected social welfare agencies and organizations. Requires approximately sixty hours in agency participation 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; developmental tasks and modes of adaptation.

42:132 Human Behavior in the Social Environment II 3 cr. Major personal and social stress situations; range and variability of adaptive responses to these stresses. Features and manifestations of social dysfunction. Assessment approaches to social functioning.

42:171 Social Welfare Program and Policy 4 cr. or cr.arr. Selected programs which demonstrate the organization and provision of individualized social services, through both government and voluntary agencies, to deal with major social and health problems in the fields of dependency (old age, children, handicapped); ill health, and accidents; evolving social problems; policies and provision relevant to respective programs; role of government; role of social work. Undergraduate registrants for 4 semester hours. Prerequisite: 42:106 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 cr.


42:241 Social Work Practice I cr. OFFICIALS. Scope and responsibility of social work; common conceptual base for all social work practice; frame of reference for student educational experience.

42:242 Social Work Practice II 3 cr.

42:243 Social Group Work 3 cr.

42:253 Community Organization for Social Welfare 3 cr.

42:254 Administration in Social Welfare 3 cr.


42:257 Practicum in Social Work I 3 cr.

42:258 Practicum in Social Work II Continuation of 42:257. 3 cr.

42:259 Individual Study 3 cr.

Chairman of Department, James L. Price

Sociology Office, Machibride Hall

An undergraduate program in this department is primarily 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.

A principal vocational goal toward which a major may plan is to enable him, through knowledge and practical experience gained at the school level, to pursue professional preparation for social welfare work, whether in the field of governmental or voluntary work, or in professional welfare administration, correctional and law enforcement work, industrial relations work where a fundamental

180
SOCIOLGY

knowledge of human relations is required; public rela-
tions work; and social research positions with either edu-
cational institutions, private research foundations, or
governmental agencies.

Students studying one of the specific vocational goals
listed above should plan their courses in such a way
as to include the following list of courses from the Depart-
ment of Sociology and also allied degree-optional
which provide a well-rounded background for the professional
degree background. These selections are made with the advice and consent
of the departmental advisor. For more information con-
cerning undergraduate year opportunities, consult the
undergraduate advisor. These intense years in the under-
graduate professional background for social work
should consult with an undergraduate advisor in sociology.

Graduates with a B.A. and Ph.D. degrees in sociology
have open to them a wide choice of professional positions.
Examples of the positions sociologists exert on comple-
tion of their graduate programs are college professor,
research director; demographer; vital statistician; social psy-
chologist; marriage counselor; public opinion analyst;
survey research analyst; social geographer; human
epidemiologist; criminologist; sociologist-actuary; probability
or person officer; classification officer for a penal institution;
police administrator; city planner; community specialist;
and industrial sociologist.

Students who complete the B.B. 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
derpartmental requirements which depend upon the ad-
mission to sociology as the major.

Research Facilities

The University Library offers a large number of books,
periodicals, journals, and other materials (including the
Human Relations Area Files) of a varied and
diversified character addition.

Students specializing in criminology have access to
specialized research laboratories for research and
training purposes. The department's research labora-
tories are equipped with the latest electronic and
processing machines. Laboratory facilities are also avail-
ible to students from the social group working.

The Iowa Urban Community Research Center was
established to assist the public in a research library
and laboratory.

The Center for Research in Interpersonal Behavior was
established in 1988 as a laboratory for research in social
psychology. The basic facility is a five-room semi-
group laboratory complex with audio, videocassette,
and interactive process recording equipment.

STAFF

Professors: Robert G. Caldwell, George A. Hillyard, Jr.,
Harold A. Attwood, James L. Price, Harold W. Beaumont,

Associate Professors: John Brown, Carl J. Conch, Edward J.
Hadden, Halwood Dunn, John H. Straton, Robert J. Terry,
Pawloski, and John A. villa.

Assistant Professors: Mary E. Bell, J. Francis, D. Janas, Michael
Klim, Frank Reuben, William L. Woodworth.

Affiliated Staff: K. Wayne Johnson.

Sociology

Undergraduate Advisors

Assigned at Departmental Office

128 Manbride Hall

Students selecting a program leading either to a
Bachelor of Arts or a Bachelor of Science degree.
A student's advisor is required within the department
for either degree.

For either a B.A. or B.S. degree, students must take
the following courses:

126 Introduction to Sociology: Principles 4 e.c.h.
128 Introduction to Sociology: Problems 4 e.c.h.
320 and 321 Theory, Research, and Statistics 4 e.c.h.
12 additional semester hours in sociology

For the Bachelor of Science degree the following addi-
tional requirements must be fulfilled:

10-123 Logic and 10-104 Introduction to the Philosophy of Science: 3
person is not in
and 10-105 Introduction to Computer Con-
cept classes (pre-requisite: 20-103 or equivalent) and 10-106 Programming
with Algorithmic Languages, Mathematics
10-109 and 10-110 may be substituted for either option
or (b) above by students who have had the equiva-
10-032 Elementary Probability and Statistics.

Undergraduates may, both B.A. and B.S., be advised
to select, in the above requirements, 4 semester
hours in one of the following departments: Anthrop-
ology, Economics, Geography, Political Science, or Psy-
chology. In addition, they are advised to include in their
present at least one basic course in history and philo-

Undergraduate majors planning to teach the social
sciences at the high school level with emphasis on soci-
ology and who wish to teach a major in sociology in the College of Education must meet the following require-
ments:

2033 Western Civilization: Middle Ages to 1815 4 e.c.h.
2113 Western Civilization: 1914 to Present 4 e.c.h.
281 Introduction to Sociology Principles 4 e.c.h.
29 Introduction to Sociology Problems 4 e.c.h.
3113 Introduction to the Study of Culture and Society 4 e.c.h.

A minimum of 15 semester hours in the Department of
Sociology and a minimum of 6 semester hours in
three of the following fields: economics, geography, po-

tical science, and psychology major in the department, leaving the more specialized
divisional courses for graduate study.

Honors in Sociology

Honors Advisor, J. Richard Whittome

2113 Western Civilization: 1914 to Present 4 e.c.h.
2280 Elementary Probability and Statistics 3 e.c.h.
2480 Research 2 to 4 e.c.h.

Students wishing to graduate with Honors must include the following in the undergraduate major:

320 Introduction to Sociology: Problems 4 e.c.h.
2300 Seminar in Sociology 2 to 4 e.c.h.
2690 Honors Research 2 to 4 e.c.h.
3113 Introduction to the Study of Culture and Society 4 e.c.h.

Graduate Study Requirements

The requirements for admission to graduate training in
sociology 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 2.5 is required, as is a combined score of at least
on the Graduate Record Examination. Special
consideration is given to those students with unusual
ability, provided the student has attained an amount of additional coursework is imposed in order to
preparatory work. In these cases where the undergraduate major was not in
sociology, admission is conditional with the understand-
ing that the deficiencies must be removed as soon as possible. For general requirements for admission to the Graduate College and for advanced degrees, see Grad-
uate College.

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 48-
semester-hour program without thesis. With the excep-
tion of the number of hours the two programs are essentially the same. The program without thesis is intended for each candidate to be a terminus in degree and for whom a wider range of content courses in soci-
ology are the applied social program is appropriate. Information concerning the general requirements for the M.A. and Ph.D. degrees in the Department of Sociology may be obtained from the chairman. The specific re-
quirements vary with the major field of specialization. In all cases, 34:113 Elementary Statistics and Data Analysis, 34:124 Sampling, Measurement, and Observational Techniques, 34:201 History of Sociology, and 34:203 Principles of Sociology are specifically re-
quired and must be passed with a grade of B or better.

The possible areas of concentration are social theory, method, social psychology, criminology, and polit-
ical sociology, stratification, political socialology, sociology of the family, industrial sociology, social problems and social change, community and population, organizations, and intergroup relations.

The student in 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 concentra-
tion in criminology.

Doctor of Philosophy Degree in Sociology

The doctorate is awarded to students who complete an approved 72-semester-hour program and pass the qualifying examination. All candidates are examined in theory and methods. In addition, candidates for the Ph.D. degree are examined in a minor area and one minor area chosen from the following: methodology, social psychology, criminology, soci-
ology and penology, stratification, political socialology, soci-
ology of the family, industrial sociology, social problems and social change, community and population, or-
ganizations, and intergroup relations. A graduate student must maintain a grade point of 3.25 in the department in order to be a potential candidate.

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 Machride Hall
John R. Straton
Office, 111A Machride Hall
Robert M. Terry
Office, 111D Machride Hall

The program provides the student with the latest in-
formation regarding the nature of crime and delinquency, their causation and treatment, and work at an appreciable level to gain insight into some of the problems that will con-
front him in his future work. Arrangements have been

made to utilize Iowa's penal institutions, training schools, and correctional agencies for educational and practical instruction. Persons applying for admission to this pro-
gram 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, 346 Crime and Justice 3 s.h.
Two of the following courses:
34:147 Penetration and Parole 2 s.h.
34:145 The American Prison System 2 s.h.
34:145 American Penal Systems 2 s.h.
34:147 Prevention of Crime and Delinquency 2 s.h.
34:242 Seminar: Criminological Theories 2 s.h.
34:241 Seminar: Theory of Criminal Justice and Delinquency 2 s.h.
34:263 Seminar: Sociology of Law 2 s.h.
34:263 Seminar: Race and Theory of Punishment 2 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 Machride Hall

The purpose of this program is to provide the student with a broad education in the social and behavioral sci-
ences as it relates to criminal law, crime control and admin-
istration of justice. The student may elect to specialize in law enforcement or correctional administration. A knowledge of community and law enforcement agencies and institutions, familiarity with the operation and function of correctional facilities and experience in interviewing, counseling, re-
habilitation, and data processing is required. The program is founded upon the conviction that sociology can make important contributions to the process of law enforcement; therefore, corrections and sociological orientation will be empha-
sized.

In the course of the Master of Arts degree with con-
centration in law enforcement and corrections, students have been made to utilize Iowa's penal institutions, training schools, and correctional agencies as laboratories for graduate in-
struction. The successful completion of this program requires a minimum of 48 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 a B.A. degree, a grade point of 3.25, and have completed the following courses or their equivalents:

31:131 Elementary Psychology
31:133 Abnormal Psychology
31:134 Introduction to Criminology, Principles
34:113 Elementary Statistics and Data Analysis
34:114 Sampling, Measurement, and Observational Techniques
34:120 Principles of Social Psychology
34:138 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 statement of required courses and sum-
mer internships is available from the program advisor.

The completion of an internship program in law enforcement and correction in conjunction with the program may be found under the section Criminology and Penology.
34:09 Honors Seminar  
This seminar is intended for undergraduate majors who have demonstrated outstanding achievement in the field of psychology. The seminar will focus on advanced research topics, with an emphasis on critical thinking and scholarly inquiry. Prerequisites: admission by recommendation of the instructor.

34:10 History of Sociology  
This course traces the development of sociology from its origins in the 19th century to the present. It covers the major sociological theories and their impact on society.

34:11 Elementary Social Statistics  
This course introduces students to the basic concepts and techniques of social statistics. It covers descriptive and inferential statistics, with an emphasis on data analysis and interpretation.

34:12 Nonparametric Statistics  
This course covers the theory and application of nonparametric statistical methods. It focuses on techniques that are useful when the assumptions of parametric methods are not met.

34:13 Elementary Statistics and Data Analysis  
This course introduces students to the basic concepts and techniques of data analysis. It covers descriptive and inferential statistics, with an emphasis on data interpretation and presentation.

34:14 Sampling, Measurement, and Experimental Design  
This course covers the theory and application of sampling and measurement techniques. It focuses on the design and analysis of experiments.

34:15 Individual Study  
This course allows students to pursue an individualized study in a chosen area. It is designed for students who wish to explore a topic in depth.

Advanced Courses

34:20 Research Seminar  
This seminar is intended for advanced graduate students. It focuses on the design and execution of research projects. Prerequisites: admission by recommendation of the instructor.

34:21 Research Methods  
This course introduces students to the basic concepts and techniques of research methods. It covers descriptive and inferential statistics, with an emphasis on data analysis and interpretation.

34:22 Research Design  
This course covers the theory and application of research design. It focuses on the design and execution of experiments.

34:23 Research Techniques  
This course introduces students to the basic concepts and techniques of data analysis. It covers descriptive and inferential statistics, with an emphasis on data interpretation and presentation.

34:24 Sampling, Measurement, and Experimental Design  
This course covers the theory and application of sampling and measurement techniques. It focuses on the design and analysis of experiments.

34:25 Individual Study  
This course allows students to pursue an individualized study in a chosen area. It is designed for students who wish to explore a topic in depth.
### 34:206 Azonimetic Method in Sociology 2 s.h.
Clariñification of existing social-trial theories by resolution into explicit terms. Conceptual analysis of theories, with emphasis on their content rather than their structure. Emphasis on the method and models. Prerequisites: graduate standing and consent of instructor.

### 34:311 Advanced Social Statistics 3 s.h.
Development of error formulae for various sample designs; further statistics of relationship among social data; involving analysis of variance and covariance and multiple and partial correlation. Prerequisites, 34:113.

### 34:212 Design of Social Research 3 s.h.
Theoretical, logical, and technical problems in the formulation of descriptive and explanatory survey formulations, conceptual framework, development of adequate research design, problems and techniques of sampling, and execution of field work. Consideration of theoretical and practical problems. Prerequisites, 34:311.

### 34:213 Analysis of Social Research 3 s.h.
Preparation of research data for electronic processing. Measurement techniques, testing and scaling. Problems of evidence and proof in the study of the interaction of various variables and the application of various statistical techniques. Use of electronic equipment for electronic research analysis. Prerequisites, 34:213.

### 34:214 Mathematical Sociology 3 s.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 s.h.
Logic of computers and basic programming techniques. Computer simulation of social processes and analysis of simulation data. Techniques applicable to students' research interests. Prerequisites, course in research methods and consent of instructor.

### 34:216 Intermediate Statistics and Data Analysis 3 s.h.
Problems of drawing statistical inference from data in studies using basic designs, measurement techniques, and analysis techniques. Hypothesis testing and parameter estimation. Nonparametric statistical techniques for basic analysis procedures and the concept of measurement error in data analysis. Analysis of variance and statistical inference. Basic computer programs in data processing. Prerequisites, 34:114.

### 34:217 Theory and Research Design 3 s.h.

### 34:218 Advanced Statistics and Data Analysis 3 s.h.
Problems of drawing statistical inferences from data in studies using moderately complex measures, survey designs, and analytical techniques. Multivariate analysis involving several variables, measurement and scaling error in data analysis, nonlinear regression and simple transformations, Computer applications. Prerequisites, 34:217.

### 34:219 Seminar in Research Methods and Data Analysis 3 s.h.
Selected topics. Prerequisites, advanced graduate standing and consent of instructor. May be repeated.

### 34:120 Principles of Social Psychology 3 s.h.
Basic concepts and principles of social psychology: personality, interpersonal, and intergroup processes. Prerequisites, 34:1.

### 34:121 Social Structure and Personality 3 s.h.
Research and theory relating social structural variables to processes of socialization, development of personality, conceptions of role and self. Prerequisites, 34:120.

### 34:122 Sociology of Personality 3 s.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 s.h.
Problems of socialization and measurement of the opinion process. Influence of mass media, redress groups and categories, interpersonal relations, personality factors. Same as Journalism 39:142. Prerequisites, 34:120 and Psychology 31:1 or graduate standing and consent of instructor.

### 34:125 Small Group Analysis 3 s.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 31:1 or graduate standing and consent of instructor.

### 34:126 Seminar: Collective Behavior 3 s.h.
Social unrest, crowd behavior; social movements treated as a form of social change. Prerequisites, 34:120.

### 34:127 Interaction Processes 3 s.h.
Reviews various aspects to the study of interaction 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 s.h.
Field experiments, case-studies, various natural observation techniques. Open to advanced undergraduate and graduate students, enrollment by permission of instructor. Prerequisites, 34:120.

### 34:128 Group Organization and Leadership 3 s.h.
Primary groups in modern society; interpersonal relations within small 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 s.h.
Guided group research on selected topics in social psychology. Prerequisites, consent of instructor. May be repeated.

### 34:129 Contemporary Approaches to Social Psychology 3 s.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 electoral member in social psychology; other students by consent of instructor.

### 34:121 Seminar: Selected Topics in Social Psychology 3 s.h.
Selected theoretical and methodological issues. Prerequisites, graduate standing and consent of instructor. May be repeated.

---

173
34:232 Seminar in Social Structure and Personality 3 a.h.
Selected problems. Prerequisites, advanced graduate standing and consent of instructor. May be repeated.

34:233 Seminar in Social Psychiatry 3 a.h.
Selected problems. Prerequisites, advanced graduate standing and consent of instructor. May be repeated.

34:234 Seminar in Small-Group Analysis 3 a.h.
Selected problems. Prerequisites, advanced graduate standing and consent of instructor. May be repeated.

34:235 Seminar in Collective Behavior 3 a.h.
Selected problems. Prerequisites, advanced graduate standing and consent of instructor. May be repeated.

34:237 Seminar: Processes of Deviation 3 a.h.
Critical analysis of dynamic models of deviance with particular emphasis upon significant theoretical and methodological issues. Prerequisites, graduate standing and consent of instructor.

34:140 Criminology 3 a.h.
Nature and causes of crime; criminal investigation and prosecution; punishment, correctional treatment, and crime prevention. Prerequisites, 34:1.

34:541 Juvenile Delinquency 3 a.h.
Delinquency as an individual and a social problem; theories of delinquency causation; law enforcement and the juvenile court; methods of correction and prevention. Prerequisites, 34:51.

34:143 Probation and Parole 2 a.h.
Development, organization, administration, operation, and results of probation and parole. Prerequisites, 34:120 or 141.

34:143 Crime and Justice I 3 a.h.
Criminal law and procedure; Jensen, the American legal system, crime and punishment; theory and practice; problems in the criminal law considered in the light of recent developments in the social sciences. Prerequisites, 34:140 or consent of instructor.

34:144 Crime and Justice II 3 a.h.
Continuation of 34:143. Prerequisite, 34:143 or consent of instructor.

34:165 American Prison Systems and Their Administration 2 a.h.
Origins of the prison system in the United States; philosophical and institutional corrections and problems of administration. Prerequisite, 34:140.

34:166 American Police Systems and Their Administration 2 a.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 a.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 a.h.
Theories of crime causation and their relationships to the cultures in which they have functioned. Prerequisites, graduate standing and consent of instructor.

34:241 Seminar: Theory of Criminal Law 3 a.h.
Role, doctrine, and principles of criminal law and their functional relationship to culture and social change. Prerequisites, graduate standing and consent of instructor.

34:242 Seminar: Sociology of Law 3 a.h.
Law as a social institution; its origins, development, and relationship to culture, the social process, social groups, and other means of social control. Prerequisites, graduate standing and consent of instructor.

34:243 Seminar: History and Theory of Punishment 3 a.h.
History and theory of punishment and its influence on social change. Prerequisites, graduate standing and consent of instructor.

34:244 Seminar: Current Research in Criminology, Penology, and Delinquency 3 a.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 a.h.
Continuation of 34:143 and 34:144. Particular attention is given to the law on evidence as it is related to criminal prosecution.

34:247 Investigative Techniques 2 a.h.
Various techniques, such as surveillance interrogation, and its 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 police agency with formal instruction in theory and technique.

Social Institutions and Social Change

Social institutions is a large area consisting of the following areas: political, economic, social and cultural, and other aspects of social institutions. The study of social institutions involves the analysis of the structure, functions, and processes of social organization and the roles of individuals and groups within these organizations.

34:150 Political Sociology 3 a.h.
Sociological analysis of political behavior and belief, group conflict and political process, group consensus, political institutions, and power and policy-making in the social system. Prerequisites, 34:1. Same as Political Science 31:100.

34:151 Social Problems of Underdeveloped Areas 3 a.h.
Economic development as a sociological problem. Social institutions and social organization of underdeveloped areas and their relation to social and economic development programs. Social change and the consequences of urbanization in underdeveloped areas. Prerequisites, an introductory course in sociology, economics, or anthropology and junior standing.

34:152 Public Opinion 3 a.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 31:100.

34:154 Social Movements 3 a.h.
COMMUNITY AND POPULATION

34:170 Population and Society 3 s.h.
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, 241.

34:171 The Urban Scene 3 s.h.
Sociological interpretation of origin and spread of urban areas in the world; analysis of major urban social institutions, historical development of cities and urban areas, their role in modern societies, both Western and non-Western. Prerequisite, 24:1 in consent of instructor.

34:172 The Urban Community 3 s.h.
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, 241.

34:174 World Population Problems 3 s.h.
World population trends and pressures: their causes and consequences by countries and world areas. War, international relations, and population phenomena; standards of living and technological change, cultural contrasts in migration patterns and family planning. Prerequisite, 241.

34:176 Techniques of Population Analysis 3 s.h.
Obtaining information from population data; research problems and their solutions; population applications to world and national demographic data. Prerequisite, 241.

34:179 Problems of Community Organization 2 or 3 s.h.
Formal organizations, informal groups, voluntary associations, and their relation to total pattern of community life. Prerequisite, 241.

34:270 Seminar: Human Ecology 3 s.h.
Point of view of human ecology and selected empirical aspects of the study of social organization. Prerequisite, 241.

34:271 Seminar: Population 3 s.h.
Theory and research in social demography, population, and social structure; fertility, mortality, and migration in men-type of society; review of research literature on family planning.

34:273 Seminar: Community Research 3 s.h.
Development of a frame of reference and design for a community study, relevant to project plans of the Iowa Urban Community Research Center. Prerequisite, consent of instructor.

34:274 Seminar: Community Survey 3 s.h.
Execution of a community study project, in coordination with projects of the Iowa Urban Community Research Center. Prerequisite, consent of instructor.

34:275 Seminar: Community Studies 2 s.h.
Critical review and discussion of the design and findings of selected community studies.

34:278 Seminar: Community and Institutions 2 s.h.
Theories and research concerning interrelations of community economy, political structure, and social systems, and their relevance to further research in the community. Prerequisite, 24:202 or consent of instructor.

34:277 Seminar: Community Theories 3 s.h.
In-depth examination of selected theories and writings relevant to an understanding of territorial communities. Includes a study of the writings of Durkheim, Park, Redfield, Warner, and others. Prerequisites, graduate standing and consent of instructor.

34:279 Seminar: Urbanization 3 s.h.
Problems growing out of the increase in urban population and the relative decline in rural population. Emphasis on the urban and the Middle West. Prerequisites, graduate standing and consent of instructor.

SOCIAL PROBLEMS

34:130 Sociology of Aging 3 s.h.
Aging: problems of role definition, communication breakdown. Prerequisite, 241.

34:152 The Social Psychology of Alcohol Use and Community Problems 2 or 3 s.h.
Social and cultural factors in the definition and use of beverages. A social psychological analysis. Prerequisite, 241.

34:160 Criminology 3 s.h.
Description under Criminology and Penology.

34:165 Juvenile Delinquency 3 s.h.
Description under Criminology and Penology.

34:191 Social Problems of Underdeveloped Areas 3 s.h.
Description under Social Institutions and Social Change.

34:55 Race and Ethnic Relations 3 s.h.
Multidisciplinary study of intergroup relations with special emphasis given to historical, sociological, and social psychological aspects in the study of American minority groups. Prerequisite, 241.

34:178 African Social Structure and Special Change 3 s.h.
Development problems in relation to stratification systems, economic organization, and urbanization in tropical Africa. Prerequisite, 241.

34:261 Seminar: Social Problems and Social Disorganization 3 s.h.
Nature, origin, and types of social problem characteristics of contemporary society. Collective responses made by society to eliminate or alleviate these problems. Prerequisite, graduate standing and consent of instructor.

34:264 Seminar: Deviant Behavior 3 s.h.
Description under Social Institutions and Social Change.

INDIVIDUAL READING AND RESEARCH PROJECTS

34:383 Independent Study cr. 1-9
34:384 Research cr. 1-9
34:385 Thesis cr. 1-9

SPANISH AND PORTUGUESE

Chairman of Department, Oscar Fernandez
Office, 218 Schaeffer Hall
The department provides facilities for the study of Spanish and Portuguese. There are curricula for the B.A. degree in Spanish and Portuguese, and for the M.A. and Ph.D. degrees in Spanish. The offerings afford students a knowledge of the language, literature, and civilization of the countries represented, Latin America as well as peninsular, and they provide facilities for the fulfillment of many vital requirements in graduate and undergraduate programs held by other departments of the University.
Spanish and Portuguese

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, completing a single year’s work in Spanish or Portuguese in college and college study in one language which would be the equivalent of four semesters 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 (32:12).

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

- 32:27, 32:28 Literature
- 32:101, 32:125 Literature
- 32:102
- 32:204, 32:205
- 32:127, 32:128

Portuguese

- 32:207

Two-year forty semester hours beyond the second-year level.

Requirements for Spanish Teaching Minor

The following courses are required: 32:27, 32:28, 32:105, 32:106, 32:107, 32:108. 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 requires from any of the following Honors courses:

- 32:103, 32:104
- 32:203, 32:204

An Honors essay in Spanish.

An oral discourse in Spanish.

Graduate Study

Appointments. Teaching, research, and laboratory assist-
stanceships 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.

Master of Arts

Candidates for the master's degree are required to complete a minimum of 30 semester hours with thesis or 38 semester hours without thesis. The program may includes courses in related fields. Candidates must pass a written and oral examination.

The program for the M.A. in Spanish must include

- 32:109 Graduate Composition and Conversation; 32:110 Graduate Composition and Conversation; 32:90 Studies in Contemporary Hispanic Literature; and 32:120 Studies in Contemporary Hispanic Literature. In addition, the following areas must be covered by prescribed courses in addition to the Middle Ages, the Golden Age (including Cervantes and one other aspect); the modern era in Spain; Spanish America.

Doctor of Philosophy

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 accomplishment 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. Intensive specialization in Spanish and Spanish-America

2. Generalization

Specialization in Spanish and Spanish-America literature. Before comprehensive examinations, candidates must have passed a written and oral examination. Candidates must have completed the equivalent of three semesters of college Spanish, and must demonstrate the capability of reading knowledge of another approved foreign language.

Specialization in Spanish and literature with emphasis on philology. This major is to be supplemented by courses in another Romance language with stress on philology. Before comprehensive examinations, candidates must take a course in general linguistics, have completed the equivalent of three semesters of college Spanish, and must demonstrate the capability of reading knowledge of another approved foreign language.

Qualifying and Comprehensive Examinations

Before being allowed to present himself for the comprehensive examination for the Ph.D., a candidate's general knowledge of all periods will be tested at the M.A. level. All candidates with M.A. degrees from other institutions will demonstrate their general knowledge through a qualifying examination and Department of Romance Languages to research through seminar papers which will be evaluated by a departmental committee. The committee, in addition to the M.A. degree, will discuss the results of the student's scholarly work clearly, logically, and accurately. The candidate will be encouraged to continue preparing for the comprehensive examinations. Comprehensive examinations will be offered during the first four weeks of fall and spring semesters. To take the examination, the candidate must apply for approval in writing to the Graduate Dean by the first day of the semester examination and no later than May 1 for the fall semester examination.
Language Laboratory

The Language Laboratory provides facilities for language study, including a short-wave radio; tape recorders; record players; reel-to-reel sound equipment; two drill rooms, with sixty-eight dual channel tape recorders; a recording room; a soundproof work room; a main control room; and a library of tapes and disc recordings. The department offers a large number of courses in language laboratory procedures.

STAFF


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 241-1, 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 the elementary course is or its equivalent is a prerequisite.

33:1 Elementary Spanish 4 s.h.
33:2 Elementary Spanish 4 s.h.
Prerequisite: 23:1 or equivalent.
33:11 Intermediate Spanish 3 s.h.
Prerequisite: 23:2 or equivalent.
35:12 Introduction to Hispanic Literatures 3 s.h.
Prerequisite: 33:11 or equivalent.
35:25 Spanish Pronunciation 1 s.h.
35:27 Third-Year Composition and Conversation 4 s.h.
Prerequisite: 25:12 or equivalent.
35:28 Third-Year Composition and Conversation 4 s.h.
Prerequisite: 25:27 or equivalent.
35:52 Special Work 1 to 3 s.h.
For Undergraduates and Graduates

35:18 Renaissance and Golden Age Literature 3 s.h.
Prerequisite: 25:12 or equivalent.
35:180 Modern Spanish Literature 3 s.h.
35:180 Contemporary Spanish-American Fiction 3 s.h.
35:180 Contemporary Spanish-American Poetry and Drama 3 s.h.
35:180 Fourth-Year Composition and Conversation 4 s.h.
Prerequisite: 25:28 or equivalent.
35:180 Fourth-Year Composition and Conversation 4 s.h.
Prerequisite: 25:180 or equivalent.
35:180 Spanish-American Essays of the 20th Century 2 s.h.
35:180 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-America 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.
35:116 Spanish Civilizazion 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.
35:121 Honors: Literature 3 s.h.
35:122 Honors: Literature 3 s.h.
35:123 Honors: Language 3 s.h.
35:124 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 the permission of the instructor.
35:129 Romance Linguistics 3 s.h.
35:130 Methods in High School Modern Foreign Languages 3 s.h.
Prerequisite: 35:105 or equivalent. Ordinarily elected as Education 76:129.
35:131 Language Laboratory Procedures 1 s.h.
35:157 Spanish Pronunciation and Diction 3 s.h.
Prerequisite: 25:28 or equivalent.
35:158 Spanish Pronunciation and Diction 3 s.h.
Prerequisite: 25:180 or equivalent.

Primary for Graduates

35:207 European Fiction 3 s.h.

35:207 European Fiction 3 s.h.

35:207 European Fiction 3 s.h.

35:207 European Fiction 3 s.h.

35:207 European Fiction 3 s.h.

35:207 European Fiction 3 s.h.

35:207 European Fiction 3 s.h.

35:207 European Fiction 3 s.h.

35:207 European Fiction 3 s.h.

35:207 European Fiction 3 s.h.

35:207 European Fiction 3 s.h.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>35.206</td>
<td>Graduate Composition and Conversation</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>35.209</td>
<td>Graduate Composition and Conversation</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>35.210</td>
<td>Prerequisite, 35.206 or equivalent</td>
<td></td>
</tr>
<tr>
<td>35.210</td>
<td>Studies in Style</td>
<td>3 s.h.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite, 35.209. Introduction to literary theory and method: exposition</td>
<td></td>
</tr>
<tr>
<td>35.211</td>
<td>Research Methods and Bibliography</td>
<td>2 s.h.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite, 35.209. Literary Theory and Explication of Texts 2 or 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>35.212</td>
<td>19th-Century Spanish Novel and Essay</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.212</td>
<td>19th-Century Spanish Poetry and Drama</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.223</td>
<td>20th-Century Spanish Poetry and Drama</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.224</td>
<td>20th-Century Spanish Novel and Essay</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.251</td>
<td>Drama of the Golden Age</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.251</td>
<td>Don Quixote</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.251</td>
<td>Fiction of the Golden Age</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.253</td>
<td>Lyric Poetry of the Golden Age</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.253</td>
<td>Contemporary Spanish-American Novel</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.253</td>
<td>Spanish-American Drama</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.253</td>
<td>Spanish-American Realists and Traders</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.253</td>
<td>Seminar in College Teaching</td>
<td>no cr.</td>
</tr>
<tr>
<td></td>
<td>Ordinarily elected to Residence TH 732.</td>
<td></td>
</tr>
<tr>
<td>35.253</td>
<td>New Trends in Spanish-American Fiction</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.253</td>
<td>Spanish-American Literature of the 19th Century</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.253</td>
<td>Colonial Literature</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.253</td>
<td>Spanish-American Poetry of the 20th Century</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.253</td>
<td>The Spanish-American Short Story</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.253</td>
<td>Old Spanish</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.254</td>
<td>Historical Spanish Grammar</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.254</td>
<td>Historical Spanish Grammar</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.255</td>
<td>Epic and Ballad</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.257</td>
<td>Modernism</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>35.259</td>
<td>Nonfiction Prose of the Golden Age</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.262</td>
<td>The Picarosco Novel</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>35.262</td>
<td>Medieval Spanish Writings</td>
<td>4 or 3 h.</td>
</tr>
<tr>
<td>35.277</td>
<td>Thesis</td>
<td>cr.arr.</td>
</tr>
<tr>
<td>35.279</td>
<td>Special Work</td>
<td>cr.arr.</td>
</tr>
<tr>
<td>35.299</td>
<td>Recent European Poetry</td>
<td>3 s.h.</td>
</tr>
<tr>
<td></td>
<td>Same as Comparative Literature 45.209.</td>
<td></td>
</tr>
</tbody>
</table>

**SPEECH AND DRAMATIC ART**

- 35.359 Seminar: El Libro de Buen Amor 2 s.h.
- 35.360 Seminar: Lope de Vega and the Golden Age 2 s.h.
- 35.361 Seminar: Contemporary Spanish Thought 2 s.h.
- 35.363 Seminar: Expressionism in the Spanish-American Theater 2 s.h.
- 35.383 Seminar: 19th-Century Spanish Poetry 2 s.h.
- 35.394 Seminar: Glöngora 2 s.h.

**Portuguese**

- 38.1 Elementary Portuguese 4 s.h.
- 38.2 Elementary Portuguese 4 s.h.
- 38.11 Intermediate Portuguese 3 s.h.
- 38.12 Intermediate Portuguese 3 s.h.
- 38.13 Intermediate Portuguese 3 s.h.
- 38.27 Third-Year Composition and Conservation 4 s.h.
- 38.28 Third-Year Composition and Conservation 4 s.h.
- 38.53 Special Work cr.arr.
- 38.100 Intensive Portuguese 4 s.h.

Open to graduate students and language majors.

- 38.101 Introduction to Brazilian Literature 1 s.h.
- 38.102 Introduction to Portuguese Literature 1 s.h.
- 38.103 Modern Brazilian Fiction 2 or 3 s.h.
- 38.104 Modern Portuguese Fiction 2 or 3 s.h.
- 38.105 Advanced Portuguese Literature 3 s.h.
- 38.115 Brazilian Civilization 3 h.
- 38.116 Brazilian Civilization 3 h.
- 38.279 Special Work cr.arr.

**SPEECH AND DRAMATIC ART**

Chairman of Department, Samuel L. Becker
Office, 224 Jefferson Hall
The Department of Speech and Dramatic Art presents an opportunity to combine the broad program of the College of Liberal Arts with a study of human communication. We are concerned with communication as a means of personal expression and development. We are concerned with communication as the major means by which man adjusts himself to their society and their society to themselves. We are concerned with communication as the essential process for the operation of any society, especially the highly technological society. We are concerned with artistic communication as well as functional communication. Our concern with communication is manifested, in two major ways: our attempts and the attempts of our students to better understand communication processes, and our attempts to help our
36.57 Oral Interpretation of Literature 1 3 a.h.
Introduction to the principles and practice of reading literary prose and poetry to audiences. Analysis, interpretation, evaluation, and production especially for students in elementary education and English.

36.79 Analysis and Criticism of Communication Arts 3 a.h.
Required of all majors. Should be taken during the junior year. Literacy and application of analytical and critical principles in the understanding and appreciation of dramatic works, speeches, films, and radio and television programs.

36.89 Honors in Speech and Drama 3 a.h. or cr.arr.
Open to seniors and graduate students by permission.

36.151 Oral Interpretation of Literature II 3 a.h.
Critical analysis and oral presentation of the more complex works of fiction, poetry, drama, and comedy.

36.198 Senior Seminar 1 to 3 a.h.

36.249 Special Studies cr.arr.

36.260 Introduction to Research 2 or 3 a.h.
Required of all new graduate students in speech and drama; not open to students 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.

36.385 Master's Thesis 3 a.h.

36.685 Ph.D. Dissertation cr.arr.

Speech Education
Professor in Charge, Hugh P. Seabury
Office, 228 Jessup Hall
Teaching speech, drama, and forensics offers unusual rewards which compare favorably with those in other fields. Salaries, working conditions, and living standards are usually excellent. The demand for teachers of speech, drama, 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 in order 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 an 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 Plans A, B, or C. Basic to each of the three plans are courses required of all departmental majors.

36.6 Principles of Communication Arts 3 a.h.

36.58 Video Training for Speaking and Reading 3 a.h.
Required of all undergraduate majors. Phonetics, voice control, and sonics, with applications to film, broadcasting, public address, and dramatic situations.

36.56 Theory and Practice of Argumentation 3 a.h.

36.54 Group Discussion 3 a.h.

180
of not less than 2.0 (2.5 if a graduate) in all college work completed.

7. Candidates for the master’s degree find certification necessary to qualify for teaching in public junior and community colleges and in large public schools.

COUSE DESCRIPTIONS

36:47 Methods: High School Speech, 3 s.h.
Teaching speech, drama, and forensics. Consideration will be given to various patterns in teaching, curricular programs, objectives, instructional methods and materials, effects of and written criticism and evaluation, factors in testing and tests and references, practical and dramatic activities. A two-week summer theatre class and interscholastic activities, multimedia aids, simulation exercises. Emphasis on planning and teaching of speech in the schools. Projects, reports, observations, readings, and discussion. Same as 36:54 required for majors who plan to apply for it as a professional certificate to teach.

36:55 Laboratory: Teaching Speech, 2 s.h.
Demonstration, observation, and supervised laboratory practice in high school. Must be included as Education TP-181 (4 semester hours) and TP-182 (4 semester hours) by majors who plan to apply for it as a professional certificate to teach.

36:107 Educational Forensics, 3 s.h.
Planning, organizing, and evaluating the curricular and co-curricular forensics programs in the school. Designed as a course for independent study. Class meeting on four Saturdays. Dates to be arranged.

36:118 Speech for Educators, 3 s.h.
For administrators, teachers, and other adults who wish to study and develop their speech abilities to serve the professional and social situations in which they desire to continue as professionals and leadership in their schools and communities. Emphasis on preparation, performance, criticism, and evaluation of students, planning, and conference leadership. Individualized assignments in readings and performance. Same as Education TP-285.

36:171 The Teaching of Speech, 3 s.h.
Principles, practices, and problems in teaching speech and directing extra-curricular and interscholastic activities in dramatics, forensics, and speech in today’s secondary schools. Emphasis on planning, organizing, evaluating, and supervising the speech program including extra-curricular and interscholastic activities to satisfy the speech interests, meet the needs, and develop the abilities of individual students in diverse speech experiences to an increasingly higher level of their individual capacities. Observations, experiments, reports, and discussions of methods related to teaching and supervision. Same as 36:178.

36:178 Workshop in Teaching Dramatics, Forensics, and Speech, 2 s.h.
Methods, materials, audiovisual aids, progression, and evaluation in teaching and supervising students in courses in extra-curricular activities. Provides opportunities for observations, demonstration, and practice in teaching voice and speech development, dramatics, art, discussion and debate, radio and television, and individual speech, dramatic, and forensics events. Same as Education TP-285.

36:140 Educational Play Production, 1 to 3 s.h.
Principles and practice of play production in the schools. Designed to all 6 forms of production from choosing the play through evaluating the performance.

36:259 Teaching Grammar Rhetoric, 2 s.h.
Lecture-discussion course which explores the literature and problems involved in teaching composition, public speaking, and written and oral grammar. Same as Education TP-285.

36:301 Foundations of Speech, 2 to 4 s.h.
Origins, early precepts, psychological bases, and theories.
and practices of teaching speech. Attention to relevant counsel, teaching, and writing by early contributors to speech education; beginning with Phib-ke-top and ending with the English establishments. Special attention to speech education in the works of Aristotle, Quintilian, the Attic orators, ft. Augustine, Ramos, and English teachers and writers.

36:502 Modern Speech Education 2 to 4 s.h.
Studios in modern speech education. beginning with the works of Rame and English theorists and teachers, and ending with certain pedagogical developments in teaching, research, and service in speech education in America. Attention to inestitutional 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, 260 Jennings Hall

BA, 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 in active participation in public address or teaching. It is intended to serve as an effective force for a sound liberal education encompassing breadth of study, experience, and modest specialization. The requirements incorporate a reasonable balance between being and knowing — between courses and extracurricular activities emphasizing in-depth and guided improvement in oral performance, and courses devoted to theoretical, critical, and historical study of principles and practice of public address and the interrelations 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 present an oral address in the major area and a regional analysis of major requirements in other departments of the College of Liberal Arts.

I. Required of all departmental majors

36:19 Principles of Communication Arts
36:70 Analysis and Criticism of Communication
36:23 Voice Training for Speaking and Reading
36:25 Public Speaking
36:27 Parliamentary Procedure
46:17 Theory and Practice of Argumentation
46:18 Interview and Conference Techniques

II. In the following:

36:25 46:25 Speeches of the Western World
36:37 Theory of Rhetoric
36:38 Greek and Roman Public Address
36:39 Contemporary Public Address
36:40 Public Speaking

III. A comprehensive course (historical, critical, theoretical) in one of the following:

Rhetoric, Philosophy, or Speech

IV. At least 2 courses beyond the liberal arts graduation requirements in one or more of the following: Special study; literature, history, psychology, philosophy, foreign language, and social sciences should include a course in expiatory or argumentative writing.

COUSE DESCRIPTIONS

36:25 Principles of Speech Communication 2 s.h.
Institutional and individual fundamentals of oral communication: study of the processes and problems of effective participation in practical speechmaking and discussion; attention to and guided practice in statement and development of ideas, use of evidence, methods of motivation, and principles and methods of presentation. Satisfies the University requirement in speech for students not offering courses 161 and 2, 152, or the equivalent.

36:20 Public Speaking 3 s.h.
An intermediate course in speechmaking. preparing presentational material for delivery, work in planning and organizing, and evaluation of the speech program. 260, or equivalent.

36:30 Public Speaking 3 s.h.
An intermediate course in speechmaking preparing presentational material for delivery, work in planning and organizing, and evaluation of the speech program. 260, or equivalent.

36:502 Modern Speech Education 2 to 4 s.h.
Studios in modern speech education. beginning with the works of Rame and English theorists and teachers, and ending with certain pedagogical 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.

36:51 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.

36:75 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 presenting over parliamentary arguments.

36:85 Speeches of the Western World 3 s.h.
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.

36:88 Rhetoric 3 s.h.
Study of major theories of oral and written genre the presentation of doctrine, and the role of language and thepophany in the understanding and guidance of contemporary social and political movements, including readings, lectures, discussion, and exploratory papers.

36:87 Rhetoric and Argumentation 3 s.h.
Lecture, discussion, and term papers. Developing theories for analyzing argument and response to that argument. In small groups students participate in case studies of argu-

36:106 Greek and Roman Public Address 3 s.h.
Analysis and discussion of the major speeches from the fifth and fourth centuries b.c. and the first and second centuries B.C., the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:107 Greek and Roman Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:129 Theory and Practice of Argumentation 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:130 Interview and Conference Techniques 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:131 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:132 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:133 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:134 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:135 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:136 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:137 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:138 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:141 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:142 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:143 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:144 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:145 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:146 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:147 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:148 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:149 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:150 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:151 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:152 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:153 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:154 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.

36:155 Contemporary Public Address 3 s.h.
Study of the major speeches of ancient Greece and Rome, the role of rhetoric and writing in the development of the orator. The latter included works by Isocrates, Thucydides, and Demosthenes.
36:121 Contemporary Public Address 3 s.h.
Critical examination of public address since World War II. Attention to speaking in legislative situations, the court, the church, and the public platform. While the focus is on American speakers, consideration is given also to major speakers of other countries.

36:132 Selected American Speakers 3 s.h.
Historical and critical study of representative American speakers in Congress, the courts, the church, and the public platform from colonial times to the present.

36:133 Selected British Speakers 3 s.h.
Historical and critical study of representative speakers in the British Isles—Parliament, the law, and the church, and on the public platform—from the times of Elizabeth I to those of George V.

36:135 Rhetorical Criticism 3 s.h.
The concepts and principles of rhetorical theory applied in the analytical-critical examination of speeches and speakers, controversial writings, and the rhetorical dimensions of literary discourse. Readings, discussions, papers in practical criticism.

36:307 American Public Address 1 3 or 4 s.h.
Historical and critical study of American public speaking—In Congress and other legislative situations; pulpit, law court, and public platform—from the colonial period to the Civil War.

36:308 American Public Address II 3 or 4 s.h.
Continuation of 36:307, from the Civil War to the end of World War II.

36:309 Classical and Renaissance Rhetoric 3 or 4 s.h.
Rhetoric in the Greek and Roman world and the principal subsequent theories and philosophies and discourse through the Renaissance to the 17th century. Same as English 3307.

36:310 Modern Rhetoric 3 or 4 s.h.
Rhetorical theory from the 17th century through the 19th. Analytical study of theories and philosophies of discourse. Same as English 8308.

36:313 British and Continental Public Address I 3 s.h.
Historical study of public speaking—in pulpit, parliament, awe court, and popular assembly—in the British Isles and Western Europe from the Middle Ages to the French Revolution.

36:314 British and Continental Public Address II 3 s.h.
A continuation of 36:313, from 1700 to the present time.

36:316 Contemporary Rhetoric 3 s.h.
Theories and philosophies of discourse from 1950 to the present time. Same as English 8393.

36:330 Foundations of Public Address cr.arr.
Examination of selected rhetoricians and the history of rhetoric, or rhetorical concepts. Particular subjects for a given year will be indicated in the Schedule of Courses. Same as English 8471.

36:644 Seminar: Studies in Public Address 2 to 4 s.h.
Exhaustive examination of selected speakers, controversial writers, or orators or genres of rhetorical discourse. Particular subjects for a given year will be indicated in the Schedule of Courses.

36:645 Seminar: Aristotle and Democritus 2 to 4 s.h.
Intensive study of Aristotelian and Democritan treatment related to the Rhetorics leading a critical system for analyzing the major speeches of Democritus.
35:532 Seminar: Techniques and Problems in Dramatic Art 3 s.h.
Focuses on a problem area in small-group research; the problem area changes from term to term. Original research required.

35:533 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 devotes attention are language variables and methodological issues. Original research required.

Dramatic Art
(A Unit in the Division of Fine Arts)

Professor in Charge, David Thayer
Office, University Theatre

B.A. with emphasis in dramatic art required. A minimum of 32 semester hours in the department. Course work is to be elected in the following way:

I. Required of all departmental majors:
   26:219 Principles of Communication Arts
   26:35 Voice Training for Speaking and Reading
   26:79 Analysis and Criticism of Communication Arts

II. Required of all majors with an emphasis in Dramatic Art:
   26:51 Stage Movement
   26:65-66 Introduction to Theatrical Design
   26:98 Acting I
   26:99 Principles of Directing
   26:119 Dramatic Art Laboratory

III. Two of the following courses (including at least one from Group A):
   A. 26:119 Shakespeare
   B. 26:119 Greek Drama in Translation
   C. 26:129 Modern Dramatic Literature
   D. 26:129Modern Drama: I. Ronan Shaw
   E. 26:123 Ancient History Theatre History

IV. One of the following:
   26:188 Survey of Broadcasting
   26:159 Survey of Film
   26:185 Broadcasting Criticism
   26:254 Motion Picture History
   26:194 Visualisation and Film Theory

V. One of the following:
   26:07 Restless of Agitation and Control
   26:05 Speeches of the Western World
   26:105 Introduction to Language and Speech
   26:131 Contemporary Public Address
   26:123 Selected American Speakers
   26:134 Group Communication

Beyond the above, a maximum of 24 semester hours may be elected, in the department. Majors with a dramatic art emphasis must enroll in 11:31-33 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 and his advisor within the following guidelines:

   Introduction to Research (26:360) 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.P.A. in dramatic art: Students who demonstrate exceptional ability in playwriting, directing, design, acting, or technical theatre may apply in consultation with the program of study and production leading to the M.P.A. Admission is dependent on recommendations and appropriate demonstrations of ability. Six semesters in residence and 60 semester hours are required, and students must apply 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 one 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
   26:173 Playwriting I
   26:213 Playwriting Studio (may be repeated)
   26:225 Playwriting II
   26:226 Projects in Playwriting

Directing
   26:96 Directing I
   26:170 Directing II
   26:325 Directing III
   26:224 Directing IV
   26:127, 128 Theatre Techniques in Television
   26:225 Projects in Directing

Design and Technical Direction
   26:55, 56 Introduction to Theatrical Design
   26:125 Production Design
   26:123, 144 Visual Research for Theatre
   26:215 Design Studio (may be repeated)
   26:37 Technical Direction: Studio (may be repeated)
   26:221 Lighting Equipment
   26:223 Sound Systems in Theatre
   26:223 Stage and Production Management
   26:224 Advanced Scenery Construction
   26:235 Scene Painting
   26:226 Properties and Special Effects
   26:237 Stage Costumes: Design
   26:229 Stage Costumes: Drafting and Drawing
   26:238 Stage Costumes: Hats and Headaddresses
   26:231 Stage Costumes: Accessories
   26:231 Advanced Makeup

Properties and Stage Design
   26:203 Projects in Stage Costumes
   26:201 Projects in Stage Lighting
   26:201 Projects in Technical Theatre
   26:420 Theatrical Practicum

Acting
   26:171 Stage Movement
   26:55 Voice Training
   26:189 Acting I
   26:189 Acting II
   26:191 Acting III
   26:92 Acting IV
   26:237 Movement Laboratory
   26:237 Projects in Acting

Course Descriptions

For Undergraduates

35:11 Stage Movement 2 s.h.

35:51 Drama in Western Culture 4 s.h.

35:53 Drama in Western Culture 4 s.h.

35:65 Introduction to Theatrical Design 2 s.h.

35:65 Analysis of scripts for theatre designers and technicians. Mechanical theatre, set design, lighting, and stage 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, direction, and scene study developing the actor’s psychological technique. Exercises to enhance concentration of attention, class-rence, imagination, and sensory responsiveness. Prerequisites: 36:11 and 36:23.
36:60 Directing I 2 s.h.
Readings and exercises leading to a fundamental techni- cut of the dramatic values of a play text to the stage. Consideration of the director’s media; 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 Same as English 8:112.
36:113 Modern American Drama Same as English 8:138.
36:114 Restoration Drama Same as English 8:138.
36:115 Roman Drama in Translation Same as Latin 26:115.
36:119 Dramatic Art Laboratory cr.arr. 
36:120 Intermedia Same as Art 25:121 and Music 25:121.
36:124 English Drama of the 18th Century 3 s.h.
Same as English 8:124.
36:137 Modern Drama: Iben to Shaw 3 s.h.
36:138 Drama Since Pirandello Same as English 8:138.
36:151 Theatre Techniques in Television 3 s.h.
Directed and acting experience in observational and performance of radio productions. Prerequisite: 36:59 or permis-
36:152 Theatre Techniques in Television 3 s.h.
36:222 Production Design 2 s.h.
Theatrical design. Prerequisite: 36:220.
36:165 Visual Research for Theatre 3 s.h.
Major styles in the decorative arts relative to the production of plays; costumes, stage properties, and theatrical conventions.
36:166 Visual Research for Theatre 3 s.h.
Continuation of 36:165.
36:168 Acting II 2 s.h.
Reading and scene study focusing upon the synthesis of theatrical technique, character and physical acting. Prereq-
36:170 Directing II 2 s.h.
Study of the art of play directing with emphasis on the director as an interpretative artist. Prerequisite: 36:59.
36:172 Playwriting I 2 s.h.
Analysis and practice of the playwright’s techniques in today’s theatre, including premise improvisation and de-
36:183 American Theatre History 3 s.h.
Principal plays, playwrights, and developments in the American theatre from the beginning to the present.
36:184 Summer Repertory Theatre cr.arr.
May be repeated to a maximum of 6 semester hours.
36:186 Strategies in the Drama 3 s.h.
Play analysis for theatre arts; emphasis on current trends in drama.
36:187 Play Analysis and Performance cr.arr.
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 modern repertories.
36:202 Acting IV 2 s.h.
Emphasis on problems of style and genre in modern repertories.
36:203 Directing III 2 s.h.
Emphasis upon problems of style and genre in plays from the modern repertory.
36:204 Directing IV 2 s.h.
Focus upon problems of style and genre in plays from the modern repertory.
36:225 Voice Laboratory 1 s.h.
Voice training for the stage. Open only to M.F.A. candidates.
36:226 Movement Laboratory 1 s.h.
Individual attention to movement technique and experi-
36:231 M.F.A. Production 1 to 2 s.h.
Appropriate assignments in all aspects of production of plays in the Fine Arts Series.
36:231 M.F.A. Workshop I 2 s.h.
Laboratory of the second-year M.F.A. ensemble. Open to second-year M.F.A. students.
36:232 M.F.A. Workshop II 2 s.h.
Laboratory of the third-year M.F.A. ensemble. Open to third-year M.F.A. students.
36:233 Playwriting Studio 3 s.h.
Open only to M.F.A. students.
36:235 Design Studio 3 s.h.
Individual assignments in development ability in various areas of design. Open to second-year M.F.A. students.
36:237 Technical Direction Studio 3 s.h.
Individual assignments in production of theatrical produc-
36:238 Lighting Equipment 2 s.h.
Practical problems of lighting the theatre; layout and control of electric-acoustic systems for the theatre.
36:239 Stage and Production Management 2 s.h.
Design and organization of production personnel. One hour concurrent registration required for all courses marked with an asterisk (*). 25 hours of approved produ-

SPEECH AND DRAMATIC ART

Ordered and uncoordinated structures, and audience response. May be repeated. Open to juniors.

36:138 American Theatre History 3 s.h.
Principal plays, playwrights, and developments in the American theatre from the beginning to the present.
36:144 Summer Repertory Theatre cr.arr.
May be repeated to a maximum of 6 semester hours.
36:156 Strategies in the Drama 3 s.h.
Play analysis for theatre arts; emphasis on current trends in drama.
36:157 Play Analysis and Performance cr.arr.
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 modern repertories.
36:202 Acting IV 2 s.h.
Emphasis on problems of style and genre in modern repertories.
36:203 Directing III 2 s.h.
Emphasis upon problems of style and genre in plays from the modern repertory.
36:204 Directing IV 2 s.h.
Focus upon problems of style and genre in plays from the modern repertory.
36:225 Voice Laboratory 1 s.h.
Voice training for the stage. Open only to M.F.A. candidates.
36:226 Movement Laboratory 1 s.h.
Individual attention to movement technique and experi-
36:231 M.F.A. Production 1 to 2 s.h.
Appropriate assignments in all aspects of production of plays in the Fine Arts Series.
36:231 M.F.A. Workshop I 2 s.h.
Laboratory of the second-year M.F.A. ensemble. Open to second-year M.F.A. students.
36:232 M.F.A. Workshop II 2 s.h.
Laboratory of the third-year M.F.A. ensemble. Open to third-year M.F.A. students.
36:233 Playwriting Studio 3 s.h.
Open only to M.F.A. students.
36:235 Design Studio 3 s.h.
Individual assignments in development ability in various areas of design. Open to second-year M.F.A. students.
36:237 Technical Direction Studio 3 s.h.
Individual assignments in production of theatrical produc-
36:238 Lighting Equipment 2 s.h.
Practical problems of lighting the theatre; layout and control of electric-acoustic systems for the theatre.
36:239 Stage and Production Management 2 s.h.
Design and organization of production personnel. One hour concurrent registration required for all courses marked with an asterisk (*). 25 hours of approved produ-

ordered and uncoordinated structures, and audience response. May be repeated. Open to juniors.

36:138 American Theatre History 3 s.h.
Principal plays, playwrights, and developments in the American theatre from the beginning to the present.
36:144 Summer Repertory Theatre cr.arr.
May be repeated to a maximum of 6 semester hours.
36:156 Strategies in the Drama 3 s.h.
Play analysis for theatre arts; emphasis on current trends in drama.
36:157 Play Analysis and Performance cr.arr.
36:224 Advanced Scenery Construction 2 s.h.
Advanced problems in construction, rigging, and shifting scenery.

36:225 Scene Painting 2 s.h.
Lessons in scene painting, materials, shop layout, and techniques of applying scenic paint. Laboratory exercises at the paint frame.

36:225 Properties and Special Effects 2 s.h.
Design, construction, and finishing of theatrical properties. Development and control of special effects.

36:227 Stage Costumes: Fabrica 2 s.h.
Selection and use of fabrics on stage.

36:228 Stage Costumes: Drafting and Draping 2 s.h.
Patterns making for stage costumes with particular reference to character dresses.

36:229 Stage Costumes: Hat and Headaddresses 2 s.h.
Construction of theatrical headgear including hats, boleros, masks, and wigs.

36:230 Stage Costumes: Accessories 2 s.h.
Construction of stage costume accessories including footwear, jewelry, armes, and personal hand properties.

36:231 Advanced Makeup 2 s.h.
Design and execution of stage makeups. Three-dimensional makeup with prosthetics. Prerequisite: consent of instructor.

36:233 Playwriting II 3 s.h.
Work in progress, with presentation and discussion of work by playwrights at an advanced level. Prerequisites: 36:231 and consent of instructor.

36:234 Projects in Scene Design cr.arr.
Consent of instructor required.

36:235 Projects in Stage Costuming cr.arr.
Consent of instructor required.

36:236 Projects in Stage Lighting cr.arr.
Consent of instructor required.

36:237 Projects in Acting cr.arr.

36:239 Projects in Directing cr.arr.

36:239 Projects in Technical Theatre cr.arr.

36:239 Projects in Playwriting cr.arr.
Consent of instructor required.

36:405 English Drama of the Renaissance 4 s.h.
Same as English 8313.

36:405 English Drama of the Renaissance 4 s.h.
Same as English 8314.

36:415 Dramatic Theory I cr.arr.
2 or 3 s.h.
Studies in the major theoretical and critical works on the drama from the Greeks to the present day. Same as English 9326.

36:419 Dramatic Theory II cr.arr.
Continuation of 36:415. Same as English 8326.

36:419 Dramatic Theory III cr.arr.
Continuation of 36:418. Same as English 8326.

36:423 Physical Theatre 3 s.h.
Theatrical performance conditions, scenery, properties, and architecture to 1850.

36:428 Physical Theatre 3 s.h.
Continuation to 1900, of 36:423.

36:431 Medieval Drama 3 s.h.
Secular and religious drama of Europe from the 10th century to the close of the Medieval period. Same as Comparative Literature 46:392.

36:431 Continental Drama, 1500 to 1700 3 s.h.
The drama, written and performed, in Italy, Spain, and France, 1500 to 1700. Same as Comparative Literature 46:392.

36:433 Continental Drama, 1700 to 1850 2 s.h.
Drama and stage in France and Germany from the death of Molière to the close of the Romantic movement. Same as Comparative Literature 46:392.

36:454 Backgrounds of Modern Theatre Practice 3 s.h.
Theatre theory and practice from Sane-Maignen to the present.

36:461 History of Criticism: Plato to Romanticism 3 s.h.
Same as English 9331.

36:462 History of Criticism: Coleridge to Croce 3 s.h.
Same as English 9332.

36:658 Theatre Practicum cr.arr.
Seminar in technical production problems.

36:659 Seminar: American Theatre History cr.arr.

36:661 Seminar: Elizabethan Theatre History cr.arr.
Study of the basic sources, methods, and problems of historical research.

36:662 Seminar: Theatre History cr.arr.
Subject matter varies.

36:663 Seminar: Dramatic Literature cr.arr.
Subject matter varies.

36:664 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.

36:627 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
S.A. with emphasis in broadcasting and film. A minimum of 27 semester hours is required for majors 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 context of a liberal education and is not regarded solely as preparation for a professional career. Students may emphasize either broadcasting or film in their selection of elective courses, but minimal requirements will least all students to exposure to historical and evaluative courses in both broadcasting and film and to experience in the production of materials for broadcast and film media.

Requirements for a major in the Division of Broadcasting and Film are:

1. Historical course required of all majors:
   36:19 Principles of Communication Arts
   36:20 Visual Thinking and Reading
   36:79 Analysis and Criticism of Communication Arts

2. Technical course required of all majors:
   36:15 Visual Thinking and Reading
II. Division production courses required of all majors: 36.138 Cinematography Techniques 3 s.h.

III. Division survey course required of all majors: 36.139 Survey of Film 3 s.h.

IV. Advanced substantive courses in the Division: 36.140 Advanced Film Techniques 3 s.h.
36.142 Documentary and Educational Film 3 s.h.
36.143 Regulation of Broadcasting and Film 3 s.h.
36.144 Visualisation and Film Theory 3 s.h.
36.145 Broadcasting and Education 3 s.h.

V. One advanced substantive course from the Division of Dramatic Art or the Division of Radio and Public Address.

VI. At least 15 semester hours beyond the liberal arts graduation requirements in upper-level 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 work. The plan of study offered by the candidate and his advisor must reflect that emphasis.

For basic requirements, see Graduate College bulletin and section above on graduate degrees in Speech and Dramatic Art.

COUHR DESCRIPTIONS

36.100 Introduction to Broadcasting 3 s.h.
Survey of current status of the American broadcasting establishment in its relationship with the business community, the government, and audiences; analysis of the content of broadcast programming. Same as Journalism 139.102.

36.101 Survey of Film 3 s.h.
Development of students' awareness of the artistic and sociological factors of the cinema. Screening, discussion, and analysis of selected feature films.

36.102 History of Broadcasting 3 s.h.
History of radio and television as media of mass communication, corporate, economic, and social factors which have shaped the institutions of broadcasting.

36.103 Radio Production 3 s.h.
Registration by permission.

36.104 Radio Workshop 3 s.h.
Writing and planning of the nondramatic program. Observation of qualified junior and senior workshop.

36.105 Broadcasting and Education 3 s.h.
Television and radio as media for instruction. Research and operations problems.

36.127 Elements of Television 3 s.h.
Opportunity to develop skills in using television studio and control room equipment: technical and aesthetic aspects of television production: responsibilities of writers, producers, directors, editors, cameramen, and artists. Laboratory practice.

36.141 Broadcast and Film Writing 3 s.h.
Writing and planning of the nondramatic program. Observation of qualified juniors and seniors.

36.150 Broadcasting and Education 3 s.h.
Television and radio as media for instruction. Research and operations problems.

36.155 Cinematography Techniques 3 s.h.
Basic theory and techniques of visualization used in motion pictures. Laboratory work develops ability to pictorial organization and use of equipment. Short films made. Critiques.

36.156 Cinema Production 3 s.h.

36.159 Advanced Television Production 3 s.h.
The preparation and production of television programs. Emphasis on creative experimental approaches to the use of cameras, sound, music, lighting, and graphics in television. Prerequisite, 36.139.

36.160 The Documentary Film 3 s.h.
History and critical survey of the art of the documentary as a reportorial, experimental, and persuasive form. Credit is given for the production film. Screenings emphasize the work of Flaherty, Grierson, Lomita, and a variety of recent cinema verite directors, with some attention given to commercial and technical problems.

36.175 The Educational Film 3 s.h.
Theories and practice employed, their production for and utilization in education and conventional film exhibition. Regular class screenings.

36.176 Documentary and Public Issues Broadcasting 3 s.h.
Theories and practices employed in the production of such programs. Regular class screenings.

36.182 Regulation of Broadcasting and Film 3 s.h.
Development of legal and extra-legal control systems to regulate the content and business practices of the media; FCC policies; problems of censorship. Prerequisites, 36.150.

36.183 Broadcasting Criticism 3 s.h.
Critical approaches to the analysis of the broadcast program; theories of evaluating broadcasting as a social institution.

36.191 Television Workshop 3 s.h.
Independent creative work for graduate students who have completed and shown outstanding talent in 36.159. Registration by permission.

36.192 Film Workshop 3 s.h.
Independent creative work for graduate students who have completed and shown outstanding talent in 36.159. Registration by permission.

36.193 Motion Picture History: United States 3 s.h.
Development of the moving image as art and entertainment, with emphasis on Griffith, Chaplin, Keaton, Lang, Welles, Ford, Welles, Hitchcock, Hawks, Kubrick, and certain other contemporary directors. The realistic and romantic traditions within the commercial shorts system are also examined. Development of motion picture film makers today. Screenings and discussions of selected motion pictures.

36.194 Visualization and Film Theory 3 s.h.
A rigorous examination of the most formidable tenets in the aesthetics of film. Problems in the nature of art, style, and film are treated with reference particularly to Bampas, Rosenak, and contemporary trends in aesthetics. This course requires serious literature about films, rather than films themselves.

36.197 Social Impact of Broadcasting and Film 3 s.h.
Theory and research on the interaction between audiences and media. Opportunities for independent investigations. 36.200 Seminar: Film History 3 to 6 s.h.
Focus changes each semester.

36.205 Seminar in Broadcasting 2 or 3 s.h.

36.210 Seminar: American Film 3 s.h.

36.211 Seminar: Film Analysis and Criticism 3 s.h.
Analysis and evaluation of representative critical and systems for the motion picture and related areas.

187
SPEECH PATHOLOGY AND AUDIOLOGY

Application of various critical methodologies to particular areas of focus provides for a challenging and rewarding career in speech and hearing sciences.

Critical review of data and theories on the behavior of broadcast systems and their audiences. Individual research projects.

35:515 Problems in Television, Film, and Radio 2 a.h.

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 services, college and university teaching, and research concerned with speech, hearing, language, and communication 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. Pre-professional preparation may be studied by the study of speech and hearing problems and their disorders.

Employment opportunities are numerous and varied for persons trained in speech pathology and audiology, and in speech and hearing science. Clinical services facilities for persons with speech and hearing problems are widely available in hospitals, community clinics, rehabilitation facilities, and schools. Many academically trained persons have decided to enter private practice.

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 Educational and Training Board of the American Board of MAdentists 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 curriculum leading to the 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 majoring in this field must complete the general education requirements for students who are not majoring in the Liberal Arts. Those in this curriculum are able to participate in senior-level clinical experiences and to develop the professional skills necessary for entry into the field of speech and hearing science.

A minimum of 9 semester hours completed by one course from Group I and one course from Group II, as listed below, and one additional course selected from the fields of psychology, anthropology, or sociology.

Group I

5:510 Speech and Hearing Development 3 s.h.
5:511 Abnormal Psychology 3 s.h.
5:514 Introduction to Hearing Science 3 s.h.
5:515 Problems in Television, Film, and Radio 2 s.h.

Group II

5:512 Psychology of Adjustment 3 s.h.
5:513 Personality Development 3 s.h.
5:516 Abnormal Psychology 3 s.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 geometry, college physics, and university psychology, and a college course in the biological sciences.

Honors Program

The senior year program leading to the B.A. 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 3.0 grade-point average on 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 advisor and the departmental Honors advisor.

Students who are eligible for the senior year Honors program and who are not majoring in speech and hearing science students should confer with the departmental Honors advisor 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. S. as Honors students may apply for Honors classification in the College of Liberal Arts and in this department by recommendation of the departmental Honors advisor.

Advanced Degrees in Speech Pathology and Audiology

More specific details on the requirements for advanced degrees leading to a degree in speech and hearing science at the University of Southern California will be found in the University Graduation Requirements section of the College of Liberal Arts and in the appropriate University Graduate Record. The following paragraphs give summary information of the several degree programs.

A graduate student is accepted as a candidate for an advanced degree by recommendation of the departmental faculty upon the basis of a completed application for admission and academic record and scores on the Aptitude Test of the Graduate Record Examination. In those cases in which a student may be admitted for graduate study but acceptance is at a degree candidacy or provisional status, the student may be admitted to graduate study during the student's second semester of residence at the U. S. C.

The M.A. degree in speech pathology and audiology may be a professional program to prepare the student for immediate placement in clinical or research settings or it may be a general program of graduate study leading to additional study for the Ph.D. degree. The various programs for the professional M.A. program are necessarily specified to ensure that the student will meet upon graduation the educational and professional standards of the National M.A. Program. The general M.A. program allows greater flexibility in individualizing the educational experiences of undergroduate courses in speech and hearing science, development of special research interests, and career choices of human behavior which is essentially equivalent to an undergraduate major in this field of study.

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 12 semester hours of course registration per semester and 9 semester hours in summer session. In addition to 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 these cases are 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 coursework in speech and hearing that is considered prerequisite to graduate study. The results of these examinations are to be considered diagnosis and, for the convenience of the student and his faculty advisor, in an educational and professional development plan. The examinations are given during the first semester of residence. Portions of the examinations may be repeated if the student chooses to take appropriate courses.

Requirements for the professional M.A. degree

A. All majors

1. Neurological Procedures of Speech and Hearing

2. Clinical Procedures in Speech and Hearing

3. Articulation Disorders

4. Speech and Hearing in the Elementary School

5. Seminar: Introduction to Research in Speech and Hearing

6. Clinical Procedures for Language Development

7. Auditory Rehabilitation

Additional semester hours of practice registration sufficient to meet the supervised direct clinical experience requirements for the Certificate of Clinical Competence of the American Speech and Hearing Association and to provide a broad supervised practice experience are required.

B. Speech pathology, general clinical emphasis

1. Speech Pathology and Audiology I and II

2. Auditory Testing

3. Voice Disorders

4. Neuropsychology of Speech and Hearing

5. Clinical Procedures

6. Clinical Procedures

7. Clinical Procedures

C. Speech pathology, general clinical emphasis on an clinical work in elementary and secondary schools

The courses listed under A and B.

1. Stuttering

2. Voice Disorders

3. Neuropsychology of Speech and Hearing

4. Clinical Procedures

5. Clinical Procedures

6. Clinical Procedures

7. Clinical Procedures

D. Audiology major, general clinical emphasis

The courses listed under A and B.

1. Audiology I, II, III

2. Introduction to Laboratory Instrumentation

3. Auditory Acoustics

4. Conservation of Hearing

5. Hearing Aids

6. The Pathological Auditory System

Practicum, research, and elective courses to bring the total to at least 36 semester hours.

E. Audiology major, school hearing clinic

The courses listed under A and B.

1. Advanced Audiology

2. Conservation of Hearing

3. Hearing Aids

4. Remedial Methods in Speech and Hearing

5. Laboratory Practice in Elementary School

Practicum, research, and elective courses to bring the total to at least 36 semester hours.

American Government or American History

Introduction to Elementary Teaching

Children's Literature

Educational Psychology and Measurement

Exceptional Children

M.A. degree—general program. The M.A. program for the student planning to continue to the Ph.D. degree is individually planned in consultation with his advisor. It usually includes both academic and professional courses previously listed for the professional M.A. program. Certain of the courses listed above are included, deleted, or replaced by other courses when appropriate for the student's plan of study leading to the Ph.D. degree. Students planning to continue to the Ph.D. degree are required to present the M.A. degree as part of the M.A. program and subsequently complete a final oral examination.

The Doctor of Philosophy degree. The Ph.D. program is planned to provide the student with the opportunity to attain a comprehensive and thorough knowledge of some subject matter both in the area of speech pathology and audiology in general and in one area of particular specialization. Consideration is given to special interests and goals whenever possible in arranging the details of the student's Ph.D. program.

The Ph.D. program is usually planned with specialization in 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 establishment of prescribed programs for these areas is not intended as circumventing the candidate curriculum of the Ph.D. candidate who has specialized goals or interests which are not adequately met by these programs. Individual programs designed to meet special interests and goals are encouraged provided only that the student submits a written program to his advisor. A program that he presents an adequate plan of study for his accomplishment beyond the Ph.D. degree. The program of study beyond the Ph.D. degree comprises the student's independent research and his written dissertation. The dissertation is usually drawn mainly from the areas of his physics, phys-
SPEECH PATHOLOGY AND AUDIOLOGY

The P.H.D. comprehensive examinations are ordinarily taken after approximately two years of graduate study. The examinations are written and oral and include a general review of the student's qualifications and performance in graduate training. Candidates whose earlier training has not included a masters thesis are not eligible to take the comprehensive examinations until they have demonstrated aptitude for research by completing a suitable research project and presenting a paper summarizing its results. This project is to be of a magnitude which is appropriate 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 courses, or their equivalents, required for the M.A. degree and the following additional courses:

5220 General Psychological Phonetics 4 h.
5240 or 525, or 525R Research not less than 6 h.
Physiological Psychology or
Neuropsychology not less than 3 h.
Statistics beyond an introductory course not less than 3 h.
Appropriate courses in Computer Science

B. Speech pathology major
The courses listed under A, and
2163 Auditory Psychology 3 h.
Advanced seminars in areas of special interest 4 h.
Practicums

C. Audiology major
The courses listed under A, and
2020 Advanced Laboratory Instrumentation 3 h.
2344 Psychophysics 3 h.
2345 Psychophysics Laboratory 3 h.
2356 Physiology of Hearing 4 h.
2380 The Audiological Artillery System 4 h.
2163 Auditory Psychology 3 h.
Advanced seminars in areas of special interest 4 h.
Practicums (clinical)

D. Speech or hearing science major
Practicums for students majoring in these areas will vary considerably depending on the individual's specialty of interest.

Speech and Hearing Centers, which include audiologic testing units, diagnostic and therapy units, a diagnostic oncircuit 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 included by cooperative arrangements with the local schools and the special education programs of Johnson County and adjoining counties; supervised clinical practice in speech and hearing services provided by the Department of Otolaryngology and Maxillofacial Surgery, which grants special status and lacks the clinical training, but by the above listed organizations, and in the following hospitals: University Hospitals, as well as by the Iowa State Services for the Hearing Impaired and the Veterans Administration Hospital located in Iowa City; and internships and rotational programs with the Iowa School for the Deaf, the Iowa School for the Blind and Hearing Services, hospitals for the mentally retarded, and other state institutions.

Public and private departments and programs in addition to those mentioned above often contribute to the cooperative professional training, research, and service programs.

Research facilities. Research facilities in the Wendall Johnstone Speech and Hearing Center include a number of fully equipped laboratories for the study of the basic processes of speech, hearing, and language disorders of these processes. Included are laboratories and equipment for acoustic, physical, and perceptual studies of speech and for audiology, psychometrics, and speech-physiological and psychological studies of hearing. Well-equipped mechanical and electronic shops and trained technical personnel are available for assistance in research instrumentation.

Competition of various departments of the University Hospitals and the College of Dentistry makes it possible to utilize additional laboratory facilities for the investigation of a wide variety of research problems. Research opportunities are materially broadened by the active participation and cooperation, especially with respect to technical problems, of specialists from various fields including psychology, child development, education, engineering, and medicine.

STAFF
Professor: James F. Curtis, James C. Harder, Kenneth L. Moir, Rokhiath L. Morris, Dorothy Sherman, Arnold M. Stover, Dorse E. Williams.
Associate Professors: Charles V. Anderson, David J. Busch, Robert Van Viesen.
Assistant Professors: Carla R. Betts, Richard Roos, Michael F. Rogers, Joel D. Scoville.
Superintendent Social Services: Barbara B. Means.

COURSE DESCRIPTIONS

3:1 Preprofessional Seminar in Speech Pathology and Audiology 0 to 1 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 Speech and Hearing Clinic, 0 to 1 h.
Open to any student in need of speech and hearing clinic services, except those enrolled for Speech Program who automatically receive services without further registration. Registration by clinical staff. 14 semesters.

3:15 Introduction to Speech and Hearing 5-3-3 h.
Speech, language, and communication disorders, and their role in scientific study. Description of the major types of speech, hearing, and language disorders. Two lectures and two
SPEECH PATHOLOGY AND AUDIOLOGY

3.110 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. Prerequisite: BIOL 1180. Same as Psychology 21187.

3.116 Introduction to Speech and Hearing 3 s.h.
Prerequisite: Same as 513. Second semester. Same as Psychology 21187.

3.117 Articulation Disorders 3 s.h.
Structural and functional aspects of articulation disorders. Clinical evaluation and identification. Prerequisite: BIOL 1180 or consent of instructor. All semesters.

3.118 Hearing Loss and Audiology 4 s.h.
The evaluation and treatment of hearing problems in children and adults. Two lecture and one-two hour laboratory periods per week. Prerequisites: BIOL 1180 and BIOL 21180. Second semester; summer sessions of odd-numbered years.

3.119 Problems: Speech Pathology 2 s.h.
Prerequisite: staff consent. All semesters.

3.120 Practicum: Articulation Disorders 2 s.h.
Supervised clinical practice in the Speech and Hearing Clinic with disorder of articulation. Prerequisite: BIOL 1180 or consent of instructor. All semesters.

3.121 Practicum: Stuttering 2 s.h.
Supervised clinical practice in the Speech and Hearing Clinic with disorder of stuttering. Prerequisite: BIOL 1180 or consent of instructor. All semesters.

3.200 Seminar: Introduction to Research in Speech Pathology and Audiology 2 s.h.
Research methods and significant research issues. Prerequisite: BIOL 1180. Required of candidates for M.A. degree in speech pathol- ogy and audiology. First semester.

3.206 Voice Disorders 2 s.h.
Clinical assessment and causes of disorders of voice. Diagnosis and management. Prerequisite: BIOL 1180 and BIOL 21180. First semester; summer sessions of even-numbered years.

3.214 Clinical Procedures for Language Rehabilitation 2 s.h.
Remedial principles and procedures for children whose language development is severely retarded. Prerequisite: BIOL 1180. Second semester.

3.217 Introduction to Psycholinguistics 2 s.h.
Relationships between linguistic structure and psychological variables affecting language use. Related topics may include speech production, language development, language universals, language acquisition, bilingualism, and animal communication. Prerequisite: Linguistics 105.100. Same as Linguistics 181.172. First semester.

3.220 Advanced Laboratory in Instrumentation and Psychophysiology 3 s.h.
Prerequisite: BIOL 1180 which is prerequisite. Laboratory procedures using brain cortex techniques, power supplies amplification, signal generators, switching and recording, magnetic-tape recorders, and transducers.
2.555 Signal Analysis 2 a.h.

3.355 Neurophysiology of Speech and Language 3 a.h.

Supervised clinical practice at Speech and Hearing Clinic, University Hospital, and University Hospital School, the State Services for Crippled Children. Prerequisite, 2.335. First semester.

3.360 Speech and Language Habilitation for the Mentally Retarded 2 a.h.

Supervised clinical experience with individuals who are mentally retarded. Prerequisite, consent of instructor. First and second semesters.

3.310 Practicum: Aural Rehabilitation 2 a.h.

Supervised clinical practice in the evaluation of hearing problems at Speech and Hearing Clinic, University Hospital School, the State Services for Crippled Children. Prerequisite, 2.335. All semesters.

3.320 Practicum: Diagnostic Procedures 2 a.h.

Supervised clinical practice in the diagnostic clinic of cooperating agencies such as University Hospital School, the State Services for Crippled Children. Prerequisite, 2.335. All semesters.

3.520 Seminar: Voice and Articulation Disorders 2 a.h.

Systematic study and critical review of research on selected topics. May be repeated for credit. Prerequisite, consent of instructor.

3.521 Seminar: Stuttering 2 a.h.

Intensive, individualized study of theoretical issues and techniques. Prerequisite, 3.315 or consent of instructor. May be repeated for credit.

3.555 Seminar: Speech and Language Skills of the Mentally Retarded 2 a.h.

Intensive, individualized study of theoretical issues and research literature. Prerequisite, 3.315 or consent of instructor. First semester.

3.328 Seminar: Neuropsychology of Speech and Language 2 a.h.

Individualized study of special topics concerned with problems of speech and language associated with neurological disorders. Prerequisite, 2.335. First semester.

3.355 Neurophysiology of Speech and Language 3 a.h.

Nature and principles of treatment of communication disorders associated with neuromotoric, including the dysarthrias; speech and two laboratory periods per week. Prerequisite, 2.335. First semester.

2.337 Cleft Palate 2 a.h.

Nature, etiology, and principles of treatment of speech disorders resulting from cleft palate. Prerequisite, 2.335 or equivalent. Second semester; two summer sessions of odd-numbered years.

2.341 Advanced Audiology 4 a.h.

Techniques in diagnosis and therapy of hearing loss. Includes: principles and rationale underlying clinical procedures. Reviewing laboratory sessions provide familiarity with test administration and with calibration methods. Prerequisite, 2.315 and 2.319, corequisite, 2.311. Second semester.

2.342 Conservation of Hearing 3 a.h.

School, community, and industrial conservation of hearing, programs; administration, sociological, economic, and psychological aspects. Prerequisite, 2.315. Second semester; summer sessions of even-numbered years.

2.343 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, 2.331. Summer sessions.

2.344 Aural Rehabilitation 3 a.h.

Theory and procedures of speech reading, auditory training, and speech conservation. Observations and reports of clinic cases. Prerequisite, 2.335. First semester; summer sessions of even-numbered years.

2.550 General Experimental Phonetics 4 a.h.

A survey course summarizing current status of knowledge and theory concerning acoustic, physiological and perceptual properties of speech. Prerequisite, Psychology 2.571. Corequisite, 2.319 or consent of instructor.

2.555 Psychosocials Laboratory 2 a.h.

Survey of a laboratory experimentation. Analysis of stimulus generation equipment. Research by students of classical psychosocial experiment. Two laboratory sessions per week. Same as Psychology 2.572. Corequisite, 2.335 or consent of instructor. First semester.

2.355 Physiology of Hearing 4 a.h.

Application of physiological techniques, primarily electrophysiological, to basic research in hearing. Microanatomy of auditory system (ASS), both peripheral and central, dynamics of the cochlea, electrophysiological response at various levels in the ASS, excitation studies. Three laboratory sessions and two lecture periods per week. Prerequisite, 2.335 or consent of instructor. First semester.

2.357 The Pathological Auditory System 3 a.h.

Recent advances in the study of auditory lesions in psychosocial and bisynchronous experiments. Utilization of experimental data in modification of traditional techniques used in diagnosis of lesions within the auditory system. Prerequisite, 2.335. First semester.
Statistics

(See Mathematical Sciences, Division of)

Urban and Regional Planning

Chairman of Program, James Harris
Office, 343 Jessup 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 the graduate program requires a thorough knowledge in observing, analyzing, and interpreting the social, economic, political, and technological forces that affect environment.

There is today an unmet need for the services of persons with advanced 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. Application 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 is required to have completed basic core coursework (undergraduate or graduate) in statistics, economics, governmental and public administration, and sociology. Deficiencies in these areas must be corrected through courses during the first academic year of graduate enrollment. Such courses, regardless of whether or not eligible for graduate credit, will not be applicable to degree requirements.

A program of study is prepared for each student on an individual basis, related to his previous education and experience. The curriculum is designed to hold the required core coursework to a minimum in order to offer opportunity of options to the student through which he can develop a concentration, principally during the second year of the sequence. Courses offered in other departments, the specialized work offered by the planning faculty, and individual study programs provide the resources for such concentrations.

Degrees Offered

The degrees of Master of Arts or Science in Urban and Regional Planning are conferred upon successful completion of appropriate program requirements. Such degrees are professional degrees which prepare and qualify students to enter the planning profession.

Curriculum

The curriculum in planning is designed to differentiate between urban and regional focus, to allow for concentrations in various methodological disciplines, e.g., statistical techniques, policy formulation, implementation and evaluation, design and concentrations in functional areas such as housing, economic development, open space/conservation, social policy, transportation, and health. The requirements for program planning courses can vary considerably and are determined in consultation with the student, the academic department, and the student's major advisor. Other degree programs may be developed in consultation with the student, the academic department, and the student's major advisor. Other degree programs may be developed.

Joint programs. A joint program with the College of Law is offered, in which the degree of Juris Doctor and a Master of Arts in Urban and Regional Planning are granted after approximately four years of study. This represents an over-all credit deficiency sufficient to reduce the time required from five to four years. The detail plans after. Other joint degree programs are possible, but those requiring such are arranged until the end of the second year of the academic year.

Residence requirements. A thesis for 6 semester hours of credit is included; this may be expected to warrant additional credit, if such is proposed and approved. Satisfactory is encouraged in the thesis to include defense and physical planning projects, multimedia presentations and other approaches. An alternative to the thesis is offered: A selected paper or project for credit hours with 6 add- tional hours of coursework.

Internship opportunities. The summer period between the two academic years: This experience is to be arranged in order to provide employment in an appropriate planning agency or private firm selected through counseling with the faculty. In seeking field employment, emphasis is placed upon finding opportunities for the student in large metropolitan areas or in agencies undertaking experimental programs. An
Programs. Two major options are available, leading to a master’s degree with emphasis in either urban planning or regional planning. Under either option it 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 reference 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 exhaustive of related coursework.

Relevant to Both Urban and Regional Planning

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>44.311</td>
<td>Geographic Analysis of Social Behavior</td>
<td>3.0</td>
</tr>
<tr>
<td>44.330</td>
<td>Location of Economic Activity</td>
<td>3.0</td>
</tr>
<tr>
<td>44.311</td>
<td>Spatial Organization of Social Processes and Behavior</td>
<td>3.0</td>
</tr>
<tr>
<td>44.250</td>
<td>Locational Analysis of Economic Behavior</td>
<td>3.0</td>
</tr>
<tr>
<td>44.280</td>
<td>Spatial Implications of Public Policy</td>
<td>3.0</td>
</tr>
<tr>
<td>44.270</td>
<td>Technical Analysis of Urban Problems</td>
<td>3.0</td>
</tr>
<tr>
<td>45.254</td>
<td>State and Local Government Law</td>
<td>3.0</td>
</tr>
<tr>
<td>45.281</td>
<td>City and Human Environment</td>
<td>3.0</td>
</tr>
<tr>
<td>45.281</td>
<td>Air Pollution and Solid Waste</td>
<td>3.0</td>
</tr>
<tr>
<td>45.267</td>
<td>Mathematical Fundamentals for Computer Users</td>
<td>3.0</td>
</tr>
<tr>
<td>45.210</td>
<td>Financial Analysis</td>
<td>3.0</td>
</tr>
<tr>
<td>45.210</td>
<td>Introduction to Urban and Regional Economics</td>
<td>3.0</td>
</tr>
<tr>
<td>45.255</td>
<td>Elementary Probability and Statistics</td>
<td>3.0</td>
</tr>
<tr>
<td>45.256</td>
<td>Introduction to Statistical Methods</td>
<td>3.0</td>
</tr>
<tr>
<td>45.257</td>
<td>Introduction to Mathematical Statistics</td>
<td>3.0</td>
</tr>
<tr>
<td>45.258</td>
<td>Introduction to Mathematical Analysis</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Urban Planning Focus

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>44.115</td>
<td>Political Behavior and Urban Planning</td>
<td>3.0</td>
</tr>
<tr>
<td>44.125</td>
<td>Internal Social Structure of Urban Areas</td>
<td>3.0</td>
</tr>
<tr>
<td>44.140</td>
<td>Geographic Analysis of Inner City Areas</td>
<td>3.0</td>
</tr>
<tr>
<td>44.240</td>
<td>Social Structure of Residential Areas</td>
<td>3.0</td>
</tr>
<tr>
<td>44.240</td>
<td>Urban School Urban Areas</td>
<td>3.0</td>
</tr>
<tr>
<td>44.240</td>
<td>Macro Models of Urban Growth and Development</td>
<td>3.0</td>
</tr>
<tr>
<td>45.281</td>
<td>Land Use Planning Seminar</td>
<td>3.0</td>
</tr>
<tr>
<td>45.281</td>
<td>Urban Transportation Planning</td>
<td>3.0</td>
</tr>
<tr>
<td>45.281</td>
<td>Environmental Health and Community Relations</td>
<td>3.0</td>
</tr>
<tr>
<td>45.281</td>
<td>Economics/Planning Administration</td>
<td>3.0</td>
</tr>
<tr>
<td>45.281</td>
<td>Problems in Urban Economics</td>
<td>3.0</td>
</tr>
<tr>
<td>Course</td>
<td>Credits</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>42:125 Urban Economics</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>42:136 Real Estate and Urban Economics</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>Social Work</td>
<td>3 ar</td>
<td></td>
</tr>
<tr>
<td>52:301 Welfare Program and Policy</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>Regional Planning Focus</td>
<td>3 ar</td>
<td></td>
</tr>
<tr>
<td>Geography</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>44:132 Areas Analysis</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>44:136 Industrial Location</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>44:141 United States and Canada</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>Political Science</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>30:122 State Administration</td>
<td>2 to 3 cr</td>
<td></td>
</tr>
<tr>
<td>30:540 Far Eastern Political Systems</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>30:541 Latin American Political Systems</td>
<td>4 cr</td>
<td></td>
</tr>
<tr>
<td>Sociology</td>
<td>4 cr</td>
<td></td>
</tr>
<tr>
<td>34:116 Social Problems of Underdeveloped Areas</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>Anthropology</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>112:119 Urban Anthropology</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>Law</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>31:106 Resource Planning</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>Economics</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>42:120 Economic Development of Underdeveloped Areas</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>42:126 Regional Economics</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>42:525 Economics of Underdeveloped Areas</td>
<td>2 to 3 cr</td>
<td></td>
</tr>
<tr>
<td>Region: Latin America</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>52:561 Economic Development of North American Economies</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>Joint Program in Urban Planning and Law</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poverty, accelerated urban development, the complexity of modern society, and racial discord pose major</td>
<td></td>
<td></td>
</tr>
<tr>
<td>challenges for the United States and the world. Professionals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>skilled in analysis of these problems and in advocacy are</td>
<td></td>
<td></td>
</tr>
<tr>
<td>urgently needed to assume a leadership role and to become</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experts who can provide the public with knowledge and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>information about the causes of, and solutions to,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>the challenges and opportunities posed by the urban</td>
<td></td>
<td></td>
</tr>
<tr>
<td>environment. This program is designed for advanced</td>
<td></td>
<td></td>
</tr>
<tr>
<td>undergraduate and graduate students who are</td>
<td></td>
<td></td>
</tr>
<tr>
<td>interested in understanding the complex issues of urban</td>
<td></td>
<td></td>
</tr>
<tr>
<td>society and in developing policy solutions that are</td>
<td></td>
<td></td>
</tr>
<tr>
<td>consistent with the needs of the communities in which they</td>
<td></td>
<td></td>
</tr>
<tr>
<td>work. The program provides training in quantitative methods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and qualitative research techniques, with a focus on</td>
<td></td>
<td></td>
</tr>
<tr>
<td>urban planning issues.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analysis of current urban environmental problems. This</td>
<td></td>
<td></td>
</tr>
<tr>
<td>course is offered to students outside the planning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>program.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political dimensions of urban problems and issues; analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>of political behavior and public decision-making in the urban</td>
<td></td>
<td></td>
</tr>
<tr>
<td>environment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An option to permit students to undertake planning projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in metropolitan areas, in groups with faculty are</td>
<td></td>
<td></td>
</tr>
<tr>
<td>available, dealing with some of the acute problems of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cities. The program will be scheduled at institutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and urban areas. The course will be offered to students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>outside the planning program.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Descriptions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>102:101 Introduction to Planning</td>
<td>3 cr</td>
<td></td>
</tr>
<tr>
<td>Lecture and seminar (3 cr): problems concerned with the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>development of urban planning theory and practice. This course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>is offered to students outside the planning program.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>102:201 Environmental Planning and Design</td>
<td>4 cr</td>
<td></td>
</tr>
<tr>
<td>Lecture and studio (3 cr): planning and design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An option to permit students to undertake planning studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in metropolitan areas. On a group basis with faculty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>available, dealing with some of the acute problems of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cities. The program will be scheduled at institutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with reasonable accessibility.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Course Descriptions**

**102:101 Introduction to Planning**
- **Course Description**: Analysis of current urban environmental problems. This course is offered to students outside the planning program.
- **Course Credit**: 3 credits

**102:201 Environmental Planning and Design**
- **Course Description**: An option to permit students to undertake planning studies in large metropolitan areas, in groups with faculty available, dealing with some of the acute problems of large cities. The program will be scheduled at institutions with reasonable accessibility.
- **Course Credit**: 4 credits
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. Lec-
ture and studio.

102:206 Planning Analysis and Techniques I 3 s.h.
Planning applications of techniques for analysis of popu-
lation, community, and land use. Topics include model-
ing strategies, systems analysis, urban transportation plan-
ning, and urban information systems.

102:207 Theory of Planning 3 s.h.
Evolution of planning theory and practice. Analysis of plan preparation, evaluation, and implementation meth-
ology.

102:208 Urban Housing 3 s.h.
Lectures and seminars, regarding the quality of residential environment, the effect of variations in standards of in-
terior space, density, building form, and open space upon the residents. Historical view of housing and its produc-
tion and management; housing supply and markets; finance; legislation; design in housing related to urban renewal; a brief examination of the community facilities functionally related to housing.

103:209 Planning Legislation 3 s.h.
Governmental and legal aspects of planning and land de-
velopment in the United States covering the principal tools for implementing planning policy including planning by public agencies, zoning, subdivision control, land ac-
quisition, and development incentives.

103:210 Quantitative Methods for Planning 3 s.h.
Mathematical and statistical techniques useful in planning analysis. Introduction to computer and computer pro-
gramming.

103:220 Planning Analysis and Techniques II 3 s.h.
Application of analytical techniques to selected urban or regional problems.

103:221 Seminar: Urbanization 3 s.h.
Problems and consequences of the urbanization process. An economic, social, and political study of metropolitan areas and urban growth; urbanization, decolonization, decays, and density, Geography 44.65; and Civil Engineering 30.298.

103:222 Student Research Seminar 2 s.h.
Analysis of research methodology and study design, Research review and criticism of thesis or equivalent project.

103:223 Regional Planning Seminar 2 s.h.
Approaches to regional development policy; economic analysis; planning tools considered relevant to less developed countries; comparative studies.

104:224 Principles of Urban Design 3 s.h.
Theory 2 to 3 s.h.
Physical development of urban form. Determination of basic elements in the development of city form and as a basis for its orderly development.

104:225 Readings 2 s.h.
Individual program of readings under guidelines estab-
lished by the department.

104:226 Seminar: Urban Transportation 3 s.h.
Analysis of selected urban transportation issues and prob-
lems.

104:227 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. Morpho-
logical analysis of cities. Case studies examining struc-
ture 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 planning development. Research of planning problems of special interest to student with approval of the department. Written report and oral pre-
sentation 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 lecturers with African experience and specialization, focusing upon current problems, econ-
omeic, cultural, and political aspects. Same as Anthro-
pology 120.294.

102:241 Process and Problems of Development: Latin America I 3 s.h.
Background studies in history, geography, political struc-
tures, population, health, and welfare, followed by pre-
sentation of currently operating programs and planning efforts, economic integration, development plans for spe-
cific regions, visiting lecturers with Latin American ex-
periences, faculty from various departments. Same as Anthro-
pology 120.294.

102:242 Process and Problems of Development: Latin America II 3 s.h.
Continuation of 102.241. Same as Anthropology 110.292.

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.
Senior thesis and analysis of a special planning problem ap-
proached 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. Kalisz
Office, 309 Zoology Building
The basic courses offered by the Department of Zoology are designed both for students planning to enter medical, dentistry, or related professions. The student's undergraduate and graduate offerings are planned for persons interested in modern fields of descript-
one and quantitative experimental biology. Graduate work in the department must meet professional require-
ments in the health sciences and also may continue into graduate programs leading to teaching, service, and re-
search in the various professional areas.

The B.A. Degree in Zoology
Courses in zoology required for the baccalaureate degree majors:

Z 12 Principles of Animal Biology
Z 22 Principles of Modern Embryology
Z 32 Cell Physiology
Z 33 Animal Kingdom I
Z 34 Animal Kingdom II
Z 112 Fundamental Genetics
Z 113 Comparative Physiology
Z 114 Population Genetics
Requirements for the B.A. degree are currently under review. It is anticipated that the list of zoology courses presently above will be reduced (by 102-272), and that regional courses will substitute for the credited courses. The intent is to permit increased emphasis in coursework

198

37:103 Comparative Anatomy of Vertebrates 4 s.h.
Structure, function, and evolution of vertebrates. Lectures, demonstrations, and laboratory. Prerequisites, 27:3 or equivalent.

37:105 Cell Physiology 4 s.h.
General chemistry of living systems; energetics and intermediary metabolism; cell structures related to function; nature and properties of membranes. Prerequisite, 27:3, Chemistry 4:1 or 4:2, Physics 21:3, 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, 27:5 or equivalent.

37:108 Animal Kingdom II 4 s.h.
Anatomy, physiology, evolution, ecology, and behavior of the deuterostomiate deuterostomates. Emphasis will be on the vertebrates. Prerequisite, 27:107 or equivalent.

37:110 Fundamental Genetics 2 or 4 s.h.
Structure, behavior, and function of the hereditary material. Laboratory emphasis on living plants and animals; optional for nonmajors. Lecture and laboratory, 2 sessions each. Prerequisite, Botany 2:1 or 27:3 or equivalent.

37:110 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 Botany 2:105. Prerequisite, 27:3 or equivalent. Chemistry 4:121, 122 recommended.

37:111 Microscopic Technique 4 s.h.
Prerequisite, 27:3 or equivalent.

37:112 Microscopic Anatomy 4 s.h.
Lectures and laboratory on microscopic structure of tissues and organs of various animals. Prerequisite, 27:110 or equivalent.

37:118 Parasitology 4 s.h.
Life histories, taxonomy, morphology, and general importance of parasites of man and animals. Prerequisite, 27:3 or equivalent.

37:120 Protozoology 4 s.h.
Study of protozoal 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.
Prerequisite, 37:107 or equivalent. Comparative analysis of physiological mechanisms among invertebrates and vertebrates. Prerequisites, 37:107 and Chemistry 4:4 or Physics 21:3, or graduate standing and consent of instructor.

37:131 Population Biology 4 s.h.
Ecology at population and community levels, population genetics, and the nature of evolutionary mechanisms. Lectures, discussions. Prerequisite, 37:115 or equivalent.

37:132 Ecology 2 or 4 s.h.
The foundation and dynamics of ecosystems. Description of community structure and analysis of interactions between component populations will be studied within a framework of energy flow and biogeochemical cycling. Prerequisites, 37:131, 132, or equivalent; and Physics 21:3, 4, or equivalent; recommended, 37:2, Botany 2:1, and a course in statistics.

37:141 Comparative Neurophysiology 5 s.h.
Prerequisite, 37:105 or equivalent. Study of the nervous system and motor mechanisms, exemplified by both vertebrates and invertebrates. Lectures, seminar reports, laboratory. Prerequisite, 37:124 or consent of instructor.

37:143 Comparative Animal Behavior 4 s.h.
Lectures, discussions, readings on aspects of animal behavior, including rhythms, migration, orientation, com-
37:124 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-organs, cells, and cell-interacting systems will be explored as the bases for development and differentiation in multicellular organisms. Prerequisite, 37:120; biochemistry recommended.

For honors candidates, 1 to 3 a.h.
37:127 Readings in Zoology 1 to 3 a.h.

37:128 Seminar in Zoology 1 a.h.
Discussions and readings centered on either a single topic or on the regular lecture series of 37:125. May be repeated.
37:129 Introduction to Research cr.arr.
For senior majors in zoology. Prerequisite, consent of instructor.

ZOOLOGY

Primary for Graduates
37:201 Research Orientation 1, 2 a.h.
Research experience in selected faculty laboratories as an introduction to specific areas of research. Prerequisites, graduate standing and consent of instructor.
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 major structures of cells. Prerequisite, 37:112 or equivalent.
37:213 Cytology 2 a.h.
Continuation of 37:211.
37:214 Drosophila Genetics Seminar 1 a.h.
Informal discussion of selected topics from the literature. May be taken indefinitely. Prerequisite, consent of instructor.
37:215 Seminar: Genetics cr.arr.
Lectures, discussions, and seminars on selected topics in genetics. Course may be repeated for credit. Prerequisite, 37:211 or consent of instructor.
37:217 Seminar: Zoology 0 or 1 a.h.
Weekly lectures 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 neural and hormonal 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: nature and properties of nervous, physical chemistry of the cell, histological physiology of organs, enzymation, enzyme action, growth, and development; material transport, colorimetry, temperature, radiant energy; photobiological movement, etc.

37:144 Comparative Animal Behavior Laboratory cr.arr.
Prerequisite or corequisite, 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, 37:15; 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 chromosomes mechanics and crossing over; mutations, and effects of mutation; regulation and gene action. Prerequisites, 37:150 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. Prerequisites, 37:150 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 parametric estimation and artificial selection. Prerequisites, 37:151 or 37:150 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, analysis of variance, and correlation models, using computer 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 these phenomena on the genetic code. The regulation of gene expression, especially of RNA transcription. Laboratory investigations of the controls governing messenger RNA and bacterial replication and intracellular synthesis of messenger RNA. Prerequisites, 37:119 or 37:126, 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 terms of the relationship of general mechanisms of control of RNA, DNA, and protein synthesis. Lectures, discussions, oral reports. Prerequisites, 37:171 or consent of instructor.
Literature reports and discussion on gametogenesis, accessory gland secretions, ethiology, and hormonal control mechanisms. Research problem optional. Prerequisite, consent of instructor.
37:180 Sensory Neurophysiology 1 a.h.
Prerequisite, consent of instructor.
37:181 Integrative Neurophysiology 2 a.h.
Prerequisite, consent of instructor.
37.339 Neuroembryology 2 s.h.
Lectures, discussions, readings, and reports on development of inter-organ systems and sense organs, development of behavior, nerve growth, and regeneration. Prerequisite: 37.262 and permission of instructor.

37.330 Helminthology cr.arr.

37.331 Helminthology cr.arr.

37.332 Seminar: Systems Ecology 2 s.h.
Lectures and discussions on methods of systems analysis and their application to the study of the dynamics of ecosystems. Emphasis on methods of component analysis to describe and use of energetics to analyze relationships involved in predator-prey systems. Prerequisite: 37.182 or equivalent and consent of instructor.

37.337 Problems of Developmental Cytology 3 s.h.
Development of cell organelles; differentiation and its relation to cell division; determination of cell phenotype. Examine primarily from protistan cells and vertebrate cells in culture. Lectures, seminars, discussion. Prerequisite, consent of instructor.

37.341 Seminar: Neurophysiology 2 s.h.
Reviews of recent literature of selected topics. May be repeated.

37.360 Developmental Genetics 2 s.h.
Lectures, readings, discussions on gene action in development. Prerequisite: 37.110 or equivalent.

37.363 Seminar: Behavioral Genetics 1 s.h.
Prerequisite: 37.112.

37.367 Electron Microscopic Techniques 1 I 5 s.h.
Lecture and laboratory on methods of tissue fixation, embedding, ultrathin sectioning, and staining. Theory, use, and maintenance of the electron microscope; associated photographic techniques. Prerequisites: 37.112, 37.211 or equivalent, and consent of instructor; 37.111 recommended.

37.368 Electron Microscopic Techniques II 4 s.h.
Continuation of 37.367, but emphasis experimental aspects of electron microscopy, including negative staining, shadow casting, cryo-electron, and cell-pathologic applications. Prerequisites: 37.367, biochemical cytology, and consent of instructor.

37.399 Problems in College Biology Instruction 1 s.h.
Discussion of theoretical and practical problems; restricted to graduate students.

37.391 Research: Zoology cr.arr.

37.393 Independent Study in Zoology cr.arr.
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 1939 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 an 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 those 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 degree 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 lounges, 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 the behavior of organizations. 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

201
the Director of Admissions not later than the following dates:

Fall semester—June 1
Spring Semester—November 15

For admission to the College of Business Ad-
ministration an applicant must have completed the
following requirements:

1. The Rhetoric 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 2.50 (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 68 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-
mores 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-
tionary admission.

 Fulfillment of the minimum requirements listed
above, however, does not assure admission to the
College of Business Administration. From those
applicants who meet the minimum requirements,
the Admissions Committee will select the 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 unsat-
factory scholarship. While some proba-
tory 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 reregister, 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
adviser and instructor; maximum of 24 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 6E 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 14 semester hours
during a semester or 8 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, in-
cluding a minimum of 48 semester hours of credit
in courses not listed as business administration
and a minimum of 24 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
- Historical-Cultural
- Literature
- Natural Sciences
- Sociology or Psychology (2 courses in either area)
- Mathematics-Statistics-Computer
- Accounting
- Economics
- Finance
- Legal Environment
- Management
- Marketing

Additionally, a student must satisfy either of the following two requirements:

- Two areas of concentration consisting of a minimum of three courses (6 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;
- or

- 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 Admission Test for Graduate Study in Business, 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 696, Princeton, New Jersey 08540 or from the University Evaluation and Examination Services, 300 Jefferson Building, Iowa City, Iowa 52242. 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 of Iowa is a professional, nonthesis 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 member school of the American Association of Colleges 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.
- Price 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 previous 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.
- Comprehensive Exercise 2 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 science, 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.

203
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 elect a nonthesis option. In either case, the candidate must complete a total of 30 semester hours including the courses 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

Professor: B. L. Barron, Gilbert P. Maynard. Department of Accounting Theory, Organization, and Control.

Assistants: John W. Kowalke, Blaine A. Stiltz, and William G. Kline, Jr.

COUSE DESCRIPTIONS

Primarily for Undergraduates

6A:1 Introduction to Accounting I 3 s.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's requirements for the Bachelor of Business Administration.

6A:2 Introduction to Accounting II 3 s.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 organizational internal reporting, and analysis that decision models employed by firms form the basis for the discussion. Prerequisite, 6A:1.

6A:3 Introduction to Accounting 5 s.h.
An accelerated course for superior students integrating the material in 6A:1 and 6A:2, and allowing greater flexibility of scheduling for special students. Prerequisite, satisfaction of the University requirements for the Bachelor of Business Administration.

6A:15 Income Tax Accounting 3 s.h.
Introduction to federal tax administration, structure, and procedures: implications for individuals and business decision-making. Prerequisite, 6A:1 or 6A:14.

For Undergraduates and Graduates

6A:114 Financial Accounting 3 s.h.
A survey of current practices and thought relating to external reporting by the firm to its investors. Discussion focuses upon the rationale and criticisms of current external reporting methods and their alternatives. Primarily for M.B.A. students without undergraduate accounting: not open to undergraduate business majors. Prerequisite, former standing or admission to the Graduate College.

6A:130 Accounting for Management Analysis and Control 3 s.h.
A study of the concepts and methods used in internal financial information systems. Emphasis is placed on behavioral dimensions of organizational decision systems and their implications for accounting information. The major forms of the discussion. Prerequisite, 6A:2 or equivalent.

6A:131 Financial Accounting: Assets and Liabilities 3 s.h.
A study of the concepts and methods of corporate external reporting. The theoretical and practical aspects of financial reporting practices are analyzed in the context of investor design models and their implications for the preparation of major external reports-earnings statements, balance sheets, and fund statements-as discussed. Prerequisite, 6A:15 or equivalent.
6A:132 Financial Accounting: Special

Topics 3 s.h.
Continuation of 6A:131. A study of special problems in corporate external reporting, managerial accounting, cost control, internal controls, and computerized systems. Emphasis is on decision-making and the analysis of financial statements and accounting systems. Prerequisites: 6A:131.

6A:136 Cost Analysis and Budgeting 3 s.h.
Advances in managerial decision models and their implications for accounting information systems. Delves deeply upon cost behavior, linear programming, and cost control methods. Topics include: statistical cost analysis, probabilistic standard costs, behavioral impact of budgets and control procedures, parametric control of decision making. Prerequisites: 6A:130; Business Administration 6B:138 recommended.

6A:137 Advanced Tax Accounting 3 s.h.

6A:143 Advanced and Contemporary Accounting 3 s.h.
Topics of current or continuing interest to professional accountants relevant to preparation of external reports. Reporting for international operations, fiduciary accounts, accounting for nonprofit organizations, selected advanced topics in consolidations, and non-temporary issues. Prerequisite: 6A:128.

6A:144 Auditing 3 s.h.
Review of internal controls in accounting systems and considerations 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:146 Professional Accounting Problems 3 s.h.
Preparation for professional accounting practice through consideration of responsibilities, ethics and qualifications; an intensive review of topics covered in the preceding years and theory sections; topics not covered in previous courses. 6A:136; 6A:130, and 6A:132 or equivalent.

6A:154 Accounting for Management 3 s.h.
Internal financial information systems. Accounting information surveyed and analyzed in terms of management decision systems and models. Relevant economic, behavioral, and organizational factors are employed as a basis for the assembly and display of accounting data. Prerequisites: 6A:114 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 investor decision models and programs. The role of financial information to multicorporation complex and corporate reorganizations (combination, merger, and acquisitions) is considered. Prerequisites: 6A:114 or equivalent.

6A:220 Accounting Theory 3 s.h.
Evaluation and growth of accounting as a body of knowledge. Theory and research of such groups as the American Institute of Certified Public Accountants and the American Accounting Association are critically evaluated in relation to financial statements and accounting principles. Current and likely future developments in accounting theory are reviewed. Prerequisites: 6A:115 or equivalent.

6A:221 Research Methods in Accounting 3 s.h.
Methods of research and their relevance to accounting problems. Consideration is given to problems formulation, research design, and research methodology. Each student is expected to complete a research project. Prerequisites: 6A:115 or equivalent.

6A:222 Accounting Information Systems 3 s.h.
Management information systems—management control systems. Emphasis is on communication and information control, cost and management accounting systems. Prerequisite: 6A:104 or equivalent; Computer Science 250:130 and Business Administration 6B:138 recommended.

6A:223 Audit Theory and Current Issues 3 s.h.
Historical and modern developments and audit theory and practice. Consideration of the use of auditing as a control function through internal auditing, compliance auditing, and external audits of published financial statements. A review of current literatures and its relationship to current business developments. Prerequisites: 6A:215 or equivalent.

6A:225 Governmental and Regulatory Accounting 3 s.h.
Concepts and techniques of accounting related to 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. Prerequisites: 6A:223 or equivalent.

6A:234 Research in Tax Accounting 3 s.h.
Current tax practices and preparation for continuing research in taxation. Prerequisites: 6A:215 and problem areas. Prerequisite: 6A:141 or equivalent.

6A:270 Research: Accounting 3 s.h.
Prerequisites: graduate standing.

6A:280 Seminar in Accounting Thought 3 s.h.
The evolution of accounting theory through a survey of significant accounting systems—management control systems. Materials are evaluated in terms of their relevance to current and future development of the profession. Primarily for doctoral program students. Prerequisites: 6A:223 or equivalent.

6A:286 Seminar in Accounting Research cr.arr.
A student-survey forum for the discussion of current research topics in accounting and related disciplines. Papers authorized by faculty, students, and invited guests present the basic findings of their research. Also required for Ph.D. Dissertation proposals in accounting are presented at this seminar. Prerequisites: graduate standing.

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. Prerequisites: 6A:200 or equivalent.

6A:290 Thesis: Accounting cr.arr.
Prerequisite: consent of advisor.

BUSINESS ADMINISTRATION
Chairman of Department, Robert R. Miller
Office, 306 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 select two three-course sequences (usually 6 credit hours) in areas of concentration approved by the department advisor. Two of the courses in each area must be offered by the College of Business Administration.

265
206

COLLEGE OF BUSINESS ADMINISTRATION

2) In addition to courses outlined is the general statement, students can elect a major in one of the following areas by satisfying the specified requirements.

Requirements for the Major in Financial Management:
58:111 Investments
58:144 Commercial Banking

At least 2 semester hours of accounting beyond the basic core are also required.

Requirements for the Major in Financial Economics:
58:117 Money and Banking
58:118 Real Estate and Urban Land Economics
58:119 Short-Term Financing
58:121 Financial Management

In addition, students must select at least two, but no more than four, courses from the following:
58:120 Mathematics of Insurance
58:121 Property and Casualty Insurance
58:123 Life and Health Insurance
58:124 Risk Management
58:125 Independent Study

Six additional hours of courses are specified by the student's advisor.

Requirements for the Major in Industrial Relations:
58:126 Human Resources Management
58:127 Labor-Management Relations and Public Policy
58:129 Labor Economics and Manpower Resources
58:130 Industrial Relations

The major is awarded after the satisfactory completion of at least 2 semester hours of thesis. The minimum program for the thesis will consist of the following:

- Major Area 3 s.h.
- Economics and/or Business Organization 6 s.h.
- Economics 6 s.h.
- Thesis 3 s.h.

Total 20 s.h.

STAFF

For Undergraduates and Graduates

58:101 Directed Readings in Business Administration (3-0)
Individual guided readings in selected topics in business.

58:103 Managerial Economics
Economics and statistical analysis applied to business problems and decision making and cost analysis, and pricing policies. Prerequisite: Economics 58:1, 2.

58:111 Quantitative Analysis in Business 3 s.h.
Analysis of quantitative models and their application to decision-making. Calculus, linear programming, matrix algebra, game theory, and other related operations research techniques.

58:12 Computer Methods 3 s.h.
Functions of the computer as a research tool. Computer applications of quantitative models for decision-making, using library routines and programs written by the student. Programming included only to prepare the student to use the computer. Prerequisite: Econ 58:1.

58:13 Finance 3 s.h.
Financial planning and management of money-capital in business firms, security markets. Prerequisites: Accounting 58:3 and Economics 58:2.

58:20 General Insurance 3 s.h.
Theory of risk and risk bearing; arrangements for dealing with risk; the insurance industry, types of insurers, functions of insurers, and governmental regulation of insurance; social insurance; development of the sickness insurance concept. Prerequisite: Economics 58:2.

58:21 Introduction to Marketing 3 s.h.
General introduction to the structure of marketing. Consideration of strategies with respect to market and customer behavior. Study of buyer behavior and the management of marketing strategy.

58:47 Introduction to Law 3 s.h.
General history and structure of law. Legal action in guiding changing economic and social patterns. Prerequisite: Economics 58:2 or junior standing.

58:55 Administrative Organization 3 s.h.
Fundamentals of administrative decision-making and leadership behavior are explored within organizations. Understanding of theories of organization are examined for their relation to problems of organizational design. Simulated organizational decision environments.

58:56 Production Management 3 s.h.
Organization and management of manufacturing enterprises. Production design and process planning, plant layout and materials handling, work simplification and measurement, production and inventory control, quality control, plant location, maintenance of plant and equipment, cost and budgetary control. Prerequisite: Economics 58:2.

For Undergraduates and Graduates

58:101 Directed Readings in Business Administration (3-0)
Individual guided readings in selected topics in business.

58:103 Managerial Economics
Economics and statistical analysis applied to business problems and decision making and cost analysis, and pricing policies. Prerequisite: Economics 58:1, 2.

58:111 Quantitative Analysis in Business 3 s.h.
Analysis of quantitative models and their application to decision-making. Calculus, linear programming, matrix algebra, game theory, and other related operations research techniques.

58:12 Computer Methods 3 s.h.
Functions of the computer as a research tool. Computer applications of quantitative models for decision-making, using library routines and programs written by the student. Programming included only to prepare the student to use the computer. Prerequisite: Econ 58:1.

58:13 Finance 3 s.h.
Financial planning and management of money-capital in business firms, security markets. Prerequisites: Accounting 58:3 and Economics 58:2.

58:20 General Insurance 3 s.h.
Theory of risk and risk bearing; arrangements for dealing with risk; the insurance industry, types of insurers, functions of insurers, and governmental regulation of insurance; social insurance; development of the sickness insurance concept. Prerequisite: Economics 58:2.

58:21 Introduction to Marketing 3 s.h.
General introduction to the structure of marketing. Consideration of strategies with respect to market and customer behavior. Study of buyer behavior and the management of marketing strategy.

58:47 Introduction to Law 3 s.h.
General history and structure of law. Legal action in guiding changing economic and social patterns. Prerequisite: Economics 58:2 or junior standing.

58:55 Administrative Organization 3 s.h.
Fundamentals of administrative decision-making and leadership behavior are explored within organizations. Understanding of theories of organization are examined for their relation to problems of organizational design. Simulated organizational decision environments.

58:56 Production Management 3 s.h.
Organization and management of manufacturing enterprises. Production design and process planning, plant layout and materials handling, work simplification and measurement, production and inventory control, quality control, plant location, maintenance of plant and equipment, cost and budgetary control. Prerequisite: Economics 58:2.

For Undergraduates and Graduates

58:101 Directed Readings in Business Administration (3-0)
Individual guided readings in selected topics in business.

58:103 Managerial Economics
Economics and statistical analysis applied to business problems and decision making and cost analysis, and pricing policies. Prerequisite: Economics 58:1, 2.

58:111 Quantitative Analysis in Business 3 s.h.
Analysis of quantitative models and their application to decision-making. Calculus, linear programming, matrix algebra, game theory, and other related operations research techniques.

58:12 Computer Methods 3 s.h.
Functions of the computer as a research tool. Computer applications of quantitative models for decision-making, using library routines and programs written by the student. Programming included only to prepare the student to use the computer. Prerequisite: Econ 58:1.

58:13 Finance 3 s.h.
Financial planning and management of money-capital in business firms, security markets. Prerequisites: Accounting 58:3 and Economics 58:2.

58:20 General Insurance 3 s.h.
Theory of risk and risk bearing; arrangements for dealing with risk; the insurance industry, types of insurers, functions of insurers, and governmental regulation of insurance; social insurance; development of the sickness insurance concept. Prerequisite: Economics 58:2.

58:21 Introduction to Marketing 3 s.h.
General introduction to the structure of marketing. Consideration of strategies with respect to market and customer behavior. Study of buyer behavior and the management of marketing strategy.

58:47 Introduction to Law 3 s.h.
General history and structure of law. Legal action in guiding changing economic and social patterns. Prerequisite: Economics 58:2 or junior standing.

58:55 Administrative Organization 3 s.h.
Fundamentals of administrative decision-making and leadership behavior are explored within organizations. Understanding of theories of organization are examined for their relation to problems of organizational design. Simulated organizational decision environments.

58:56 Production Management 3 s.h.
Organization and management of manufacturing enterprises. Production design and process planning, plant layout and materials handling, work simplification and measurement, production and inventory control, quality control, plant location, maintenance of plant and equipment, cost and budgetary control. Prerequisite: Economics 58:2.
6B:112 Security Analysis 4 s.h.
Valuation of corporate securities; security markets. Pre- requisite: 6B:113.

6B:114 Commercial Banking 3 s.h.
Banking structure and functions; the money market and bank runs; the national and international aspects of commercial banking; risk and portfolio management; bank competition and regulation. Prerequisite: 6B:115.

6B:115 Short-Term Financing 3 s.h.
Case problem approach. Methods of analyzing and projecting interest rates; investment and loan policies; pricing and underwriting of security issues; cost of money; cost of capital; and capital budgeting criteria. Prerequisite: 6B:114.

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. Prerequisite: 6B:114.

6B:120 Mathematics of Life Insurance 3 s.h.
Elements from probability and the mathematics of finance are developed and applied to problems in determination of insurance premiums, benefits, and reserves. Same as Statistics 220-50.

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. Prerequisite: 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. Prerequisite: 6B:121.

6B:123 Social Insurance 3 s.h.
History and economics of Social Security arrangements; medicare and medicaid; welfare, social security, unemployment, and other social charges. Prerequisite: 6B:122.

6B:124 Risk Management 3 s.h.
Noncapitalistic risks in business and selected management techniques. Subjective and objective probability; financial planning, reduction, and transfer of risk. Risk management differential; risk attitude and reduction of losses. Case studies in risk management. Prerequisite: 6B:123 or 6B:125 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 it; growth and structure of cities; zoning; procedure and techniques of property evaluation; elements of property management; real estate finance and mortgage. Prerequisite: 6B:120 or 6B:125.

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. Prerequisite: 6B:124.

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. Prerequisite: 6B:131 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 15:119. Prerequisite: 6B:131 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 16:120. Prerequisite: 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 16:123. Prerequisite: 6B:137 or Journalism 16:120.

6B:141 Senior Seminar in Marketing 3 s.h.
Selected topics not covered in other courses. Enrollment limited to superior students. Prerequisite, consent of instructor.

6B:147 Management 3 s.h.
Development of management insights, its objectives, methods, and relationship to production and financial management. Prerequisite: 6B:124.

6B:148 Law and Business 3 s.h.
Contracts, agency, and other regulatory aspects of law applied in business. Chiefly for accounting majors.

6B:149 Dynamics of Law 3 s.h.
Forces, historic, and modern, that adapt law to changing industrial, economic, and political society, and that control the threat of law. Debate of landmark situations. Prerequisite: 6B:47 or senior standing.

6B:150 Minority Rights in an Industrial Society 3 s.h.
Individual and minority rights in industry, unions, urban and suburban life, and politics. Black history and culture emphasized.

6B:151 Senior Topics in Industrial Relations 3 s.h.
Topics of a specialized nature in industrial relations. Different topics will be offered each term, e.g., management development and training, research methods in industrial relations, etc. Prerequisite, consent of instructor.

6B:153 Labor-Management Relations and Public Policy 3 s.h.
Integration of historical, political, social, economic, and legal trends in labor legislation and the development of 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 management of 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 statistical analysis applying with applications in economics and management. Matrix algebra, classical optimization techniques, mathematical analysis, linear programming, transportation and network flow problems, decision theory and one-way and two-way analysis of variance. Prerequisite: 6B:10 or consent of instructor.
6B:157 Production Planning and Control 3 s.h.
Methods of setting, limits, regulation, and levels of production in the individual firm. Prerequisite, 6B:50.

6B:159 Management Systems 3 s.h.
Nature of systems. Parameters for the business system. Measurement problems. Information theory and its relationship to measurement and control. System design, analysis, models for management decision-making, and control of systems. Prerequisite, 6B:50.

6B:162 Human Behavior in Organizations 3 s.h.
Human interaction and group behavior in organized industrial settings.

6B:167 Administrative Theory 3 s.h.
Study of fundamental models of administrative behavior in organizational settings. Examines control decision problems involving unique aspects of economics, technical, and human variables under varying organizational environments.

6B: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 6B:61, 6B:62.

6B:181 Topics in Quantitative Methods 3 s.h.
Fundamentals of differential and integral calculus. Optimization of continuous functions, with examples in economics and management, integrated primarily for students entering the M.B.A. program. Same as Economics 6B:61.

6B:182 Statistics for Decision-Making—
M.B.A. 3 s.h.
Probability theory, classical statistical estimation, Bayes' theorem, Contrast of Bayesian and classical approaches to decision-making under uncertainty. Prerequisite, 6B:181 or consent of instructor.

6B:185 Seminar in Administration 3 s.h.
Current administrative theory with emphasis on applications to practical situations. For administrators and officials of government, management, and government. Prerequisite, consent of instructor.

6B:189 Experimental Course cr.arr.
Available for special courses not regularly offered.

Primarily for Graduates

6B:201 Directed Readings in Business
Individually guided readings in selected topics in business administration.

6B:208 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.

6B:209 Business and Society—M.B.A.
Legal, cultural, and political frameworks of the American business environment, including antitrust legislation, the promotion and pricing of market structures, competition and regulation, and public ownership; the social responsibilities of the institutions, ethics and business; the effects of politics and pressures, policies for growth and stabilization, conservation of resources, economic security, foreign economic policy, defense, and war. Course emphasizes discussion.

6B:211 Financial Management—M.B.A.
Principles and evaluating profitability, cost, and allocation of resources according to economic, financial, and other selected criteria; theory, practice, and policy. Prerequisite, consent of instructor.

6B:216 Financial Markets 3 s.h.
Organization, role, and regulation of capital market institutions of governmental financing, interaction of financial markets with other economic developments. Prerequisites, consent of instructor.

6B:217 Financial Theory 3 s.h.
Examination of theoretical aspects of investment, financing, and evaluation of the few; portfolio management. Prerequisite, consent of instructor.

6B:218 Financial Management of Multidivision Corporations 3 s.h.
Growth of firms by multidivision approach, organizational design and management, and control of economic efficiency of corporate decision-making. Development of financial statements for internal and public reporting purposes. Financial, economic, and management problems relating to mergers.

6B:219 Capital Budgeting 3 s.h.
Alternative approaches to the cost of money-capital and to performance measurement for investment projects. Explicit consideration of uncertainty, and in uncertainty in selection of investment projects. Theory and applications in the public and private sectors.

6B:250 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.

6B:252 Risk, Uncertainty, and Insurance 3 s.h.
Selected theoretical aspects of risk and uncertainty: economic and mathematical aspects; current problems in insurance.

6B:254 Risk Management in Business 3 s.h.
Nonoperative risks in business and selected management devices for dealing with them: absorption, avoidance, transfer, and reduction of risk; risk management decisions; control of risk and reduction of losses. Case studies in risk management.

6B:255 Portfolio Theory and Planning—
M.B.A. 3 s.h.
An examination of the modern theoretical concepts relating to the management of the portfolio of financial institutions. Topics include portfolio models, performance measurement, and risk and return in portfolio construction. Prerequisites, consent of instructor.

6B:257 Marketing—M.B.A.
Analysis of the marketing problems of organizations. Use of behavioral science concepts to understand buyers. Emphasis on the role of market segmentation and management 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 previous marketing courses.

6B:258 Marketing Management I—
M.B.A. 3 s.h.
Focus on understanding and responding to the internal and external environment of marketing. Setting and evaluating basic marketing goals. Formulation of marketing planning decisions. Prerequisites, consent of instructor.

6B:259 Marketing Management II—
M.B.A. 3 s.h.
Focus on marketing decision areas. Development and analysis of topics in product planning, advertising and promotion, pricing, personal selling, channels, and distribution. Emphasis throughout on the role of the marketing manager in planning and control. Prerequisite, any marketing course.

6B:263 Buyer Behavior 3 s.h.
Study of the behavior of consumers and industrial buyers. Emphasis on research of the behavioral sciences. Prerequisite, consent of instructor.

6B:265 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. Credit is depth of a number of models and participation in a model-development project.

6B:241 Marketing Measurement 3 s.h.
Focus on management's need for measuring performance and information from internal and external sources. Analysis of secondary sources of information and methods for generating primary measurements, control, and from human respondents. Development of scales of measurement and psychometric procedures. Nonparametric statistical procedures for analyzing measurements. Prerequisite, consent of instructor.

6B:242 Operations Research in Business—M.B.A. 3 s.h.
Linear programming, dynamic programming, game theory, queuing, and other optimization models applied to business decisions. Prerequisite, Economics 6B:211; prerequisite, 6B:382.

6B:243 Statistics for Decision-Making I—Ph.D. 3 s.h.
Probability, random variables, mathematical expectation, generating functions, and probability distributions. Statistical estimation and hypothesis testing. Basic theories of estimation and hypothesis testing; estimation of parameters under uncertainty. Intended for Ph.D. basis area requirement. Prerequisite, 6B:241.

6B:244 Statistics for Decision-Making II—Ph.D. 3 s.h.
Correlation, regression, and the general linear hypothesis. Experimental design and analysis of variance. Sampling theory and nonparametric statistics as applied to Ph.D. basis area requirement. Prerequisite, 6B:243.

6B:245 Statistics for Model Building 3 s.h.
Forecasting and regression. Regression analysis, discriminant analysis, factor analysis, and other special topics. Orientation toward applications in management with sufficient theory covered for assuring proper use. Prerequisite, consent of instructor.

6B:246 Statistical Methods for Research 3 s.h.
Sampling theory, including random, stratified, systematic, cluster, and other sampling designs. Design of experiments. Collection of data and analysis of variance. Emphasis on planning experiments and drawing conclusions from the results. Prerequisite, consent of instructor.

6B:247 Statistical Decision Theory 3 s.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. Probabilistic, optimal fixed-rate, and other forms of analysis of statistical decision problems. Prerequisite, consent of instructor.

6B:248 Seminar in Quantitative Analysis 3 s.h.
Special topics in quantitative methods of current interest to faculty and students. Prerequisite, consent of instructor.

6B:249 Simulation Techniques 3 s.h.
Introduction to simulation and model building using digital computer and student design of computer simulation and specialized languages. Consideration of random number generation techniques. Review and evaluation of simulation applications. Prerequisites, computer experience and 6B:145 or 6B:242.

6B:250 Production Management 3 s.h.
Analytical and interpretative approach to the planning, operation, control, and analysis of the production processes. Emphasis on linear programming, and mathematical models as extensively used in analytical tools. Prerequisite, consent of instructor.

6B:253 Employment Relations and Public Policy 3 s.h.
Public policy issues related to collective bargaining and labor-management relations.
obtain a major in economics for the Bachelor of Business Administration degree by completing the following courses and electives:

ECON 1101 Introduction to Mathematical Economics I 3 s.h.
ECON 1102 Introduction to Mathematical Economics II 3 s.h.
ECON 2102 International Economics 3 s.h.
ECON 2103 Microeconomics 3 s.h.
ECON 2104 Macroeconomics 3 s.h.

Graduate Programs in Economics

The Department of Economics offers graduate instruction leading to 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 plans under which a student may elect to complete his degree are flexible. However, the choice is not solely at the discretion of the student. A student's program 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 academic requirement is a baccalaureate degree from a college or university in good standing. The minimum grade-point average for admission is 2.5 in the last 60 semester hours or 2.2 in the last 45 quarter hours. The minimum score on the Graduate Record Examination Aptitude Test and three letters of recommendation are required.

Application forms for admission and financial assistance are obtained by writing to the Department of Economics, 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 the Ph.D. program. For students enrolled in the Ph.D. program, the requirements for the M.A. degree must be completed from the core courses listed below. These courses are designed to provide the student with a sound understanding of 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>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 2101</td>
<td>Microeconomics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>ECON 2102</td>
<td>Macroeconomics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>ECON 2103</td>
<td>International Economics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>ECON 2104</td>
<td>Mathematical Economics</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

Undergraduate Requirements

In addition to the common requirements for students in the College of Business Administration, the student may
COU RSE DESCRIPTIONS

Primarily for Undergraduates

Note: EE1 and EE2 may be taken in either order or they may be taken simultaneously. They satisfy the social science core requirement.

EE1 Principles of Economics 4 q.h.
Organization and workings of the modern economic 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, education, security), poverty and the distribution of wealth, economic factors in the total environment. Alternative economic systems. Prerequisite: satisfaction of the University requirements in the Rhetoric Program.

EE2 Principles of Economics 4 q.h.
National income and output, employment, and prices; monetary and fiscal policy; monetary and fiscal policy; economic growth and development, international relations; economic systems. Prerequisites: satisfaction of the University requirements in the Rhetoric Program and college algebra.

EE26 Business and Economic Statistics 3 q.h.
Statistical methodology: sampling theory, estimation methods, statistical hypothesis testing. Requisites: MATH1 or MATH2, or MATH4.

EE37 Introduction to Mathematical Economics for Undergraduates 3 q.h.
Use of mathematics in economics. Application of elementary calculus and matrix algebra to production, consumer choice, market equilibrium, and the national income and employment. Prerequisites: college algebra, EE1 and EE2, or senior standing.

EE100 Micro-Economics 3 q.h.
Concepts and methods of economic theory. Relationship between economic theory and policy. Theories of microeconomics. Further allocation. Relationships and importance of micro-economics to other areas of economic theory. Prerequisites: EE1 and EE2, or senior standing.

EE105 Macro-Economics 3 q.h.
Measurement, theory, and control of aggregate economic activity. Prerequisites: EE1 and EE2 or senior standing.

Graduate Courses and Seminars

The Department of Economics offers several graduate courses in economic theory and applied fields. In addition, a wide selection of courses in other social sciences-law, business administration, and the quantitative areas of mathematics, statistics, and computer science is available. Each of the economics courses and seminars is described in the Catalog.
6E:106 Price and Employment Theory 3 s.h.
Role of markets and price determination under various conditions. National income analysis, employment, growth, and economic policy. Alternative economic systems. Not open to students with previous economics courses. Prerequisites, 6E:105 and senior or graduate standing.

6E:111 Labor Economics 3 s.h.
Industrialization's impact on labor markets with analysis of resulting economic problems: wages, hours, working conditions, and standardization. Manpower training and allocation. Assessment of labor market institutions and their role in the economy. Prerequisites, 6E:105 and 6E:106 and senior standing.

6E:113 Health Economics 2 s.h.
Structures of America's health-care industry and applications of economic analysis to its problems of production, pricing, and distribution. Evaluation of medical care as one of the factors contributing to health. Prerequisites, 6E:106 and consent of the instructor.

6E:115 Economics of Human Resources 3 s.h.
Readings in recent applications of economic theory to the human being considered as an economic resource. Particular emphasis placed upon estimation of poverty in relation to normatives. Prerequisites, consent of instructor.

6E:117 Money and Banking 3 s.h.
Institutions, theory, practice, and policy. Prerequisites, 6E:105 and 6E:106 or senior standing.

6E:119 Economics of the Government 3 s.h.
Economic functions of government in modern economies, economic decision-making in government, budgetary processes, effects of government expenditures and taxation upon allocation of resources, distribution of income, and economic growth and stability. Prerequisites, 6E:105 and 6E:106 or consent of instructor.

6E:123 International Economics 3 s.h.
Foreign exchange, balance of payments, foreign investments, tariff policy, and world interdependence. Prerequisites, 6E:105 and 6E:106 or senior standing.

6E:129 Economic Development: Advanced Developed Areas 3 s.h.
Classical, neoclassical, and modern contributions to the theory of economic development. Advanced study of underdeveloped areas; major proposals for speeding up development. Prerequisites, 6E:105 and 6E:106 or senior standing.

6E:133 Economic Growth: Industrailly 2 s.h.
Causes and consequences of economic growth in the more developed countries, such as the United States. Elementary growth theory. Critical issues: population, labor force, technology, health and education, the role of government and other institutions. Elements of planning. Growth vs. progress. Prerequisites, consent of instructor.

6E:135 Introduction to Regional and Urban Economics 3 s.h.
Theory of location and regional development, factors influencing the location of production, city location and hierarchies, land-use patterns, and the measurement and change in regional economic activity. Public policy issues in regional and urban development. Prerequisites, 6E:105 and 6E:106 or senior standing.

6E:137 Problems in Urban Economics 3 s.h.
Application of economic analysis to problems faced by city. Problems usually include air pollution, welfare, urbanization, migration, industrial development. Prerequisites, 6E:105 and 6E:106 or senior standing.

6E:141 Industrial Organization 3 s.h.
Structure of major American industries and the effectiveness of public policy. Development of restraint laws and theories of market behavior. Prerequisites, 6E:105 or senior standing.

6E:150 Extraterritorial and Organizational History 3 s.h.
Individual accomplishments in the context of large-scale organization, researched and analyzed with reference to responsibility for economic change. Discussion on organizational activity in both corporate and noncorporate sectors of the economy. Prerequisites, 6E:105 and 6E:106 or senior standing.

6E:151 American Economic History 3 s.h.
Analysis of American economic past on the basis of theoretical model cast in terms of the process of economic growth and development. Special emphasis is placed on demographic factors, the role of government, capital markets, and structural change. Prerequisites, 6E:105 and 6E:106 or senior standing.

6E:151 History of Economics: Thought 3 s.h.
Economic concepts and doctrines against background of evolving urban-industrial society. Classical, neoclassical, Keynesian, and modern economic thought. Prerequisites, 6E:105 and 6E:106 or senior standing.

6E:163 Economic Systems 3 s.h.
Functions performed by all economic systems; origins and applications of some contemporary economic systems; modern problems of the underdeveloped areas. Prerequisites, 6E:105 and 6E:106 or senior standing.

6E:165 Comparative Labor Movements 3 s.h.
Labor movements of major industrial nations including England, Germany, Austria, Scandinavia, Russia, and the United States. Theoretical aspects and economic aspects of unions and collective bargaining. Prerequisites, 6E:106 or senior standing.

6E:171 Economic Method, Logic, and Ethics 2 s.h.
6E:171 Topics in Quantitative Methods 3 s.h.
6E:172 Quantitative methods applicable to business and economics: matrices and linear algebra; economics and production, marketing, finance, and management. Prerequisites, 6E:106 or senior standing.

6E:193 Business and Economic Statistics II 3 s.h.
Probability; hypothesis testing; estimation; simple linear regression and correlation; nonparametric statistics. Prerequisites, 6E:172.

6E:166 Introduction to Mathematical Economics I 3 s.h.
The nature of statistical economics and economic models. Application of elementary calculus and matrices to production, consumer choice, market equilibriums, and the national income and employment. Permission for graduate students. Prerequisites, college algebra and consent of instructor. Note: Student cannot receive credit for both 6E:172 and 6E:193.

6E:167 Introduction to Mathematical Economics II 3 s.h.
Further applications of calculus and matrix algebra to economics; applications of mathematics to economics; elements of mathematically exact technique; and difference equations; linear programming and game theory. Application of topology to economics.

Economics for Advanced Undergraduates Courses 6E:106 and 6E:109 are intended to be an invitation to students in the Honors Program.

6E:158 Senior Seminar in Economics cr.arr.
Prerequisites, consent of instructor.
COLLEGE OF BUSINESS ADMINISTRATION

or equivalent, 65-23 or equivalent, and junior standing. Second semester only.

65-23 Office Calculating Machines 3 s.h.
Use of ten-key adding machines, printing and rotary calculators for solving business problems.

65-36 Office Services 3 s.h.

For Undergraduates and Graduates

65-125 Administrative Communication 3 s.h.

Study of the total communication process in business. Message theory, semantics, and human behavior in business communications. Verbal and non-verbal communication problems in business. Communication media, skills, and systems. Preparation, analysis, and preparation of written material. Student on design of forms and report formats. Experience on typewriting, editing, and transcription equipment. Prerequisites: B.S.E.

65-142 Office Management (required) 3 s.h.
Courses beyond those required in the business administration core.

65-143 Administrative Behavior 3 s.h.
Marketing and Advertising
Finance and Insurance
Management
Accounting

65-145 Executive Office Procedures 3 s.h.
or other electives as approved

65-146 Administration Systems 3 s.h.

65-147 Administrative Systems 3 s.h.

65-148 Administrative Behavior 3 s.h.
or other electives as approved

65-125 Written Communication in Business 3 s.h.

Preparation of written business communication and reports. Procedure and directive writing. Distinction and other forms of oral communication. Preparation, evaluation, and junior standing.

65-149 Office Management 3 s.h.
Relationship of the administrative management function to the business enterprise. Analysis of legislation, work flow, and selection of equipment and supplies. Administration, supervision of personal, professional, data processing, and control of office technology. Prerequisites: Junior standing.

65-147 Administration Systems and Procedures 1 s.h.

Information systems analogous methods of establishing, standardizing, and controlling administrative systems; work simplification, forms control, work flow charts, and selection of new offices. Optional semester only. Prerequisite: Junior standing and 65-148.

65-155 Data Processing in Business 3 s.h.
Introduction to data processing systems, including manual, punched-card, and electronic applications. Management of data processing operations. Prerequisites: Junior standing.

65-191 Principles of Business Education 3 s.h.

65-192 Methods of Office Education 3 s.h.

Business education program in the secondary school; emphasis on objectives, content, and teaching methods for the high school program of office education subjects. Corequisite: Education 170-116.

65-184 Methods: Basic Business Education 3 s.h.
Business education program in the secondary school; emphasis on objectives, content, and teaching methods for the high school program of business education subjects. Corequisite: Education 170-116.

65-195 Organization and Administration of Cooperative Programs 4 s.h.
Objectives, organization, and coordination of vocational programs. Office and distributive education programs, in

215
COLLEGE OF BUSINESS ADMINISTRATION

Required for teacher coordinators of office education programs. Summer session only.

65:196 Individual Instruction Techniques 2 s.h.
Problems of correlating classroom instruction with on-the-job training in office and distributive education. Required for teacher coordinators of office education programs. Summer session only.

65:197 Philosophy of Vocational Education 2 s.h.
Study of vocational education programs with special emphasis 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.

65:199 Business Education Workshop 0 to 1 s.h.
Offered alternate summers.

Primarily for Graduates

65:303 Seminar: Basic Business and Economic Education 2 to 3 s.h.
Techniques, and materials of instruction, behavioral objectives, and the implications of research for teaching in the area of basic business and economic education.

65:304 Seminar: Teaching Bookkeeping 2 to 3 s.h.
Accounting principles and analytical analysis. Comparison of the various approaches, techniques, and materials available. Research findings applied to the various accounting phases. Analysis of automated, mechanical, and manual processes.

65:305 Seminar: Secretarial Education 2 to 3 s.h.
Research findings and experimental evidence applied to the areas of secretarial education including office procedures and communication. Psychology applicable to the skill-building process.

65:207 Seminar: Teaching Information Processing 2 to 3 s.h.

65:216 Supervision of Business Education 2 s.h.
Principles, problems, and practices of business education at the supervisory level. Designed for business education administrators and those who wish to prepare for, or improve, supervisory roles in business education.

65:220 Post-Secondary Business Education 2 s.h.
Philosophy; organization and administration; principles and problems; curriculum development and teaching procedures in postsecondary business education programs including four-year colleges.

65:225 Seminar in Administrative Communication 3 s.h.
Communication theory applied to the organization and administrative process. Communication in the automated system. Applications to selected areas of business. Prerequisite, 65:125 or equivalent.

65:225 Foundations in Business Education 3 s.h.
Philosophy and objectives of the business education program and its role in secondary and higher education. 65:546 Seminar in Business Education 2 or 3 s.h.
For advanced graduate students only. Current issues in business education and business teacher training. Prerequisite, consent of instructor.

65:246 Administrative Management Seminar 3 s.h.
Philosophy of administrative management and basic systems concepts. Current and projected developments in administrative services. Applications to selected areas of business, industry, and government. Prerequisites, 65:146 or equivalent and graduate standing.

65:265 Directed Readings cr.arr.
Individually guided readings in business education, data processing, communication, or office management. Prerequisites, graduate standing and consent of instructor. May be repeated to a maximum of 8 semester hours.

65:270 Research: Business Education cr.arr.

65:275 Research Seminar: Business Education 2 s.h.
Analysis of research methods and design. Formal research techniques, including business teacher education, office management, secretarial education, and data processing.

65:280 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 business 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 inter- national 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 pathology; oral pathology; pharmacology; microbiology; clinical pathology; 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, anesthesia 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 orthodon- tics.

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 "clerkships" 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-
COLLEGE OF DENTISTRY

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 three credit hours 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 sufficiently 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
marking systems will be evaluated by the Office of the Admissions and the Admissions Committee of the College of Dentistry.

Interviews. Personal interviews may be required of applicants for admission to the College of Dentistry. Applicants will be notified when they should appear for the required interviews with members of the Admissions Committee.

Required Dental Admission Test. All applicants must complete the Dental Admission Test sponsored by the Council on Dental Education of the American Dental Association. All applicants for admission to the College of Dentistry should obtain an application form from the University for the required test. The fee for the examination must be paid when the application is completed. The fee will entitle the applicant to have the scores sent to five dental schools. Applicants are requested to submit applications well before the test deadline. Tests are given three times annually, and The University of Iowa is a testing center.

Applicants for admission to The University of Iowa's College of Dentistry are urged to complete the examination in the previous October to enable the Admissions Committee to begin its selection in December. Applicants who have completed more than one year of pre Dental work are urged to take the examination in the preceding April.

Deposit by accepted applicants. Accepted applicants shall make the required deposit within two weeks after notification of favorable action on their applications. This deposit is not refundable 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 entering class.

Physical examination. 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.

Advanced standing. Applications for admission with advanced standing are considered on the basis of their individual merit and availability of space in a given class.

Combined liberal arts-dentistry course. The provision for acceptance, by the College of Liberal Arts, of 30 semester hours of elective credit from any other college of the University makes it possible for the student who enters the College of Dentistry to attain the bachelor's degree from the College of Liberal Arts upon the successful completion of the freshman year. To take advantage of this plan, the student must fulfill all specific requirements for the bachelor's degree, including the requirements for a major in some department or area of concentration. The successful completion of the last 30 hours in the College of Liberal Arts preceding enrollment in the College of Dentistry satisfies the college residence requirement.

Fullfilment 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. The Committee considers applicants' academic averages, the scores on the required Dental Admission Test, and several other factors.

Since the available places in the freshman class of the College of Dentistry are limited, preference will be given to applicants who are residents of Iowa under the University's regulations on residence. If it is found possible to consider a limited number of applicants who are 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>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
<td>0</td>
</tr>
<tr>
<td>P</td>
<td>Pass</td>
<td>0</td>
</tr>
</tbody>
</table>

Absences. Students are required to be in residence on the first day of the school year and are expected to participate in all academic activities and their associated 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 2.9 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 generally unfit to be promoted or 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 $2,000 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 completes his course of study.

A number of short-term loans are available from the American Dental Association, the Iowa Dental Association, the Kallion Foundation, and other sources, to help students in emergency situations. Short-term loans average $500 at interest rates from 2 1/2 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, Dental Prosthesis, Operative Dentistry and Endodontics, Oral Diagnosis, Oral Pathology, Oral Surgery, Orthodontics, Pedodontics, and Periodontology.

Prerequisites for admission to any of the graduate programs in the College of Dentistry are the satisfaction of all requirements for admission to the Graduate College (see Graduate 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. Galagan.

Dean Emeritus: George R. Easton.

Associate Dean and Coordinator of Research: Jess Hayden, Jr.

Associate Dean and Coordinator of Curriculum: Robert Montgomery.

Chief of Clinic: C. Fredric John.

Coordinator, Student Affairs: Ralph C. Ageley.

Director, Dental Education: Beverly & Halen.

Librarian: Margaret R. Czuchowski.

PRECLINICAL SCIENCES

COURSE DESCRIPTIONS

Below are listed required science courses offered by departments in college other than dentistry for the undergraduate dental students.

17:119 The Science of Nutrition 2 s.h.


60:101 Gross Anatomy for Dental Students 6 s.h.

Lecture-laboratory approach to gross and neuroanatomy with emphasis on head and neck. Graduate students 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, 335 Dental Building

STAFF

Professor: Keith E. Thayer.
Assistant Professor: John L. Dyer.
Associate Professor: William E. Ker.
Assistant Professor: Kenneth W. Flett, Arthur N. Kelloch.

Visiting Assistant Professor: Sami I. Abdulah.

Instructor: Clifford G. Motley, Iszowkski R. E. Mahood.

Graduate Program

The Department of Crown and Bridge offers a graduate training in the art and science of prosthodontics. This degree is granted through the Graduate College of the University of Iowa. The program satisfies the special 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 adaptable 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 pursuit which best fulfills his interests, goals, and desires while meeting all of the requirements set by the department and the Graduate College necessary for the obtaining 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 are a grade point average of 3.0 and completion of prerequisite courses. The student must hold a B.S., B.D.S. or M.D. degree or foreign equivalent. No advanced GEs are 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. It is a course in research methodology as well as a course in histopathology or laboratory techniques in medicine will be required. Some coursework is the general area of prosthodontics in one of the basic science areas will also be required. Oral and/or written exams are given during the regularly scheduled graduate degree exam period each year.

Any student is unable to maintain the minimum 2.5 grade-point average during the first year of his program or those individuals who elect to terminate their program after one year will be considered for issuance of certificate of attendance. Each student will be required to submit a manuscript suitable for publication in a nationally recognized professional journal based upon the student's research and/or thesis topic. He will be required to present one additional manuscript for publication on another topic.

COURSE DESCRIPTIONS

81.1 Physiology of Mastication 1 s.h.

Introduction to the concept of occlusion and stabilization.

81.7 Crown and Bridge Technique 2 s.h.

Lectures covering introduction to crown and bridge den-

tistry, including definitions, materials and techniques

used in the construction of various types of metal and
gold porcelain crowns and assembling of bridges. 28 clock

hours.

81.9 Crown and Bridge Technique Laboratory 4 s.h.

Technical procedures required in construction of dental
crowns and bridges. 18 clock hours. Sophomore year.

81.11 Dental Materials 1 s.h.

Review of basic physical and clinical principles that
apply to materials used in dentistry. Structure and state of
matter, nature of solution, and physical and mechanical
properties.

81.12 Crown and Bridge 5 s.h.

Lectures and seminars covering previously acquired
knowledge in biological and dental sciences and technical
courses with clinical crown and bridge restorative proce-
dures. Practice in this Dental Laboratory experimentally
on specimens to small groups. 18 clock hours.

81.18 Clinical Crown and Bridge 4 s.h.

Clinical crown and bridge procedures which will fulfill
clinical requirements and determine satisfactory pro-

tocols in clinical crown and bridge prosthetics. 28 clock

hours. Senior year.

81.11 Oral Rehabilitation and Gerdontics 1 s.h.

Lectures dealing with extensive or involved recontruc-
tion of the oral apparatus and with the effects that the
aging of the dental patient has on such treatment.

Primarily for Graduates

81.30 Crown and Bridge Literature Review* cr.arr.

Assumed reading and preparation of abstracts.

81.20a Technic Methods: Crown and Bridge* cr.arr.

Advanced review of all technic procedures. Prepara-
tion of abstracts of specific technic procedures.

81.20b Advanced Clinical Crown and Bridge* cr.arr.

Student working under one demonstrator completes as-
signed cases in sequence of difficulty.

81.203 Research: Crown and Bridge* cr.arr.

81.204 Seminar: Crown and Bridge* cr.arr.

221
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 Emeritus: Earl S. Smith
Assistant Professor: Leo F. DeCoutner, Hunter H. Miller, Forrest R. Seminett.
Instructor: Ronald R. Spater

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. Applicants 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 2920.

Applicants 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.D.S. or D.M.D. degree, and preference will be given to those also holding a bachelor's or master's degree. It must have a grade-point average of 2.4 for admission to the College of Liberal Arts.

The admission decision also requires to an examination in August to all newly accepted students.

The applicant will be advised on the decision by the Director of Admissions. He will be informed in the College of Liberal Arts and will be required to be present at all regular fees. The student must be required to fulfill all of his own instruments, upon notice of acceptance, the instrument list will be sent to him.

The cost of the department or his designated representative will be the student's advisor. If possible, a personal interview will be arranged prior to acceptance. Letters of recommendation are suggested, however, these letters of recommendation will be requested from individuals at the discretion of the department.

The following requirement was approved by the House of Delegates of the American Dental Association in October 1968.

Each board shall require for eligibility for certification as a dentist a minimum of two academic years of advanced education in recognized institutions, or two calendar years of advanced education in programs that involve hospital internships and residencies. Although in the past, the period of advancement study need not be continuous, nor completed within a specific period of time and as a graduated sequence of educational experience, may be considered acceptable in satisfying this requirement. Short continuation and refresher courses and training experience in speciality 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 prosthetics at The University of Iowa be flexible to the extent that the goal of the individual student may be realized. The department takes into consideration that some program is not in the best interest of all students nor of the profession. The requirements are considered flexible to the extent that or endeavor is made to 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 two programs follows:

Certificate Program:

Certificate programs. The certificate program is intended for those individuals whose primary interest is in clinical prosthetics. The certificate program will usually require 21 months of advanced study for successful completion. The program includes courses in the Colleges of Dentistry, Medicine, and Liberal Arts. Certain courses will be designated as requirements, and others as elective. The final decision on the choice of courses will rest with the graduate committee, the student and his advisor.

The following are current suggested courses for the certificate program:

1. Basic Science Courses
   a. Required
      62:250 Basic Otolaryngologic Science Review 2 s.h.
      60:236 Problems (head and neck) 2 s.h.
      37:193 General Physiology 4 s.h.
      72:282 Advanced Neuro-Physiology 3 s.h.
      61:501 Pathologic Processes (basic processes of disease) 3 s.h.
      62:207 Advanced Dental Therapeutics 1 s.h.
   b. Electives
      59:151 Oral Biology (includes physiology of mastication) 2 s.h.
      17:118 Nutrition 3 s.h.
      17:110 Pharmacology Seminar 1 s.h.
      59:152 Nutritional Biochemistry 2 s.h.
      61:301 Research Microbiology 1 s.h.

2. Clinical and Related Courses
   a. Required
      60:400 Literature Review Prosthodontics 4 s.h.
      84:201 Seminar Prosthodontics (complete and removable partial dentures) 2 s.h.
      84:202 Advanced Clinical Prosthodontics 2 s.h.
      84:203 Therapeutics 2 s.h.
      89:401 Seminars Multifaceted Rehabilitation 1 s.h.
      60:402 Clinical Prosthodontics 2 s.h.
      62:301 Practice Teaching Prosthodontics 2 s.h.
      62:302 Research Prosthodontics 2 s.h.
      81:504 Seminar: Crown 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 areas: removable prosthodontics (complete and removable partial dentures); fixed prosthodontics (crowns and bridges); and maxillofacial prosthesis.

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, and 42 credits Advanced Clinical Prosthodontics and 44 Clinical Maxillofacial Prosthodontics, will provide the opportunity to treat prosthodontic 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 entire body, not just the oral cavity and closely related areas.

Maxillofacial prosthetic. The department, in cooperation with the Department of Oral Surgery and Maxillofacial Surgery, also offers a three-year program for specialty training in maxillofacial prosthetics. Individuals interested in the maxillofacial prosthesis should request additional information.

Dental education. Individuals interested in a career in dental education are urged to register for as many of the following courses as their time and schedule will permit.

82.250 Methods of Instruction in Dentistry
82.251 Taste and Measurements in Dental Education
82.252 Educational Psychology for Dental Teachers
82.253 Curriculum Development for Dental Education
82.254 Design and Evaluation of Research in Dental Education
82.255 Ethics in Dental Education
82.256 Organization and Administration of Dental College
82.257 Professional Standards for Dental Education

These courses are sponsored by the College of Dentistry's Division of Educational Resources.

COURSE DESCRIPTIONS

84:8 Prosthodontic Technical Lecture
2 s.h.

Technical procedures in the construction of complete and removable partial dentures. 52 clock hours. Sophomores and Juniors.

84:10 Prosthodontic Technical Laboratory
4 s.h.

Laboratory procedures in the construction of complete and removable partial dentures. 130 clock hours. Sophomores and Juniors.

84:110 Prosthodontics Seminar
5 s.h.

Seminar and clinic experience: mouth examination, diagnosis, progress notes, laboratory design and construction of complete and removable partial dentures. Junior year.

84:112 Clinical Prosthodontics
3 s.h.

Clinical experience in constructing more complicated cases of complete and removable partial dentures. Senior year.

Primarily for Graduates

84:200 Literature Review Prosthodontics* cr. arr.

Assigned reading and preparation of abstracts.

84:201 Technic Methods Prosthodontics* cr. arr.

Assigned practical educational procedures in the construction of complete and removable partial dentures.

84:202 Advanced Clinical

Advisors: Prosthodontics* cr. arr.

Student working under one demonstrator completes assigned cases in sequence of difficulty.
COLLEGE OF DENTISTRY

84:203 Research Prosthodontics*  cr.arr.
84:204 Seminar Prosthodontics*  cr.arr.
84:255 Practice Teaching Prosthodontics*  cr.arr.
Clinical and classroom teaching experience as assigned by advisor.

84:206 Thesis Preparation Prosthodontics*  cr.arr.
Prepared in accordance with the regulations of the Graduate College. A student may be excused from the course taken during any semester with permission of the department head.

OPERATIVE DENTISTRY AND ENDODONTICS

Head of Department, Wallace W. Johnson
Office, DI Dental Building

STAFF

Professor: Arne M. Bjornard, Director, Endodontics; Wallace W. Johnson, Director, Operative Dentistry; Professor Emeritus: James H. Whitaker, Associate Professor: Peretz E. Kilip, Director, Teacher

Assistant Professor: Kie Chu Chen, Mohamed A. Khawamish, Gerald S. Emsley, 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 broad 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 spoken English language.

Unless the preparatory training of the candidate has included sufficient work in mathematics and chemistry, it will be necessary for him to complete these studies through correspondence courses, and quantitative analyses when 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, unmotivated, his respective studies through his own arrangements. Qualified persons may apply for Postdoctoral Fellowships from the National Institutes of Health or the National Science Foundation; however, these fellowships should be received prior to matriculation.

In compliance with the basic regulations of the Graduate College for programs of higher education in dentistry, the following requirements for a degree must be met:

1. The satisfactory completion of a minimum of 48 semester hours of academic credit by the candidate for the degree of Master of Science in Dentistry. This includes the following courses of study:
   a) 12 semester hours in the major field of clinical endodontics and related courses offered by the Department of Operative Dentistry of the College of Dentistry.
   b) 12 semester hours in a major field of biochemistry, physical chemistry, or microbiology.
   c) 10 semester hours in the principal areas of general chemistry, organic chemistry, and inorganic chemistry.

2. The preparation of an acceptable thesis based on original research. Not more than 10 semester hours of research credit and 8 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 research, written and oral, which is of a functional character and is not degree dissertation in substance.

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 arrangements of the graduate program can be quite flexible. The student has considerable freedom to choose courses of advanced study that may be of particular interest to him. Resident courses of study have been arranged in the biological sciences, material sciences, and education.

An applicant for this program must be a graduate of a recognized school of dentistry, and must 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) 20 semester hours of graduate-level courses to be selected from advanced graduate courses in the College of Dentistry. These courses may include seminars, clinical practice, and/or research.
   b) 20 semester hours of graduate-level courses in other areas of study as approved by the student's advisor. These courses should include courses in statistics and education.
   c) 8 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 candidate for the degree by an examination committee. 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
84:1 Endodontic Laboratory 1 cr.

84:109 Endodontics 1 cr.
Basic principles; indications and contraindications of pulpotomy, vital and nonvital techniques. 17 clinical hours.
Senior year.

84:115 Clinical Endodontic Practice 1 cr.
Clinical endodontic practice. Clinical symptoms are evaluated and methods of treatment of each individual case is followed by the student's practical application on simple simulative cases. 30 clinical hours. Prerequisite: 84:109. Junior year.

84:316 Clinical Endodontic Practice 1 cr.
Advanced clinical case management of more difficult cases in colored and non-colored teeth. 6 clinical hours. Prerequisite: 84:315. Senior year.

Primarily for Graduates
84:250 Endodontic Literature Review* 1 cr.
Reviewing all the reading materials. 2 cr.
84:351 Endodontic Technic Methods* cr.arr.
Advanced review of all technical procedures. 2 cr.

224
82:253 Research in Endodontics* cr.arr.
Prerequisite: Education TP:145.
82:254 Seminar in Endodontics* cr.arr.
Conferences and discussions of current literature. Specific assignments reviewed and reported upon by students.
82:255 Practice Teaching in Endodontics* cr.arr.
For students wishing to enter the field of dental education. Assigned teaching obligations by adviser. Prerequisite: Education TP:251.
82:258 Thesis Preparation in Endodontics* cr.arr.
Prepares for publication a narrative article on the research project, replete with graphic illustrations, charts, and photographs.
82:258 Advanced Endodontics* 1 a.h.
Continuation of course 82:106. Advanced review of research and technical procedures.
82:259 Advanced Clinical Endodontics* cr.arr.
Clinical demonstrations and assigned surgical and nonsurgical endodontic cases.
"May be taken during any semester with permission of department head.

Operative Dentistry
82:3 Dental Anatomy 2 a.h.
Lectures and seminars concerning dental nonsclerotic detailed anatomy, eruption patterns, and occlusion of the human primary and permanent dentition. 84 clock hours. Freshman year.
82:3 Dental Anatomy Laboratory 4 a.h.
Detailed study of human tooth morphology and function utilizing a wax replacement method and natural and plaster teeth. 126 clock hours. Freshman year.
82:4 Operative Dentistry 2 a.h.
Lectures and seminars concerning dental nonsclerotic, microporous, and microscopic structure of the teeth and investing tissue, gross and microscopic anatomy. 126 clock hours.
82:7 Dental Technology for Hygienists 1 a.h.
Survey to develop a familiarity with dental materials used in the clinical practice of dentistry. 54 clock hours.
82:107 Operative Dentistry 5 a.h.
Lectures, seminars, and clinical demonstrations correlated with supervised patient treatment for each dental student in the dental clinic. Students perform all forms of operative treatment for coronary patients and gain an understanding of the physiological and esthetic importance of restorative treatment to their patients. 323 clock hours, junior year.
82:110 Dental Therapeutics 1 a.h.
Uses and administration of drugs commonly employed in dental practice. 17 clock hours. Junior year.
82:114 Dental Therapeutics for Dental Hygienists 1 a.h.
Survey of drugs used in dentistry, the pharmacology, and dosage.

COLLEGE OF DENTISTRY
82:114 Advanced Clinical Operative Dentistry 5 a.h.
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 cr.arr.
Assigned reading and preparation of abstracts.
82:301 Operative Dentistry Technical Methods cr.arr.
Advanced review of all technical procedures. Student studies and performs specific technical procedures.
82:202 Clinical Demonstrations in Operative Dentistry cr.arr.
Assigned cases in sequence of difficulty completed under one demonstrator.
82:203 Research in Operative Dentistry cr.arr.
Prerequisite: Education TP:145.
82:204 Seminar in Operative Dentistry cr.arr.
Conferences and discussions of current literature.
82:205 Practice Teaching in Operative Dentistry cr.arr.
For students wishing to enter the field of dental education. Assigned teaching obligations by adviser. Prerequisite: Education TP:251.
82:206 Thesis Preparation in Operative Dentistry cr.arr.
Prepares for publication a narrative article on the assigned research project, replete with graphic illustrations, charts, and photographs.
82:207 Advanced Dental Therapeutics 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.

Teacher Education
82:210 Methods of Instruction in Dentistry cr.arr.
Survey of the literature to integrate the theory of educational methods with the practices of classroom teaching. Present methods explored as they reflect sound educational practices and psychological principles. Innovation in media will be proposed in a systems analysis of dental teaching.
82:221 Tests and Measurements in Dental Education cr.arr.
Inspection of measurement theory as it relates to dental teaching. Such problems as reliability, validity, and difficulty will be applied to the construction of achievement and attitude tests in classroom and clinical dental programs. Statistical interpretation of test scores will be included. Prerequisite: Introductory statistics or consent of instructor.
82:222 Educational Psychology for Dental Teachers cr.arr.
Investigation of the literature to formulate a consistent,defensible theory of how students learn dental knowledge and professional attitudes and habits. Emphasis will be placed on a behavioral approach to managing the learning environment. Prerequisite: 8 hours of psychology or consent of instructor.

225
82:223 Curriculum Development for Dental Education* cr.arr.
Analytic approach to the problem of selecting course content in 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 general writing 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.
Exploration 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 treating professional attitudes and habits to dental students, the effects of the literature on the psychology of attitudinal 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, 226 Dental Building

STAFF
Professor: Richard M. Jacobs.
Associate Professor: Nandead N. Seni, Dennis P. Welikson.
Assistant Professor: Devendra N. Kothbar.

COURSE DESCRIPTIONS
83:101 Oral Biology 2 s.h.
Lecture-lecture/ laboratory course covering recent advances in oral biology; dynamic concepts of tissue mineralization; prevention of oral disease; use of fluoride and hydroxyapatite in dentistry; physiology of masturbation.

83:102 Oral Biology 2 s.h.
Lecture-lecture/laboratory course; craniofacial malformations; speech pathology; genetic counseling; physiology of masturbation; clinical evaluations.

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 maxilla 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 tissues 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, 135D Dental Building
Oral Diagnosis
Acting Head of Division, J. D. Whisnand
Office, 115E Dental Building

STAFF
Assistant Professor: C. Frederic Erbe, R. D. Fleming, Harold B. Hammond.

COURSE DESCRIPTIONS
Admissions
85:107 Ethics and Practice Management I 1 s.h.
Ethical concepts and professional relationships between doctor and patient. 12 lecture hours. Junior year.

85:108 Practice Management II 1 s.h.

Dental Radiology
86:6 Dental Radiology for Dental Hygiene Students 1 s.h.
Lectures and instruction in introral techniques, radiographic hygiene, film processing, and mounting. 16 lecture 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 lecture hours. Second year.
86:206 Dental Radiology cr.arr. 1.5 h.
Fundamental principles of intranasal and external technique in dental radiography, principles of mouth, x-ray film, and radiographic interpretation, 16 clock hours. Summer session.

86:208 Clinical Dental Radiology 1.5 h.
Supervised experience in taking and processing intraoral and extraoral radiographs and their interpretation, correlation of intraoral and extraoral projections. Prerequisite, consent of instructor.

1.0 h.

Primarily for Graduates

86:206 Dental Radiology Literature Review cr.arr.
Assigned readings and preparation of abstracts.

86:207 Seminar: Dental Radiology cr.arr.
Basic concepts of radiation physics, measurement, radiological hygiene and radiation, generating devices. Principles and procedures in technique and interpretation in intraoral and extraoral projections. Prerequisite, consent of instructor.

86:208 Research: Dental Radiology cr.arr.

86:209 Practice Teaching: Dental Radiology cr.arr.
Observations and practice in current teaching procedures.

86:210 Thesis Preparation: Dental Radiology cr.arr.
Thesis to be prepared in conformity with the regulations of the Graduate College.

Oral Diagnosis

86:2 History of Dentistry 1.0 h.
History of dental sciences, education, and dental care in the United States. 36 clock hours . Senior year.

86:104 Oral Diagnosis and Treatment Planning 1.0 h.
Principles used in examining the oral cavity, history and overall condition of the oral cavity and systemic conditions, the use of diagnostic aids, and the translation of diagnostic data into plans of treatment arranged in the correct sequence. 36 clock hours. Junior year.

86:110 Clinical Oral Diagnosis 1.0 h.
Practical application of diagnosis and treatment planning for patients. 36 clock hours. Senior year.

91:130 Law in a Technological Society 1.0 h.
A cultural course designed to provide perspective and understanding of the place of law in modern society. The course will consider theories of law, the court system, procedures, evidence, property, theft, crime, contracts, and constitutional and administrative law with emphasis on the role of the various professions. Junior year, second semester.

Primarily for Graduates

86:200 Dental Diagnosis Literature Review cr.arr.
Assigned reading and preparation of abstracts.

86:201 Seminar: Oral Diagnosis cr.arr.
Principles and procedures in diagnosis of oral diseases and deficiencies. Use of laboratory aids in different diagnoses.

86:202 Seminar: Treatment Planning cr.arr.
Outlining treatment plans for complex problems.

86:203 Research: Oral Diagnosis cr.arr.

86:204 Practice Teaching: Oral Diagnosis cr.arr.
Observation of and practice in current teaching procedures. Prerequisite, Education 17:294 or 17:382.

COLUMBIA COLLEGE OF DENTISTRY

86:305 Thesis Preparation: Oral Diagnosis cr.arr.
Thesis to be prepared in conformity with the regulations of the Graduate College.

May be taken during any semester with permission of departmental head.

ORAL PATHOLOGY

Head of Department, Allen K. Fisher
Office, B1 Dental Building

STAFF
Professor, Allen K. Fisher
Associate Professor, William H. Tyle
Assistant Professors, Harold L. Hammond, Clayton L. Stalla

General Information

The major objectives of the Department of Oral Pathology are basic instruction of dental and other health professional students in diseases affecting oral structures, advanced instruction in this subject 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 in Oral Pathology is designed for students who wish to pursue residency training in oral pathology. A longer and more comprehensive program that includes research training leads 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, is essential to all phases of the dental care, and education. The laboratories are equipped with the latest technics employed in oral pathology, and are open to the College of Medicine, and to members of the Department of Oral Pathology who 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 discuss his opportunity for membership with the departmental executive prior to submission of an application for admission to the Department of Oral Pathology.

Minimum requirements for admission to either program are a full-time average of 2.0 in the last 36 hours of factory work in the Graduate Record Examination, Aptitude Test in the Advanced Test in either biology or chemistry. Final decision on acceptance of any applicant rests with the departmental staff. Certificates in oral pathology. This program prepares students for residency training in oral pathology. The student must complete a minimum of two-four months of full-time work for each semester. A minimum of all required courses with a passing grade, in addition to final examination in the practice of oral pathology, and in a satisfactory grade in a final comprehensive examination before an examination committee composed of members of the students selected from the Department of Pathology and Oral Pathology.

227
Although additional courses may be elected if circumstances permit, the required courses in this program are:

85.201 Pathologic Processes 3 a.h.
87.211 Cytology 3 a.h.
87.212 Cytology 3 a.h.
87.213 Cytology 3 a.h.
87.251 Basic Undergraduate Science 4 a.h.
87.252 General Biochemistry 3 a.h.
87.253 Clinical Biochemistry 3 a.h.
81.586 Diagnostic Microbiology 5 a.h.
20.254 Clinical Pathology 6 a.h.
88.203 Clinical Pathology 8 a.h.
88.202 Clinical Pathology 8 a.h.

Master of Science degree with thesis. Candidates for the Master of Science degree are expected to develop substantial ability to work into the mechanisms of some
specific disease and should anticipate that considerable ef-
fort will be devoted to completion of an assigned re-
search project and the thesis that will be based upon it.
The nature of the research project and some of the criteria
that determine the tools for research as well as for the in-
ferred practice of oral pathology dictate prerequisites in mathemathics, quantitative analysis, and physical chemistry.
When students are admitted to this program with
out these prerequisites, they will be required to com-
plete mathematics through calculus and at least one sem-
ester of physics chemistry not later than eighteen
months after beginning the program. Applicants who have not earned degrees in dentistry, medicine, or
veterinary medicine are required, in addition, to show evidence of equivalent training in the sciences contri-
bute to pathology. Minimum requirements for completion of this program are 36 months of full-time work and 50
semester hours of acceptable graduate credit.

The required courses are:
4111 Analytical Chemistry 3 a.h.
85.201 Pathologic Processes 6 a.h.
87.211 Cytology 3 a.h.
87.212 Cytology 3 a.h.
87.130 Fundamental Genetics 4 a.h.
87.251 Basic Undergraduate Science 4 a.h.
87.252 General Biochemistry 4 a.h.
87.253 Experimental Biochemistry 4 a.h.
87.254 Clinical Biochemistry 3 a.h.
81.586 Diagnostic Microbiology 5 a.h.
20.254 Clinical Pathology 6 a.h.
88.202 Clinical Pathology 8 a.h.
88.203 Clinical Pathology 8 a.h.

Research in Oral Pathology cr.arr.

Those who hold dental, medical, or veterinary degrees may elect also to qualify for the certificate in oral path-
ology, the degree of the additional requirements described under the certificate program but not listed as part of the degree program.

Determination of the qualifications of candidates for the degree of Master of Science with thesis is based
on the degree of the certificate in oral pathology will be determined by formal
examination of the project. In accordance with the
rules of the Graduate College, the examination commit-
nite will be composed of six members of the graduate faculty from the Departments of Pathology and Oral Pathology and an additional member of the graduate faculty
representing dentistry other than pathology that provided the candidate's last academic research contribution.
The examination will review the candidate's knowledge of basic research processes and use of
thesis. It will also cover the practice of oral pathology if the candidate's thesis is to be considered for the certificate
in oral pathology.

**ORAL SURGERY**

Head of Department, M. E. L. Hale

**STAFF**

Professor: M. E. L. Hale.
Associate Professor: John C. Montgomery.
Assistant Professor: Leslie H. Bla, James W. Thisthew, 
Instructor: Larry A. McCray.

For graduate oral surgery, see Oral Surgery, College of Medicine.

**COURSE DESCRIPTIONS**

87:102 Anesthesia 1 a.h.

87:104 Oral Surgery I 1 a.h.

87:105 Oral Surgery II 1 a.h.

87:107 Oral Surgery III 1 a.h.

87:108 Oral Surgery IV 1 a.h.

87:109 Clinical Oral Surgery 1 a.h.

87:111 Dental Practice in the Principles of Oral Surgery in the surgery clinic at the College of Den-

87:112 Pathology 69:11. 1st clock hours. Sopho-

87:103 Clinical Pathology 2 a.h.

87:201 Pathologic Processes* 3 a.h.

87:204 Research in Oral Pathology* cr.arr.

*May be taken during any semester with permission of department head.
ORTHODONTICS
Head of Department, George F. Andreasen
Office, 308 Dental Building

STAFF
Professor: Richard M. Jacobs, W. M. Clin.
Associate Professor: George Andreasen, Charles R.
Krasaick.
Assistant Professor: Samir Ittahara, Robert Salach.
Assistant Clinical Professor: William DeKook, Bruce
Thornburn.

COURSE DESCRIPTIONS
09:101 Orthodontic Technic 1 a.h.
Basic technical procedures used in clinical orthodontics
explained and performed in the laboratory, 25 clock hours.
Sophomore year.

09:103 Dental and Facial Growth 2 a.h.
Growth changes in the face and jaws and their relation-
ship to general body growth, effects of specific growth
alterations on the dentition. 25 clock hours. Sophomore
year.

09:104 Principles of Orthodontics 1 or 2 a.h.
Biological and mechanical principles involved in classifi-
cation, diagnosis, and etiology of dentofacial anomalies.
25 clock hours. Sophomore year.

09:105 Preventive Orthodontics 1 a.h.
Interceptive orthodontics with emphasis on guidelines to
normal occlusion, recognition of malocclusions, design
and manipulation of minimal treatment appliances. 25
clock hours. Senior year.

Primarily for Graduates

09:200 Bone Biology 2 a.h.
Reaction of tissues and bone to various types of ortho-
donetic forces. 25 clock hours.

09:201 Orthodontic Theory and Diagnosis 2 a.h.
Recent concepts and techniques are discussed. Topics
stress inclined guidelines to normal occlusion, endodonti-
cal factors influencing malocclusion, cephalometrics, and
diagnostic aids.

09:202 Diagnosis and Treatment Planning 2 a.h.
Prerequisites, 08:201, Philosophy of treatment with spe-
cial reference to multidisciplinary techniques.

09:203 Advanced Orthodontic Technic 2 a.h.
Laboratory course dealing with multidisciplinary ap-
proaches applied to advanced orthodontics.

09:204 Biomechanics 1 or 2 a.h.
Fundamental principles of mechanics relevant to clinical
orthodontics.

09:205 Facial Growth 1 or 2 a.h.
Development of the face, including growth of bone and
muscles tissues, from the embryonic period to maturity.

09:206 Facial and Dental Growth 2 a.h.
Continuation of 09:205 with emphasis on the clinical ab-
normalities of dentofacial growth and development to diagnosi-
tic, treatment, and prognosis.

09:207 Case Analysis 2 a.h.
Seminar dealing with the analysis of mixed dentition
cases, including discussion of the rationale and underlying
principles of etiologic extraction procedures utilized in North
America and Europe.

09:209 Orthodontic Practicum cr.arr.

09:210 Orthodontic Seminar cr.arr.
Review of current literature.

COLLEGE OF DENTISTRY

ORTHODONTICS  cr.arr.

09:211 Problems: Orthodontics  cr.arr.
Prerequisites, consent of instructor. Required of all stu-
dents who are working toward a degree.

09:212 Research: Orthodontics  cr.arr.
Prerequisites, Research 79:145 and consent of instructor.
Required of all students who are working toward an ad-
vanced degree.

09:214 Research Methodology cr.arr.
Scientific method, with particular reference to the col-
lection, analysis, and publication of dental research.

09:215 Journal Club  cr.arr.
Interpretative reporting of articles selected from the ortho-
donics and related literature.

09:216 Practice Management  cr.arr.
Principles of practice management covering office business
methods.

PEDIODONTICS
Head of Department, Frederick M. Parkins
Office, 318 Dental Building

STAFF
Associate Professor: Frederick M. Parkins
Assistant Professor: Clements A. Pull, Ronald Johnson,
Stephen Hon Yiu Wei.
Instructor: Jerry D. Walker.

COURSE DESCRIPTIONS
09:101 Pediatric Dentistry and
Treatment 2 a.h.
Concepts of growth and development, behavior manage-
ment, and preventive-restorative techniques for the pedi-
donetic patient. 25 clock hours. Sophomore year.

09:104 Clinical Pediatrics 2 a.h.
Comprehensive clinical management of the pediatric pa-

tient. 25 clock hours. Junior year.

Primarily for Graduates

09:200 Pediatric Literature Review I cr.arr.
Discussion of growth and development, behavior manage-
ment, preventive-restorative techniques, and diseases of
the pediatric patient.

09:201 Pediatric Literature Review II cr.arr.
Discussion of preventive orthodontics, fluoride therapy,
health and nutrition guidelines, anesthetic pharmacology,
and minor oral surgery as related to the pediatric patient.

09:203 Pediatric Literature Review III cr.arr.
Discussion of behavior management, preventive-restora-
tive techniques, and multidisciplinary care for the handicapped
child.

09:203 Pediatric Literature Review IV cr.arr.
Discussion of community responsibilities and practice
management, hospital affiliations, and advanced pharma-
cotherapy for the pediatrician.

09:204 Advanced Clinical Pediatrics cr.arr.
Comprehensive clinical management of the pediatric pa-

tient in the areas of preventive orthodontics, operative
therapy, endodontic, and minor oral surgery.

09:205 Research Pediatrics cr.arr.

09:206 Practice Teaching Pedodontics cr.arr.
Observations and practice in current Dental procedures.

09:207 Thesis Preparation cr.arr.
Preparation of an original research report and completion of
a thesis.

229
Primary aids for Graduates

92:201 Periodontology cr.arr.
92:202 Seminar: Periodontology cr.arr.
92:203 Periodontology cr.arr.
92:204 Research: Periodontology cr.arr.
92:205 Methods of Instruction in Periodontics cr.arr.
92:206 Periodontology Literature Reviews cr.arr.
92:207 Practice Teaching in Periodontics cr.arr.
92:208 Recent Advances in Periodontics cr.arr.
92:209 Techniques in Dental Research cr.arr.
92:210 Periodontology Pathology Seminar cr.arr.

PREVENTIVE AND COMMUNITY DENTISTRY
Head of Department, W. Philip Phair
Office, 109 Dental Building

Course Description

111:302 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, focusing on environmental and ecological problems; presentation of the major current dental diseases and preventive measures; and an analysis of factors which influence dental health and their potential application to a critical appraisal of the scientific literature, and a study of dental health care delivery systems, manpower and financial resources, methods of payment for dental care, dental epidemiological methods and findings, and community action programs for the prevention and control of dental diseases and the promotion of dental health.
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 area. 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 105 members with academic rank hold earned doctorates in their teaching fields, and 85 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 practical 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 1955. 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 superintendents 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 Child’s Rehabilitation section and the Pine School section. The College of Education, in cooperation with the University Hospital School, studies and develops curricular programs 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. Opportunities for student teaching and supervised clinical practice is available.

Basic 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 practice in school psychological services.

The Reading Clinic makes possible investigation into the fundamental causes of reading deficiencies and experimentation with methods of overcoming these deficiencies. It provides opportunities for observation and practice in the diagnosis and teaching of severely retarded readers.

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 an acquisition and collection of approximately 10,000 volumes. It is staffed by two professional librarians, one assistant, and 4,000 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 Iowan 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 81,000 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 research in the many areas of the above-mentioned fields, four full-time assistants, and 6,500 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 200, Jepson Hall, or from the College of Education Office, Room 200, Jefferson Building. The completed application should be returned to the Admissions Office in Jepson 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 admission. The status of all elementary education majors will be reviewed as 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 16 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 2.5 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;
College of Education

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 209 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 advisors 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. Courses 20:1 Introduction to American Politics or 36:100 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 the area.

(a) Required courses: (Sophomore or Junior year)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE:100</td>
<td>Introduction: Elementary Teaching</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>TP:75</td>
<td>Educational Psychology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>b) Selected requirements (Junior year) (Minimum of 3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV:110</td>
<td>Selection and Utilization of Educational Media</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>TE:120</td>
<td>Methods and Materials: Music for the Classroom Teacher</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>TE:121</td>
<td>Elementary School Physical Education</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>TE:122</td>
<td>Methods and Materials: Art for the Classroom Teacher</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>TV:123</td>
<td>Children's Literature</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

234
COLLEGE OF EDUCATION

E. Additional required courses for early child-
hood emphasis: (Junior year)

7E: 157 Methods: Early Childhood
Education I 3 s.h.

7E: 158 Observation and Participation
in Pre-Primary Education 4 s.h.

2. Professional semester. (16-18 s.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 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:

7E: 160 Methods: Elementary School
Language Arts 2 s.h.

7E: 161 Methods: Elementary School
Social Studies 2 s.h.

7E: 162 Methods: Elementary School
Science 2 s.h.

7E: 163 Methods: Elementary School
Mathematics 2 s.h.

7E: 164 Methods: Elementary School
Reading 2 s.h.

7E: 167 Methods: Early Childhood
Education II 2 s.h.

7E: 181 Laboratory Practice in the
Elementary School 8 s.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 Division 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 dual program quali-
2 fies the student for an additional certification as either
an elementary or secondary teacher and also in
an area of special education.

The major in teaching the mentally retarded or
physically handicapped. The major in special
education emphasizing teaching the mentally re-
tarded or physically handicapped requires 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
elementary 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 the other semester for student teaching in the
other area of certification. Students majoring in
the education of physically handicapped will
take the professional semester in that during the
spring semester. Formal admission and senior
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 s.h.
TU: 135 Mental Retardation 3 s.h.
TP: 102 The Learner 3 s.h.
or
TP: 148 Social Development of the
School-Age Child 2 or 3 s.h.

235
3.15 Introduction to Speech and Hearing Processes and Disorders (31:107) 3 a.h.

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 and a laboratory practical 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: 130 Teaching the Trainable Mentally Retarded 3 a.h.
TU: 137 Education of Gifted Children 2 a.h.
TU: 140 Vocational Resources for the Mentally Retarded 3 a.h.
TP: 117 Philosophy of Education 2 or 3 a.h.

TP: 133 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.

31:11 Child Development (TP: 106 and S: 100) 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:

31:17 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 adviser.

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: 148 Social Development of the School-Age Child 3 or 5 a.h.

TE: 100 Methods: Elementary School Language Arts 2 a.h.
TE: 104 Methods: Elementary School Reading 3 or 5 a.h.

TV: 110 Selection and Utilization of Educational Media 2 a.h.

TU: 100 Introduction: Secondary School Teaching 3 a.h.

7C: 101 Principles of Guidance 3 or 5 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 (31:137) 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 3 or 5 a.h.

3.15 Introduction to Speech and Hearing Processes and Disorders (31:107) 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 practive 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: 138 Methods in Education of the Physically Handicapped 3 s.h.
TU: 148 Cases and Problem in Teaching the Physically Handicapped 2 s.h.
TU: 191 Laboratory Practice in Education of the Physically Handicapped Child cr.arr. (3 to 8 s.h.)

Additional electives

Recommended electives for this program are:

34:1 Introduction to Sociology: Principles
4 s.h.
TP: 117 Philosophies of Education 2 or 3 s.h.
TP: 136 John Dewey and Education 2 or 3 s.h.
TP: 151 Psychology of Reading 3 or 4 s.h.
TU: 135 Mental Retardation 3 s.h.
31:13 Psychology of Adjustment 3 s.h.
31:15 Introduction to Social Psychology 3 s.h.
31:11 Child Development (TP: 106 and 5:100) 3 s.h.

The major in teaching the deaf. In addition to general liberal arts requirements, the major in special education emphasizing teaching the deaf requires a minimum concentration of 10 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:
TU: 130 Exceptional Children (31:117) 3 s.h.
TP: 75 Educational Psychology and Measurement (31:17) 3 s.h.
TP: 102 The Learner 3 s.h.
or
TP: 148 Socialization of the School-Age Child 3 s.h.
TE: 160 Methods: Elementary School Language Arts 2 s.h.
TE: 163 Methods: Elementary School Mathematics 2 s.h.
3:15 Introduction to Speech and Hearing Processes and Disorders (31:167) 3 s.h.
5:20 Phonetics of American English 3 s.h.
5:110 Anatomy of Speech and Hearing Mechanisms 3 s.h.

B. Professional courses to be completed at I.S.D.:
TU: 151 Language for the Deaf I 3 s.h.
TU: 152 Language for the Deaf II 3 s.h.
TU: 153 Speech Training for the Deaf I 2 s.h.
TU: 154 Speech Training for the Deaf II 2 s.h.
TU: 155 Education and Guidance of the Deaf 2 s.h.
TU: 156 Observation and Student Teaching for the Deaf I 3 s.h.
TU: 157 Teaching Elementary Subjects to the Deaf I 2 s.h.
TU: 158 Teaching Elementary Subjects to the Deaf II 2 s.h.
TU: 159 Speech Reading for the Deaf 2 s.h.
TU: 169 Auditory Training for the Deaf 2 s.h.
TU: 181 Anatomy of the Speech and Hearing Mechanisms 2 s.h.
TU: 162 Observation and Student Teaching for the Deaf II cr.arr.

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 as degree candidates.

COLLEGE OF EDUCATION

3:112 Fundamentals of Speech Science 3 s.h.
Prerequisites, 3:20 and 3:110
3:113 Introduction to Hearing Science 3 s.h.
105:100 General Linguistics 3 s.h.
3:114 Children's Language Development 3 s.h.
Prerequisites, 103:100
3:185 Hearing Loss and Audiology 4 s.h.
Prerequisites, 3:15 and 3:113
3:242 Conservation of Hearing 3 s.h.
Prerequisite, 3:185
3:244 Aural Rehabilitation 3 s.h.
Prerequisite, 3:185
3:319 Practicum: Aural Rehabilitation cr.arr.
Prerequisites, 3:344
3:311 Practicum: Hearing Measurement cr.arr.
Prerequisite, 3:185

227
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 8 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 8 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 sciences, 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 the 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—TES 100 Introduction to Secondary Teaching, 3 semester hours (first semester); TES 75 Educational Psychology and Measurement, 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 TES 75 and TES 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 fields. Students who do not declare a minor will be expected to select a 3-semester-hour course in some other area of professional education such as audiovisual 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 7B:181 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 five 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.ED.S.) 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 38 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 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 must have completed an organized research project or other evidence of their ability to carry on independent investigation.

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 a content area which is not 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 educat-
tion requirements, 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 60 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. degrees 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 Hendershot, Acting Director.

EXPENSES

See Admissions-Registration-Fees and Housing sections of the Catalog.

ADMINISTRATIVE STAFF

Dean: Howard R. Jones
Dean Emeritus: Emerson T. Peterson
Associate Dean: Lauren A. Van Dyke
Associate Dean Emeritus: Henry L. DoKrack
Assistant Dean: Stuart G. Gray, Ray A. Martin, Owen L. Spring

University Schools: Director, Wesley A. Erbe; Principal, High School: Kent R. Winser; Principal, Elementary School, Rotary-Keystone: Dean J. Petty

University Hospital School: Principal, Sigurd B. Walden.

Iowa Testing Program: Director, William K. Oeffner

Iowa Center for Research in School Administration: Director, Paul W. Weatherly, Associate Director, William G. Minahan, Robert Stephens

Iowa Educational Information Center: Director, Walter J. Foley

Educational Placement Office: Acting Director, Judith D. Henderhot

Education-Psychology Librarian: Librarian, Anne G. Evans

Curriculum Laboratory: Librarian, Grace M. Wynn

CHAIRMAN OF DIVISIONS

Division of Social Foundations of Health Education, Higher Education, and Educational Media: Robert E. Delpkin
Division of Educational Administration: William E. Lane
Division of Elementary Education: Jerry N. Kohn
## COLLEGE OF EDUCATION

**TC:336 Workshop: College Union**
- **Program:** 2 s.h.
- Description: Designed to introduce students to the role of the union in higher education, the unionized college student, and the social life of the campus.

**TC:341 Introduction to Rehabilitation Services**
- **Program:** 2 s.h.
- Description: Historical and legal background of rehabilitation; roles of rehabilitation workers and nature of rehabilitation resources. Same as Psychology 31:255.

**TC:342 Rehabilitation Counseling**
- **Program:** 2 s.h.
- Description: Counseling process in rehabilitation setting. Approaches and counseling procedures. Same as Psychology 31:255.

**TC:347 Medical Aspects of Disability**
- **Program:** 4 s.h.
- Description: Orientation to medical evaluation as part of the rehabilitation process. Body systems, medical terminology, and medical description of disabilities of importance in counseling. Integration of medical information with the social, psychological, and vocational aspects of disabling conditions.

**TC:348 Medical Aspects of Disability**
- **Program:** 4 s.h.
- Description: Continuation of TC:347.

**TC:351 Vocational-Educational Counseling**
- **Program:** 3 s.h.
- Description: A survey of theories and techniques of counseling clients with vocational and educational problems.

**TC:354 Apprenticeship in Counseling**
- **Program:** 3 s.h.
- Description: Critical survey of research on aptitude, interest, and personal characteristics of successful counseling and personal selection. Laboratory practicum in test administration, scoring, interpretation, and counseling.

**TC:355 Vocational Psychology**
- **Program:** 3 s.h.
- Description: Comprehensive review of theory and research on vocational growth and development. Two units: vocational choices and vocational adjustment.

**TC:355 Individual Instruction in Counselor Education**
- **Program:** 3 s.h.
- Description: Preparation of counselors. Consent of instructor.

**TC:360 Counseling: Theories, Issues, and Process**
- **Program:** 2 or 3 s.h.
- Description: Current theoretical concepts; both process and issues of counseling. Evaluation of research in the field. Consent of instructor.

**TC:360 Advanced Practicum in School Counseling**
- **Program:** 2 or 3 s.h.
- Description: Supervised practice in counseling; intensive analysis of counselor roles and methods. For advanced graduate students in school counseling. Consent of instructor.

**TC:332 Seminar: The College Student**
- **Program:** 2 or 3 s.h.
- Description: Characteristics of college students and their implications for goals of higher-education, the impact of college on student characteristics, and influences which seem especially potent.

**TC:332 Seminar: Student Personnel**
- **Program:** 2 or 3 s.h.
- Description: Intensive study and seminar presentation of current issues, problems, and strategies in student personnel administration at higher education. May be repeated. Consent of instructor.

**TC:333 Practicum in Personal Services**
- **Program:** 2 s.h.
- Description: Supervised practice in college student personal services. Consent of instructor. May be repeated.

**TC:335 Administration of College Student**
- **Program:** 2 s.h.
- Description: Organization, theory, and practice of administration of college student personal services. Consent of instructor. May be repeated.

**TC:336 Seminar: Psychological Aspects of Disability**
- **Program:** 1 s.h.
- Description: May be repeated. Same as Psychology 31:255.

**TC:351 Supervised Practice in Rehabilitation Procedures**
- **Program:** 2 s.h.
- Description: May be repeated. Same as Psychology 31:255.

**TC:356 Supervised Counseling**
- **Program:** 3 s.h.
- Description: Supervision of students enrolled in a counseling practicum. Consent of instructor.

**TC:357 M.A. Thesis in Counselor Education**
- **Program:** 3 s.h.
- Description: Practicum in Vocational-Educational Counseling.

**TC:358 Seminar in Counseling**
- **Program:** 2 or 3 s.h.
- Description: Supervised practice in counseling; intensive analysis of counselor roles and methods. For advanced graduate students in college counseling. Consent of instructor.

**TC:362 Practicum in Personal-Adjustment Counseling**
- **Program:** 2 s.h.
- Description: Practicum in counseling clients with vocational and personal problems and supervised experience in the University Counseling Service. Consent of instructor. May be repeated.

**TC:363 Practicum in Personal-Adjustment Counseling**
- **Program:** 2 s.h.
- Description: Practicum in counseling clients with personal and interpersonal problems and supervised experience in the University Counseling Service. Consent of instructor.
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.
Theory supplemented by practical unit accounting techniques, budgetary procedures, and consideration of debt retirement problems. Prerequisite: consent of instructor.

TD:297 Theory in Administration 3 s.h.
The administrative process. Leadership and organizational behavior in developing theoretical constructs in the description, analysis, and methodology of administrative behavior.

TD:299 Legal Aspects of Educational Administration 3 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.

TD:304 Seminar: Elementary Supervision and Administration 2 or 3 s.h.
For experienced supervisors and administrators. Indepth study of the issues of major significance to elementary school organizational and instructional practice. Evaluation of prior research and the consideration of research proposals. Prerequisites: TD:281 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 governments and general government: status and trends in meeting the intergovernmental relations; predetermining forces in the federal system; challenges; and opportunities; political character; model building. Same as Political Science 30:232.

TD:350 Seminar: Computer Applications in Elementary Education c.arr.
Research and practice in the application of the computer to educational administration, instruction, and research. Prerequisites: TD:281 and TD:304.

TD:360 Seminar: School Business Management Administration 1 to 3 s.h.
Problems of school business management are explored with special reference to school personnel and public relations. Students should be able to conduct self-studies in the local school districts 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 working toward the doctorate. Developing the dissertation topic and prospectus. Defining the problem, methods of data gathering, design, language, form.

TD:371 Research Practicum c.arr.
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 potential faculty 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 infor-
COURSE OF EDUCATION

mission and convey the collection, organization, formatting, and retrieval of information; development of criteria for evaluation and program administration.

TD-377 Seminar: Educational Administration 3 s.h.
Students select work of particular theorists or theoretical systems and develop papers for presentation and discussion. Prerequisites: TD-301, TD-301, Ph.D. candidacy, and consent of instructor.

TD-320 Seminar: Value Problems in the Administra-
tion of American Education 3 s.h.
Analysis of the philosophical and sociological ideas which underlie the American system for the administration of public education. Investigation of various ideas as to the place of both conformity and dissent in a democratic so-
ciety and democratic educational process. Continuous atten-
tance will be used to provide the focus for the examina-
tion of these ideas. Same as TE-303.

TD-384 Summer Seminar for School Administrators 0 to 4 s.h.

TD-390 Seminar: Recent Developments in School Administration 2 or 3 s.h.
Student investigates some phase of school administration and submits reports to group criticism. Prerequisites: former course 7.185 or TD-300 and consent of instructor.

TD-391 Seminar: Case Studies in School Administration 2 or 3 s.h.
Administrative problems and issues experienced in actual school situations. Construction and/or discussion of case using theoretical models and theory. Open to people who have studied one other course in administration or who have had some administrative experience. Prerequisites: former course 7.185 or TD-300 and consent of instructor.

TD-392 Field Service Project in Educational Administration 2 or 3 s.h.
Prerequisites, consent of instructor. 

TD-393 M.A. Thesis in Educational Administration 2 or 3 s.h.
Prerequisites, consent of instructor.

TD-403 Ph.D. Thesis in Educational Administration 2 or 3 s.h.
Prerequisites, consent of instructor.

Elementary Education

TE-100 Introduction: Elementary Teaching 2 s.h.
Mental requirements for elementary grades. Opportunities, requirements, and responsibilities in teaching. Open to non-majors.

TE-102 Nutrition Work with Children 3 s.h.
Same as Home Economics 17.188. Prerequisites, 17.188 or consent of instructor.

TE-103 Geography in the School 3 s.h.
Same as Geography 44.136.

TE-104 Remedial Methods in Speech and Hearing 3 s.h.
Emphasis on elementary grades. Usually taken in com-
junction with TE-150, which provides approximately 10 less hours of supervised teaching practice in elementary schools. Prerequisites, Speech Pathology and Audiology 2100.

TE-120 Methods and Materials: Music for the Classroom Teacher 3 s.h.
Basic singing, part singing, music reading, rhythm activities, other instruments, solo, section, conducting, etc.

TE-121 Elementary School Physical Education 2 or 3 s.h.
Materials, methods, curriculum planning, and improve-

TE-122 Methods and Materials: Art for the Classroom Teacher 3 s.h.
Combination lecture and studio. Same as Art 13.105.

TE-123 Children's Literature 3 s.h.
Critical review of literature intended for children. Dis-
cussion of children's interests, capabilities, and reading preferences. History and critical study of books for children. Illustation of these books and recent trends in the use of literature. Same as Library Science 22.122.

TE-133 Principles of Outdoor Education 2 or 3 s.h.
Developments in outdoor education. Principles of out-
door activities and outdoor education programs and methods. Same as Physical Education 27.132 and 28.132.

TE-138 Practicum: Environmental Education 2 or 3 s.h.
Same as Physical Education 28.138 and Recreation Educa-
tion 29.148.

TE-141 Methods and Materials: Elementary School Physical Education 2 or 3 s.h.
For physical education majors only. Same as Physical Education for Men 27.50 and Physical Education for Women 28.75.

TE-142 Methods and Materials: Elementary School Physical Education 2 or 3 s.h.
Same as Physical Education for Men 27.50 and Physical Education for Women 28.75. For physical education majors only. Prerequisite, TE-141 or consent of instructor.

TE-143 Methods: Elementary School Art 3 s.h.
For art majors only.

TE-145 Methods and Materials: Elementary School Mathematics 3 s.h.
Both high school and elementary school methods are re-
quired for a certificate. For music education majors only. TE-132 Workshop in Economic Education 3 s.h.

TE-157 Methods: Early Childhood Education 1 3 s.h.
Acquaintance with current educational ideas in all curricular areas. Emphasis on application of educational theory and instructional materials in preparation for teaching. Open only to junior elementary education majors; seniors and graduate students with consent of the instructor.

TE-158 Observation and Participation in Preschool Education 3 s.h.
Supervised observation and participation in pre-
primary classrooms. Open only to junior elementary education majors; seniors and graduate students with consent of the instructor. To be taken concurrently with TE-137.

TE-160 Methods: Elementary School Language Arts 3 s.h.
Methods for kindergarten and grades 1 through 6 of de-
veloping skills of effective oral and written communica-
tion: Reading, handwriting, spelling, grammar, usage, punctuation, vocabulary, creative and functional writing.
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 process of learning. Techniques through observation in University Elementary School.

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. Specific emphasis in application of educational theory and its 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 disability. Free teaching hours and staff meet 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. Consent of instructor.

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; communicative factors affecting child development; relationship of instructional techniques to learning objectives. Applicable to the methods requirements for either the elementary or secondary teachers seeking supervisory or administrative certification.

TE:182 Music Workshop for Classroom Teachers and Elementary Music
2 s.h.
Music workshop for classroom teachers and elementary music teachers. 6 or 3 s.h.

TE:183 Supervision of Science in the Elementary School 2 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:194 Practicum in School Libraries
2 s.h.
Same as TE:184 and Library Science 21155.

TE:185 Elementary Art Workshop
2 s.h.
Curriculum content for elementary school art. Emphasis on recent procedures, new methods, and materials.

TE:186 Curriculum Foundations
2 or 3 s.h.
Elementary and secondary background developments in curriculum, definitions, functional perspective, philosophy, theories of knowledge, models, learning theories, directions of development, and shaping forces. Same as TE:186.

TE:191 Laboratory Practice in Elementary School
Science 2 s.h.
Supervised teaching and observation in elementary school classrooms. Prerequisite, consent of instructor.

TE:192 Laboratory Practice in Elementary School
Science 2 s.h.
Supervised teaching and observation in selected areas of elementary curriculum. 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 teaching. Prerequisites, TE:128.

TE:241 Physical Education for Elementary School
2 or 3 s.h.
Same as Physical Education for Men 21207.

TE:242 Seminar: Improvement of Instruction in Physical Education
2 s.h.
Same as Physical Education for Women 21209.

TE:243 Supervision of Art Education
3 s.h.
Organization of the supervision program in elementary school and high school, techniques in planning, evaluation, and criticism. Prerequisites, TE:143 and TE:84.

TE:245 General Music in the Elementary School
2 s.h.
Same as Music in the Elementary School.

TE:246 Problems of Science Instruction
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 practiced. For graduate students interested in evaluation training in 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
2 s.h.
Preparation of special laboratory materials for instruction in the new elementary, junior high, and high school science courses. Some attention to the development of materials for a special interest. Students will work individually or in small groups in the mechanics of writing, making, and constructing materials. Same as TE:251.

TE:269 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 lan-
TE 261 Supervision of Elementary School

Social Studies 2 or 3 h.
Curriculum content used as the basis for the development of modern classroom procedures; the cooperative problem assignment; provision for individual differences; functional development of skills; observation in University Elementary School.

TE 263 Advanced Techniques of Teaching

Science in the Elementary School 3 h.
Theories of teaching science at the elementary school level. Emphasis upon processes which enable implementation of the aims of modern philosophy, characterizing elementary science education. Primarily for experienced elementary school teachers. Credit only toward undergraduate degree; graduate students in science education may also find consideration of these concepts of value.

TE 263 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 264 Supervision of Primary Grade

Reading 2 or 3 h.
For superintendents, supervisors, and teachers. Pertinent research, specific teaching materials, current use of materials, organization for instruction, and use of reading in other curricular areas.

TE 265 Supervision of Intermediate

Grades Reading 3 h.
For teachers, principals, and supervisors. Reading with comprehension, provision for individual differences, reading research, the extension of skills taught in the primary grades.

TE 267 Improvement of Instruction in Primary Education

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 268 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, discussion, and guided observation.

TE 280 Observation and Conference in Supervision

2 or 3 h.
Teachers and supervisors study observation procedures in the University Elementary School. Requires two hours of observation per week (between 8 a.m. and 11:30) for each hour of credit; a continuous hour in the afternoon, readings contributed to the solution of problems raised in observation and conferences. Prerequisite, consent of instructor.

TE 293 Individual Instruction in Elementary Education

Education 2 or 3 h.
Prerequisite, consent of instructor.

TE 300 Elementary Curriculum

2 or 3 h.
Major issues; modern selection, sequential arrangement, and organization of content; relations of time to content; methods of content presentation; utilization of instructional equipment; traditional procedures; staff participation in curriculum development. Basic requirement in supervision and administration programs.

TE 301 Seminar: Theory Underlying Early Childhood Education

2 or 3 h.
History and trends of kindergarten education, curricular problems, instructional materials, and appropriate curriculum for the kindergarten child from related fields such as educational psychology and child psychology. Recent research pertinent to the development of a kindergarten program. Readings and class discussions coordinated with observations in the University Elementary School.

TE 302 Science Curricula in the Elementary School

2 h.
Analysis of major science series and curricular materials. Rational, historical, and practical studies of evaluative studies for each program will be considered. Sample programs will be experimented with by the students and use in the classroom with peers. For graduate students interested in supervision, administration, or college teaching.

TE 303 Seminar: Elementary Education

2 or 3 h.
Consideration of major problems, research findings, and current developments in elementary school instructional programs. Prerequisite, consent of instructor.

TE 304 Seminar: Elementary Education

2 h.
Continuation of TE 303; but may be taken independently with consent of instructor.

TE 305 Seminar: Teaching Children's Literature

2 h.
Development of curriculum content for children's literature. Construction of course in literature will be required. Emphasis on the development of adequate background for teaching and supervised experience will be arranged. Prerequisite, consent of instructor.

TE 306 Seminar: Elementary School Language Arts 3 h.
For advanced students in elementary education who have taken the systematic course (e.g., TE 261). Opportunity to do further intensive study on specific topics. Prerequisite, consent of instructor.

TE 307 Seminar: Current Research and Concerns in Science Education

2 h.
Trends and modern research. Advanced investigation in which research, readings, and seminars will be read, analyzed, and discussed. Emphasis on learning theory. Primarily for advanced graduate students.

TE 308 Seminar: Elementary School Mathematics

2 h.
Intensive study and seminar discussion of curricular and instructional questions in elementary school mathematics instruction. e.g., developing an understanding of the multiplication operation by various product combinations or repeated addition situations; geometric region or set representations to receive major emphasis in developing basic notions of rational number; content of elementary school mathematics to play a major or minor role in instruction.

TE 309 Seminar: Elementary Reading

2 h.
For advanced students in elementary education who have taken the systematic course (e.g., TE 264 or TE 265). Opportunity to do further intensive study on specific topics. Prerequisite, consent of instructor.

TE 310 Reading Clinic: Supervision

Education 2 or 3 h.
Prerequisite, consent of instructor.

TE 311 Supervision of Science

2 h.
Practicum and supervised techniques; problems in selecting and presenting material, interpreting the position of a science supervisor. Special work with the articulation of a K-12 program and situa-
COLLEGE OF EDUCATION

TP.110 Education for International Understanding 3 or 5 s.h.

Political, cultural, and economic problems that impinge on individual lives and influence educational policies present new and challenging questions. The study of history and of the role of education in the United States is essential for a better understanding of the world today.

TP.170 Philosophy of Education 2 or 5 s.h.

Examination of the role of education in the United States, as well as the role of the United States in the world. The study of educational policy and the role of education in the United States, as well as the role of the United States in the world.

TP.205 British Education 3 or 5 s.h.

The British educational system is examined in terms of history, social, and economic factors. The role of the school in the life of the community is also considered.

TP.270 Sociology of Education 3 or 5 s.h.

The role of education in the life of the community is considered. The school as a social institution and its impact on society is examined.

TP.293 Individual Instruction in Social Foundations and Comparative Education 3 or 5 s.h.

The student is given individual instruction in social foundations and comparative education.

TP.295 Art Education 3 or 5 s.h.

The role of art in education is examined. The student is given individual instruction in art education.

TP.305 British Education 3 or 5 s.h.

The British educational system is examined in terms of history, social, and economic factors. The role of the school in the life of the community is also considered.

TP.355 American Higher Education 3 or 5 s.h.

The American educational system is examined in terms of history, social, and economic factors. The role of the school in the life of the community is also considered.

TP.401 Seminars: Problems of Higher Education 3 or 5 s.h.

The student is given individual instruction in higher education. The role of the school in the life of the community is also considered.
Higher Education

TH:211 The Community College 2 or 3 s.h.
Survey of problems in organization, administration, and curricula.

TH:215 Iowa Community College
Workshop 0 or 1 s.h.

TH:293 Individual Instruction in Higher Education 2 or 3 s.h.
Prerequisite, consent of instructor.

TH:301 Seminar: Higher Education 2 or 3 s.h.
Analysis of special problems; preparation and presentation of one major research project.

TH:305 Seminar: Recent Research in Higher Education 2 or 3 s.h.
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 s.h.
Prerequisite, consent of instructor.

TH:317 Administrative Decision-Making in Higher Education 2 or 3 s.h.
Administrative problems in higher education using simulated materials.

TH:321 Seminar: Administration in Higher Education 2 or 3 s.h.
Prerequisite, consent of instructor.

TH:323 Practicum in Higher Education 0 to 6 s.h.
Prerequisite, consent of instructor.

TH:335 M.A. Thesis in Higher Education 2 or 3 s.h.
Prerequisite, consent of instructor.

Prerequisite, consent of instructor.

Higher Education 3 s.h.
A study and analysis of current, selected functions, problems, and policies in American higher education; a basic course open to nonseniors and undergraduates.

TH:115 Post-High School Faculty Development Workshop 0 to 2 s.h.
This workshop is designed to provide post-high school instructors with work in other than the discipline areas 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:155 Higher Education Colloquium 0 to 6 s.h.
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 six hours.

TH:211 Problems in College Teaching 2 or 3 s.h.
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 s.h.
Fundamentals of various types of institutions: community colleges, colleges, universities, technical, and professional institutions. Policy determination at local, 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. Prerequisites; enrollment in the community college teacher preparation program or preparing to enroll in a community college teacher preparation program during the first term.

TH:233 Seminar: Teaching Modern Languages 1 s.h.
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 assistant in French and Spanish but open to others by permission. Same as French 9:233 and Spanish 35:233.

TH:234 Seminar: Teaching Modern Languages 1 s.h.
Prerequisite, TH:223 or equivalent. Same as French 9:234 and Spanish 35:234.

TH:240 Workshop: Higher Education 0 to 2 s.h.

TH:250 Administration of Technical Education Programs 2 or 3 s.h.
Administrator's role in post-high school occupational education. Legal, financial, and staffing aspects of vocational-technical and semiprofessional education.

TH:375 Educational Psychology, Measurement, and Statistics


TH:108 The Learner 3 s.h.
Characteristics related to classroom learning: individual differences in physical, emotional, and intellectual factors.

TH:106 Child Development 3 s.h.
Same as Child Behavior 31:10 and Psychology 31:11. Not open to sophomores.

TH:108 Personality and Mental Hygiene 3 s.h.

TH:109 Socialization of the School-Age Child 2 or 3 s.h.
Social development, preschool influences, development of attitudes and interests, effects of social class on social development.

TH:121 Educational Psychology 3 to 4 s.h.
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 31:18.
CHAPTER 3: Adolescence 3 a.h.
Readings and discussion relating physical, psychological, and cultural development of adolescent behavior in contemporary society. Traditional academic literature on adolescence supplemented by fiction, films, and materials reflecting current youth culture. Prerequisite, consent of instructor.

TP:134 Introduction to Programmed Learning 2 a.h.
Theoretical tests of programming of learning. Examination of various forms of programmed instruction, other devices for use in the structuring of learning. Modem programs for autonomous learning, frame construction.

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-tests); introduction to correlation and linear regression. Same as Statistics 220:143 and Psychology 21:143.

An introduction to Bayesian and regression methods with applications to the analysis of educational data. Conditional probability, Bayes Theorem, the analysis of posterior densities, Beta-binomial analysis, normal models, correlation and regression theory, multiple regression. Model II ANOVA. Same as Statistics 220:148. Prerequisite, TP:142 or equivalent.

A continuation of TP:148. Model II ANOVA, the classical test theory, Bayesian inference with the classical model, simple and multiple regression in many groups, a comparison of academic prediction systems with emphasis on guidance technology. Same as Statistics 220:149. Prerequisite, 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 analysis of reading process; implications for teaching methods and materials; factors related to reading ability. Same as Psychology 220:170. Prerequisite, TP:145.

TP:175 Reading Clinic: Diagnosis 3 or 3 a.h.
Evaluation of diagnostic tests of reading ability. Clinical practical work. Interpretation of test results. Prerequisite, TP:150.

TP:181 Theories and Conditions of 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 interpreting the group process and attitude of the classroom atmosphere.

TP:193 Special Readings and Projects every 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 adolescents 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 flexibility for both full-time and part-time adult learners with occasional interaction with the instructor, and independent study projects.

TP:234 Advanced Programmed Learning 3 a.h.
A survey and critical review of current state of the art of instructional media. Course notes and assignments for large- or small-group interaction with the instructor, and independent study projects.

TP:242 Selected Applications of Statistical Techniques 3 a.h.
For students planning to take only one course in statistical methods beyond the scope of a single elementary course. Not equivalent to TP:234. Application and interpretation of correlation techniques; chi-square, the t- and F-tests, interval estimation and simple cases of analysis of variance. Prerequisite, TP:143 or equivalent.

TP:243 Advanced Statistical Methods 4 a.h.
Logic of statistical inference. Chi-square and other tests of statistical hypotheses, small sample theory, interval estimates, introduction to the theory of variance and selected parametric methods. Prerequisite, TP:143 or equivalent. Same as Statistics 220:243.

TP:244 Correlation Methods 3 a.h.
Regression analysis and correlation techniques. Multiple, partial, curvilinear, bivariate, and tetradecient correlation; discriminant analysis; correlation ratios; sampling theory applied to regression analysis and correlation. Prerequisites, TP:143 and TP:243 or equivalent. Same as Statistics 220:244 and Psychology 224:244.

TP:245 Application of Multivariate Statistical Techniques 2 or 3 a.h.
Application of selected multivariate statistical techniques in educational research. Techniques include factor analysis, multidimensional scaling, response surface methodology, and discriminant analysis. Same as Statistics 220:245 and Psychology 224:245.

TP:246 Design of Experiments 3 a.h.
Theory and methods in the planning and statistical analysis of experiments. Testing of hypothesis about linear contrasts among means in single-factor and multiple-factor experiments. Prerequisite, TP:143 or equivalent. Same as Statistics 220:246.

TP:247 Distribution Free Statistical Methods 3 or 3 a.h.

TP:255 Construction and Use of Classroom Tests 2 or 3 a.h.
Role of testing, test planning, item construction, test administration, scoring and interpretation of scores, analysis, and grade placement. Prerequisite, TP:145 or consent of instructor.

TP:257 Educational Measurement and Evaluation 3 a.h.
The use of standardized tests. Sources of test information and criteria, evaluation of reliability and validity data, and interpretation of scores and profiles. Prerequisite, TP:245 or equivalent.

TP:258 Theory and Technique in Educational Measurement 3 a.h.
Mathematical theories underlying educational and psychological measurement. Philosophical issues in achievement test construction, estimation of test reliability and
validity, derivation of norms, scaling and equating test outcomes. Prerequisites, TP 348 and TP 355 or equivalent and consent of instructor.

TP 355 Individual Instruction in Educational Psychology, Measurement, and Statistics cr.arr.

Prerequisite, consent of instructor.

TP 356 Seminar in Advanced Psychopathology 2 s.h.

Same as Psychology 387.

TP 357 Seminar: Educational Psychology I: Research and Teaching cr.arr.

The profession of educational psychology. Current issues, concepts, and methods. Critique and evaluation of research in educational psychology. Prerequisite, consent of instructor.

TP 358 Seminar: Educational Psychology II: Psychology of Learning cr.arr.

Psychology of learning as related to classroom practice and curriculum organization. Prerequisite, consent of instructor.

TP 359 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 356 Seminar: Educational Psychology IV: Mental Hygiene in School Practice cr.arr.

Mental health, adjustment, normality, maturity; integrative and distinctive forces in education; behavior problems in the classroom; professional role, personal development of teachers. Prerequisite, consent of instructor.

TP 358 Seminar: Educational Psychology VI: Psychology and Education of the Disadvantaged 3 s.h.

Readings and discussion to understand effects of cultural segregation and economic deprivation on psychological development and school achievement. Application to meet the educational needs of disadvantaged youth. Prerequisite, consent of instructor.

TP 357 Seminar: Educational Psychology VII: Advanced Readings in Educational Psychology cr.arr.

Review and evaluation of recent literature in educational psychology. Prerequisite, consent of instructor.

TP 347 Seminar: Data Processing cr.arr.

Computer data processing with special emphasis on the FORTRAN language used by the computer at the University Computer Center. Use of the Computer Center statistical library. Preparation, printing, and editing of data to be submitted to the computer. Use of computer in obtaining statistical analyses and other research data. Prerequisites, consent of instructor.

TP 353 Seminar: Statistical Analysis cr.arr.

Restricted to education majors in divisions other than the Division of Educational Psychology, Measurement, and Statistics. Prerequisite, consent of instructor.

TP 355 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 vari-
ables. 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 profile 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 basis in theory, 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 383 M.A. Thesis 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 14:110.

15:111 Methods: Basic Business Education 3 s.h.

Same as Business Education 14:111.

15:113 Supervision of School Publications 3 s.h.

Basic methods course in high school journalism; school newspaper and yearbook. Same as Journalism 14:113.

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 14:117.

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 15:120 number. Same as French 14:120, German 14:120, Latin 14:121, Spanish 14:120, and Russian 14:120.

15:124 Language Laboratory Procedures 1 s.h.


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 s.h.
Same as Journalism 10:114.

73:135 Methods: High School Mathematics 6 s.h.
Survey of modern subject matter, organization of content, and methods of teaching. Prerequisite, Mathematics 22:50 or consent of instructor.

73:140 Methods and Materials: Junior and Senior High School Music 3 s.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 s.h.
Same as Music 25:132.

73:144 Instrumental Techniques 1 to 3 s.h.
Same as Music 25:108.

73:145 Methods and Measurement: High School Physical Education for boys 4 s.h.
Course in theory to be taken concurrently with 73:191.

73:146 Methods: High School Physical Education for Girls 3 s.h.
Same as Physical Education for Women 25:119.

73:147 Choral Methods and Conducting 3 s.h.
Same as Music 25:106.

73:148 Choral Literature and Conducting 3 s.h.
Same as Music 25:110.

73:150 String Techniques and Methods 2 or 3 s.h.
Same as Music 25:132.

73:151 Methods: Secondary Physical Science 3 s.h.
Specific methods peculiar to the modern secondary courses in this area. Observation and interteaching experiences will be a central part of this course. Specific courses will be structured and the various "national" curricula will be explored.

73:153 Methods: Secondary Biological Science 3 s.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 s.h.
Basic information on alcohol use and abuse and the pharmacological problems for elementary and secondary teachers.

73:160 Methods: High School Speech 3 s.h.
Same as Speech 24:17.

73:170 Methods: High School Social Studies 3 s.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 73:194 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 s.h.

73:172 Workshop in Economic Education 3 s.h.
Same as 73:151.

73:173 Workshop in Economic Education 3 s.h.
Same as 73:151.

73:182 Practicum in School Libraries cr.arr.
Same as 73:184 and Library Science 25:52.

73:188 Curriculum Foundations 2 or 3 s.h.
Elementary and secondary background developments in curriculum: definition, historical perspective, philosophies, theories of knowledge, models, learning theories, directions of development, and shaping forces. Same as 73:108.

73:191 Observation Practice in High School cr.arr.
Weekly conferences on problems encountered while teaching. Work in adversarial 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 73:191, but may be taken as an independent unit. Prerequisite, consent of instructor.

73:193 Literature for the Adolescent 3 s.h.
Reading and evaluation of literature suitable for the junior and senior high school student. Same as Library Science 21:108 and English 29:108.

73:194 Reading in High School and College 3 or 3 s.h.
Problems of adolescent and adult reading. Methods and materials used in instruction in remedial and developmental reading.

73:203 Preprofessional Seminar (M.A.T.) 3 s.h.
Desire for M.A.T. candidates only prior to professional semester. Offered fall semester only.

73:210 Supervision of Business Education 3 s.h.

73:215 Problems in Teaching of English: Materials 3 s.h.

73:217 Workshop for Junior and Senior High School Teachers of English 2 s.h.
Same as English 25:52.

73:220 Supervision of Foreign Languages 3 s.h.
Research and practice of laboratory methods of instruction in the foreign languages at the secondary school level.

73:235 Supervision of Mathematics 3 s.h.
Same as Mathematics 25:115. Prerequisite, 25:50 or equivalent or consent of instructor.

73:236 The Teaching of Geometry 3 s.h.
Correct practice and thinking in the teaching of secondary school geometry, syllabus and organization of content, and development via discovery.

73:240 Supervision and Administration of Music 3 s.h.
Open to graduate students and experienced teachers with consent of instructor.

73:241 Instrumental Workshop in Music Education 0 or 2 s.h.
Same as Music 25:208.

73:243 Supervision of Art Education 3 s.h.
Same as Education 70:243 and Art 15:243.
7S: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.

7S:246 Supervision of Physical Education for Boys 3 s.h.
Same as Physical Education for Men 21:139.

7S:250 Problems of Science Education cr.arr. 3 s.h.
Research design characterizing specific studies in science education. Laboratory school will provide the classroom setting for a variety of investigations. Special ideas may be structured and tried prior to the preparation of a proposal for a thesis.

7S: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 curricula. 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 7S:251.

7S:352 Advanced Methods: Science Education 3 s.h.
Implementing a modern philosophy of science teaching; experience with science teaching as a vocation; major methodological trends reflected in the current secondary and college teaching. Required of all graduate students.

7S: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.

7S:354 Supervision of Science 3 s.h.
Problems, practices, responsibilities, and techniques characterizing the practice of the science supervisor. 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 supervision at the regional, state, and national levels will be considered. Practicing science supervisors will be utilized. Primarily for supervisor trainees and advanced students. Same as 7S:306.

7S:355 Structure of Science and Its Application in Science Teaching 3 s.h.
Relationship between the nature of science and teaching methods. 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 course in the philosophy of science.

7S:356 History of Science and Its Role in Science Instruction 3 s.h.
Explores the science teacher's knowledge of science history and his ability to apply that knowledge in designing and teaching science courses. Combines tracing the presence 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 bibliographical material in teaching and course construction. Required of all Ph.D. candidates. Prerequisite, previous work in history or philosophy of science.

7S:360 Teaching of Speech 3 s.h.
Same as Speech 26:317.

7S:261 Speech for Educators 2 s.h.
Same as Speech 26:311. 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 making discussions, and conference leadership. Individualized assignments in reading and performance.

7S:262 Workshop in Teaching Speech 3 to 4 s.h.
Same as Speech 26:178.

7S:270 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 in innovation of current research and development in the past decade, and problems involved in curriculum development and supervision. An investigative study will be required.

7S:273 Building Resources and Teaching Units in the Social Studies 3 s.h.
For the in-service teacher who wishes to build resources or teaching units. Focuses emphasizes the rationale and provides a model for building resources and teaching units. Special emphasis is placed on the incorporation of recent developments.

7S:272 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 seminars using inquiry, case study, and simulation approaches. Strategies for incorporating behavioral, cognitive, and affective learning materials within existing courses considered.

7S:280 Junior High School Organization and Administration 2 to 3 s.h.
Development of the junior high school; nature of the junior high school population; problems of organizing junior high schools and similar programs; certain administrative techniques.

7S:281 Junior High School Curriculum 3 or 3 s.h.
Current practices and trends is the program of the junior high school: objectives and content in the various subject areas; curriculum planning.

7S:290 Improving Instruction in the Secondary School 3 s.h.
Upgrading the instructional program and consideration of specific instructional problems in secondary schools.

7S:291 Secondary School Curriculum 3 or 3 s.h.

7S:293 Individual Instruction in the Secondary Education cr.arr.
Prerequisite, consent of instructor.

7S:500 Humanities and Fine Arts Workshop 2 s.h.
Designed for administrators and teachers who wish to explore developments in the liberal arts areas of the secondary school. Major emphasis on aesthetics and its interdisciplinary impact on the curriculum. Individual projects emphasizes strategies for implementation.

7S:315 Seminar: English Education cr.arr.
A discussion of significant questions in English education from primary and secondary classrooms. Prerequisites, previous instruction in English Education.

7S:321 High School Journalism 3 s.h.
Advisers Workshop 0 or 1 s.h.
Same as Journalisms 11:128.
COLLEGE OF EDUCATION

75:441 The Psychology of Teaching Music 2 s.h.
The nature of musitnality and its relationship to age, rep, intelligence, aesthetic response in children, teaching methods, etc.

75:442 Music Education: Advanced Observation and Laboratory Practice 2 s.h.
Pre-requisite, consent of instructor.

75:443 Evaluation and Measurement in Music 2 s.h.
Techniques of evaluation, test construction, and standardizing test in music.

75:444 Research in Music Education 0 or 2 s.h.
Pre-requisite, consent of instructor.

75:445 Social and Psychological Factors in Music Education 0 or 2 s.h.
Pre-requisite, consent of instructor.

75:490 Seminar: Secondary Education cr.arr.
Survey and experimental procedures. Special areas of instruction, remedial work opportunities, and individualized classrooms techniques.

75:493 Ph.D. Thesis cr.arr.
Pre-requisite, consent of instructor.

Special Education

75:30 Introduction to and Observation of Exceptional Children I 5 s.h.
The various types of exceptional children and their educational problems. Includes observation of five hours a week, observing and working with children with various types of handicaps. Restricted to majors in special education. Offered first semester of a two-semester sequence.

75:31 Introduction to and Observation of Exceptional Children II 5 s.h.
Continuation of 75:30 and required for special education majors. Pre-requisite, 75:30.

75:130 Exceptional Children 2 s.h.
Problems and methods of teaching exceptional children. For teachers and school or clinical psychologists. Same as Psychology 15:112.

1:133 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 potential of students.

75:135 Mental Retardation 3 s.h.
The mentally retarded child and his problems. Causes, diagnosis, and psychological problems of retardates. Principles, factors, and conditions in learning of educable mentally retarded in the public school setting.

1:136 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. Pre-requisite, 75:136.

1:137 Education of Gifted Children 2 s.h.
Identification and characteristics of gifted children. Methods of teaching, curricula.

1:138 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 therapy and treatment. Pre-requisite, 75:138 or consent of instructor.
TU:139 Orientation to Rehabilitation of the Physically Handicapped Child 3 s.h.
Medical, therapeutic, and educational aspects. The several problems 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.
Processes involved in developing programs for all students who need or wish job experiences 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; evaluative 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 1 or 2 s.h.
Continuation of TU:145, but with the emphasis on junior and senior high school programs for educable mentally retarded; objectives; curriculum content; evaluative techniques; high school credit and graduation standards. The mentally retarded, development and coordination of work study programs, observation in public schools. May be taken independently. Satisfactory completion of TU:145 meets the requirements for certification to teach 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 to the teacher from related community agencies, school psychology, and school nursing; an in-depth 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 to the teacher from related community agencies, school psychology, and school nursing; an in-depth study of selected cases of physically handicapped individuals.

TU:151 Language for the Deaf I 3 s.h.
Rationale for multiple approach, in presenting language to deaf child; techniques for presenting a 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.
Philosophy underlying methods for meeting communicative needs of deaf speech development goals; phonetics as needed for oral ap-proach to pronunciation and prosody.

TU:154 Speech Training for the Deaf II 2 s.h.
Continuation of TU:153.

TU:155 Education and Guidance of the Deaf 2 s.h.
History and philosophy of education of deaf in the United States; facilities for teaching deaf; psychology and social adjustment of deaf during and after school life.

TU:156 Observation and Student Teaching for the Deaf I 3 s.h.
Thirty to 90 observations of 45 minutes each during first year of training; written reports required, approved by director of training program; supervised and classroom teaching.

TU:157 Teaching Elementary Subjects to the Deaf I 2 s.h.
Specialized techniques and methods in presenting elementary school subjects to deaf children.

TU:158 Teaching Elementary Subjects to the Deaf II 2 s.h.
School curricula for the deaf; underlying rationale for each; the problems encountered in, and materials available for, teaching these subjects.

TU:159 Speech Reading for the Deaf 2 s.h.
Speech reading in communicative process; methods and materials used to develop speech-reading facility in deaf children.

TU:160 Auditory Training for the Deaf 2 s.h.
Hearing-testing techniques and evaluation of test results; methods and objectives of auditory training for deaf.

TU:162 Observations and Student Teaching for the Deaf II 2 s.h.
Thirty to 90 observations of 45 minutes each during second year of training; written reports approved by director of training program are required; supervised classroom teaching.

TU:191 Laboratory Practice in Education of the Physically Handicapped Child 2 s.h.
Practice and observation in University Hospital School. Prerequisite, consent of instructor.

TU:192 Laboratory Practice in Education of the Mentally Retarded Child 2 s.h.
Prerequisite, consent of instructor.

TU:193 Tutorial Assistance 2 s.h.
Helping secondary age students tutorialy. May be done in conjunction with the Hawkins Area Community Action Program. Prerequisite, consent of instructor.

TU:198 Human Relations for the Classroom Teacher 2 s.h.
Relationship between parents and teachers; teachers and pupils; teachers and other school personnel; teachers and community.

TU:199 Individual Instruction in Special Education: Undergraduate 2 s.h.
Prerequisite, consent of instructor.

TU:230 Advanced Problems in Psychology of Exceptional Children 2 s.h.
Current research in the identification, diagnosis, management, and education of mentally, emotionally disturbed, and neurologically handicapped children. Current research findings, techniques of psychological and educational management and administration approaches. Prerequisite, consent of instructor.

TU:235 Theory and Practice in School Psychology 3 s.h.
Current research in the identification, diagnosis, management, and education of exceptional children; relationships to other professional disciplines. Prerequisite, consent of instructor.
TU-236 Administration and Supervision of Special Education 3 s.h.
For supervision of staff and campus programs of special education. Organization of programs, examinations, 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 1 cr.arr.
Supervised practice in psychological and educational evaluation in various University facilities and in community schools. Prerequisites: EP-234 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. Prerequisites, 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. Opportunities will be provided in gaining needed skills as well as planning for the implementation of services.

TU-241 Medical Aspects of Mental Retardation and Allied Disorders and the Team Approach 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 facilities for diagnosis and care for the normal newborn and the neurologically handicapped child; demonstrates the multidisciplinary team approach to evaluation and treatment of the handicapped child, including medical, psychological, neurologist input, and learning problems.

TU-245 Practicum in School Psychological Services II 1 cr. arr.
Continuation of TU-237. Prerequisites: TU-237 and consent of instructor.

TU-243 Advanced Problems in Psychoeducational Assessment of Children 3 s.h.
Personal experience of assessment of children and adult clients. Special emphasis on projective techniques, specifically the TAT. With respect to projective techniques, hardware, 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 ecologically based model of behavior disorders and of interdisciplinary services within various community settings providing psycho-social-educational programs for children and youth with behavior difficulties. Prerequisites, consent of instructor.

TU-245 Educating Children and Youth With Behavior Disorders 1 3 s.h.
Testing, function, prognosis, evaluation, problems, issues, methods, and procedures of specific educational processes to include emotional, social, and behavioral dysfunctions. Prerequisite, consent of instructor.

TU-246 Educating Children and Youth With Behavior Disorders II 3 s.h.
Continuation of TU-245. Prerequisites, consent of instructor.

TU-247 Practicum in School Psychological Services 1 cr.arr.
Supervised practice with children and youth with psychoeducational disorders. Taken concurrently with TU-245 and TU-246. Prerequisite, consent of instructor.

TU-248 Practicum: Educating Children and Youth With Behavior Disorders II 5 s.h.
Continuation of TU-247. Taken concurrently with TU-246 and TU-247. Prerequisite, consent of instructor.

TU-249 Seminar: Educating Children and Youth With Behavior Disorders I 3 s.h.
Integration of the therapeutic and practical experiences. Taken concurrently with TU-245 and TU-246. Prerequisite, consent of instructor.

TU-250 Seminar: Educating Children and Youth With Behavior Disorders II 3 s.h.
Continuation of TU-249. Taken concurrently with TU-246 and TU-247. Prerequisite, consent of instructor.

TU-251 Individual Intelligence Testing 3 s.h.
Administration of individual intellengence tests and interpretation of test results. Issues in psychological testing. Topics which influence performance. Prerequisites, TU-245 or TP-150 or consent of instructor.

TU-252 Advanced Laboratory Practice in Education of the Exceptional Children cr.arr.
Observation, experimentation, and individual instruction pertaining to problems of teaching, guidance, and administrative evaluation. Construction, evaluation, and utilization of curriculum materials for the mentally retarded. Prerequisites, TU-245 or TU-246 and consent of instructor.

TU-253 Individual Instruction in Special Education cr.arr.
Prerequisite, consent of instructor.

TU-301 Seminar: Rehabilitation of the Physically Handicapped Child cr.arr.
Prerequisites, TU-230 and graduate standing.

TU-305 Seminar: Advanced Problems in the Education of the Exceptional Child and Youth With Behavior Disorders cr.arr.
In-depth analysis and discussion of psychology, specific community programs, and psycho-social-educational processes. Includes preparation for doctoral work. Prerequisites, consent of instructor and completion of an M.A. program in behavior disorders.

TU-306 Seminar: Criminal Supervision for Practicum Supervisors—Behavior Disorders cr.arr.
Problems and procedures is clinical supervision with particular study of point.
and practice processes. Limited to doctoral students. Prerequisites, consent of instructor.

TU 338 Seminar: School Psychological Services 3 cr.
Selected topics: preparation and presentation of research projects. Doctoral students only. Prerequisites, consent of instructor.

TU 340 Internship in Curriculum Development for the Mentally Retarded 3 cr.
Process of curriculum 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 levels. Open only to students with teaching experience.

TU 344 Seminar: Research Practicum in Mental Retardation 3 cr.
Areas of needed research in mental retardation will be explored. Small-scale research projects will be designed. Individual attention will be given in planning, managing, and reporting research. Seminars will be assigned in current research projects for practical experience in research.

TU 366 Seminar: Special Education: Advanced Problems in Exceptional Children 3 cr.
Prerequisites, consent of instructor.

TU 367 Seminar: Exceptional Children: Advanced Problems in the Administration of Special Education 3 cr.
Taken concurrently with an internship. Field experiences interfaced with theory and practice. Prerequisites, TU 328 and consent of instructor.

TU 394 Field Service Project in Special Education Internship 3 cr.
Prerequisite, consent of instructor.

TU 395 M.A. Thesis in Special Education 3 cr.
Prerequisite, consent of instructor.

TU 399 B.S. Research Project in Special Education 3 cr.
Prerequisite, consent of instructor.

TU 399 Field Service Project in School Psychology 3 cr.
Prerequisite, consent of instructor.

TU 431 Ph.D. Thesis in Special Education 6 cr.
Prerequisite, consent of instructor.

Educational Media
TV 101 Operation of AV Equipment 0 or 1 cr.
Principles and practices in operating still and motion picture projectors, tape recorders, record players, slide duplicators, copy machines, and the dry transfer press.

TV 110 Selection and Utilization of Instructional Media 2 cr.
Primarily for students who expect to teach, but open to non-teaching majors of education, development, utilization of instructional materials and methods. Basic techniques for developing teacher-made instructional media. Prerequisites, TV 101 and TV 102, which can be taken concurrently.

TV 120 Theory and Practice of Educational Communications Technology 3 cr.
The relationship of authentic 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.

TU 127 Planning and Production of Instructional Materials 1-3 cr.
Theory and practice of planning and producing instructional materials that can be developed by the classroom teacher. Experience in designing, displaying, originating, preserving, duplicating, and simple lettering and photomechanical techniques. Prerequisites, TV 110 or TV 112.

TU 138 Planning and Production of Instructional Materials 2-3 cr.
The development of instructional materials using still or motion picture photography, audiocassette, or advanced graphic techniques. Basic skills will be covered, then students will produce self-instructional programs using selected media. Prerequisites, TV 110 and consent of instructor.

TU 140 Communication Through Drawing 2 cr.
Principles of freehand drawing, observation and projection in the use of line, tone, and shape that will be used in drawing flat and three-dimensional objects. Training in using drawings as a means of communication. No art experience necessary.

TU 131 Principles and Techniques of Graphic Communication 2 cr.
Linguistics and design of graphic communication materials; principles from psychology and art. Experience in making and using graphic symbols, freehand drawing, layout and design, and simple lettering techniques. No art background necessary.

TU 125 Seminar: Survey of Educational Media Research 2 cr.
Investigation of research from the behavioral sciences, art, and technology, pertinent to instructional development and/or message design problems. Prerequisites, TV 116 or TV 126.

TU 126 Seminar: Administration of Educational Media Programs 2 or 3 cr.
Selecting, developing, financing, organizing, and managing the hardware, software, materials, and personnel in an instructional media program. Prerequisites, TV 116 or TV 126.

TU 140 Seminar: Educational Media and the Systems Approach to Instruction 2 or 3 cr.
Planning for instruction through systematic management of learning using through effective utilization of man, re-source materials, and equipment.

TU 140 Seminar: Research Methods in Educational Media 2 or 3 cr.
Research practices, experimental design considerations, and writing for publication. Prerequisites, TV 114, TV 116, and consent of instructor.

TU 393 Individual Instruction in Educational Media 2 cr.
Opportunity to investigate areas of specific concern to the student. Prerequisites, consent of instructor.

TU 310 Practices in Educational Media 2 cr.
Off-campus, supervised, administrative, and other non-teaching and/or teaching experiences in the University AudioVisual Center and/or the College of Education.

TU 320 Internship in Educational Media 3 cr.
Off-campus, supervised administration, and other non-teaching experiences in public schools, social agencies, or industries.

TU 126 Individual Thesis in Educational Media 2 cr.
Prerequisite, consent of instructor.

TU 126 Ph.D. Thesis in Educational Media 6 cr.
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 the graduate study. The four years are socio-humanistic studies, mathematics, basic and applied science, and analysis and design. It is the latest 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 terminates with departmental specialization in 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 bachelor's programs. The enrollment in post-graduate 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

Bachelor's 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 48 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.
COLLEGE OF ENGINEERING

The combined program. The vast technologi- cal 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 engi- neering or in a designated department of engi- neering. Students taking the combined course register in the College of Liberal Arts and trans- fer 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 com- bined program must be taken in residence at The University of Iowa. By proper scheduling of coursework in consultation with advisors from the College of Liberal Arts and Engineering, the student in the combined program can meet the baccalaureate degree requirements of both Col- leges 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 Ex- aminers 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 ad- vanced examination following professional ex- perience. 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 pur- suing 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 infor- mation, 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 assist- ants 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 rec- ognized for their contributions to teaching and research.

FACILITIES

The Engineering Building. The Engineering Building includes administrative offices, the Li- brary, and the Departments of Civil Engineering, Electrical Engineering, Industrial and Manage- ment Engineering, Mechanical Engineering, and Mechanics and Hydraulics.

The new Engineering Library is the center of College activity. Its collection includes 32,000 books and 750 periodicals. The Library is equip- ped with microfilm and microfiche readers. A full-time librarian is in charge. This area is also used for informal receptions.

Chemical Engineering Laboratories. The De- partment of Chemical Engineering is located in the Chemistry-Booth Building. Its main lab- oratories include pilot-plant equipment for the study of industrial evaporation, distillation, dry- ing, fluid flow, and heat transfer. A section of the laboratory devoted to nuclear reactor research contains a subcritical nuclear reactor, a pulsed neutron generator, and a reactor simulator. Lab- oratories have recently been added for biotechno- rials research. Smaller laboratories are pro- vided for investigations of plastics and other engineering materials. Laboratories for in- dividual research are available to graduate stu- dents; these are equipped with chromatographs, analog computers, and other instruments.

Electrical Engineering Laboratories. The in- structional laboratories of the electrical engineer- ing department include dynamic systems, digital systems, and control systems laboratories, and a general-purpose laboratory for special projects. Research laboratories are equipped for investiga- tions in plasma physics, signal analysis, electronic circuits and devices, and digital systems. A computer laboratory is provided for undergrad- uate and graduate student use for study and re- search in analog, digital, and hybrid computer applications.

Environmental Engineering Laboratories. Fa- cilities 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-
COLLEGE OF ENGINEERING

Engineering Laboratory. The department has laboratories equipped for research in the principal areas of materials and processing, including materials science, powder science, metal casting, cutting, and fabricating. Human factors laboratories are equipped to investigate basic motor capabilities and the effects of selected tasks on environmental variables. Unique equipment for the measurement of human factors includes electronic timing, force sensing, recording, and simulation equipment.

Mechanical Engineering Laboratories. The mechanical engineering laboratories contain instruments and equipment for experimental investigations in a variety of fields. These fields include thermodynamics, thermal systems, heat transfer, gas dynamics, behavior of materials, control 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 using computers.

Structures and Materials Testing Laboratories. These laboratories are equipped for the determination of physical properties of materials of engineering construction, such as soils, aggregates, concrete, steel, timber, and plastics. Included are a compression testing machine, a universal testing machine, and an axial testing machine. Test equipment is along with mechanical and electronic instrumentation and photostatic equipment for 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 consists of consolidation and triaxial testing equipment of the latest design. Special equipment is available for negative pore water pressure studies and model footing tests.

Hydraulics Laboratory. Located on the west bank of the Iowa River at the end of the University dam, this laboratory houses the latest facilities for undergraduate and graduate laboratory instruction, and for basic and applied research by staff and students in the area of hydraulics and fluid mechanics. The equipment includes an 800-HP data acquisition and control system for online analysis of experimental data, a 300-foot towing tank, several flumes and wind tunnels, a low-temperature BSW facility for 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 students and faculty of the College, under the auspices of the College Computer Committee. The College itself maintains remote terminals for free access to the University computer and key-punch equipment for computer-aided education.

PLACEMENT SERVICES

Students and alumni can avail themselves of the placement services provided by the College of Engineering. Interview rooms and a placement library of informational material are located in the Engineering Building. Assistance is available for arranging interviews and obtaining information on job opportunities. Additional information can be obtained from the Dean of the College of Engineering.

STUDENT ORGANIZATIONS AND ACTIVITIES

The entire student body in the College of Engineering is organized as The Associated Students of Engineering.

Engineering students publish a monthly periodical, the Iowa Transact.

Student branches of the America 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 Electronic 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; Beta Kappa Nu, honorary electrical engineering fraternity; and Pi Tau Sigma, honorary mechanical engineering fraternity, recognize the work of outstanding students in their respective fields.

ADMISSION

Freshmen. The applicant must submit a formal application for admission and have his secondary
SCHOLARSHIP REQUIREMENTS

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.

ADMINISTRATIVE STAFF

Dean: Hunter Bacon, Associate Dean: Donald H. Madsen, Assistant Dean: Melvin L. Batterby, Coordinator, Placement and Special Projects: Thomas F. McCall.

LIBRARY Librarian, Engineering Library: John W. Medcraft.

INSTITUTE OF HYDRAULIC RESEARCH STAFF


DEPARTMENTS AND COURSES

Each course is designated by a code or department number, a course number, and a title. The number following the title is the course number. Code numbers assigned in the course's description in this section of the Catalog have the following significances:

- 16 Mechanical Engineering Engineering
- 19 Electrical Engineering
- 21 Chemical Engineering
- 22 Civil Engineering
- 23 Mechanical Engineering
- 24 Electrical Engineering
- 25 Industrial and Management

ENGINEERING COURSES

(See departmental listings for other courses.)

51:1 Introduction to Engineering I 2 or 4 s.h.
Stimulation 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-semester-hour 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 ins-
COLLEGE OF ENGINEERING

52:140 Design for Energy and Momentum Transfer 2.0 4 4
52:141 Survey of Chemical Process Equipment 0 3 3
52:142 Process Thermodynamics 0 3 3
53:138 Chemical Reaction Engineering A 3 3 3
52:143, 144 Mass Transfer Operations Laboratory I, II 3 2 4
52:150 Chemical Engineering 2.0 3 3
52:151 Chemical Thermodynamics 8 3 0
52:152 Chemical Economy 3 5 0
52:153 Chemical Engineering 3 3 3
52:159, 160 Chemical Reaction Engineering 2.0 3 3
52:161 Technical Elective 3 3 3
52:162, 163 Technical Elective 2 3 3
52:164, 165 Technical Elective 3 3 3

Total 128

Graduate Programs

The chemical engineering department offers graduate courses leading to the degree of M.S. and Ph.D. The area of specialization can vary from fundamental chemical engineering science to biomolecular 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 2.5 based on a maximum of 4.0, for the Ph.D. program the minimum grade-point average is 3.7 based on completed graduate work. Conditional admission is granted if the student is not satisfied with the grades. Conditional admission is granted if the student is not satisfied with the grades. The student must present a satisfactory grade-point average and may be admitted with a passing grade in a comprehensive examination.

Doctor of Chemical Engineering. Doctor of Philosophy degree is granted primarily on the basis of achievement rather than on the number of semester hours of credit. However, the candidate is normally expected to have completed at least 2 years of residence, or 2 years if he already holds a recognized master's degree. The candidate must pass either two foreign languages from the following list: Spanish, German, French, Russian, or one foreign language and one research topic. He must also pass a written and open comprehensive examination and a final examination which is a defense of his thesis.

Financial aid. A limited number of fellowships, assistantships, and research scholarships are available to graduate students who qualify. Some are awarded on the basis of competition; others are the results of accomplish ment.

COURSE DESCRIPTIONS

Primarily for Undergraduates

52:1 Introduction to Engineering I 2 or 3 h.
Same as Engineering 311.
52:2 Introduction to Engineering II 2 or 3 h.
Same as Engineering 312.
52:131, 132, 133, 134 Professional Seminar 2 or 3 h.
Lectures and discussions on topics of current interest in chemical engineering. Field trips and seminars will be held. Prerequisites: junior standing.

52:120 Reaction Kinetics 2.0 h.
Application of chemical reaction kinetics theory to chemical engineering equipment design. Prerequisites: 52:140, 141, 143, Chemistry 4132.
52:125 Process Calculations 3.0 h.
Application of laws of conservation of matter and energy to the solution of industrial problems. Units and dimensions; the energy balance; material balance; methods of systematic computation. Three lectures. Prerequisite, Mathematics 2543-2546.
52:130 Chemical Industries 2.0 h.
Technology and economic relations of the principal chemical industries. Process descriptions, flow sheets, description of types of instrumentation and control used in the process. Elective for students in Liberal Arts and Graduate College. Two lectures. Prerequisites: Chemistry 4-11, 4-12.
52:139 Structure of Materials 2 or 3 h.
Basic principles of chemistry and physics as applied to an understanding of the properties of materials for engineering and biomolecular applications. Phase diagram and microstructure of metals and effecting properties; polymer formulation; crystals, whiskers, ceramics, ultramaterials. Two lectures and one laboratory. Prerequisites, Chemistry 4-4, 4-121.
52:140 Design for Energy and Momentum Transfer 4.0 h.
The design of chemical process equipment for movement of materials or transfer of heat, based on physical chemical principles. Three lectures. Prerequisites, 52:125, Chemistry 4132.
52:141 Mass Transfer Operations 2 or 4 h.
Theoretical bases of and design of equipment for molecular transfer of matter, including filtration, absorption processes, extraction, drying, and related stages in processes. Three lectures. Prerequisites, 52:125, Chemistry 4133.
52:145 Unit Operations Laboratory 2.0 h.
Continuation of 52:144. May be taken as an independent unit. Two laboratory periods. Prerequisite, 52:144.
52:147 Analog Computer Laboratory 1.0 h.
Design and testing of basic analog circuit. Use of the analog computer to solve engineering problems. One laboratory period. Prerequisite, Mathematics 2533-2537.
52:150 Chemical Engineering Thermodynamics 3.0 h.
52:154 Economics in Design 3.0 h.
Economic principles applied to the design and operation and optimization of chemical process plants. Three recitations. Prerequisite, 52:141.
52:155 Chemical Engineering Process Design 3 or 4 h.
An integrative course in the design of chemical processes and process equipment, requiring the application of process calculations, thermodynamics, unit operations theory, and economics. Three recitations. Prerequisites, 52:141.
52:160 Survey of Chemical Industry 1.0 h.
One trip annually to leading chemical plants at St. Louis or Chicago. Four days of inspection, exclusive of travel time. Prerequisite, junior standing.
52:180 Introduction to Nuclear Science and Engineering 3 a.h.
The production of power from nuclear reactions. Basic principles, terminology. Prerequisite, junior standing in engineering or science. 52:180

52:190 Special Problems 3 cr. att.
Prerequisite, consent of instructor.

Primarily for Graduates

52:221 Heat Transfer 2 a.h.
Theory and practice of industrial heat transfer. Problems in steady-state heat transfer, conduction, convection, radiation, and combination. Two lectures. Prerequisites, 52:140, 141.

52:222 Fluid Flow I 2 a.h.
Molecular flow phenomena and flow separation processes. Two lectures. Prerequisites, 52:140, 141.

52:223 Fluid Flow II 2 a.h.
Advanced theory and problems on fluid flow in pipes and process equipment. Two lectures. Prerequisites, 52:140, 141.

52:224 Distillation I 2 a.h.
Theoretical and applied treatment of vapor-liquid equilibria and fractionation of binary systems. Two lectures. Prerequisites, 52:140, 141.

52:225 Distillation II 2 a.h.
Fractionation of multicomponent systems. Two lectures. Prerequisites, 52:140, 141.

52:226 Extraction 2 a.h.
Theory and calculations for solid-liquid extraction and liquid-liquid extraction equipment. Two lectures. Prerequisites, 52:140, 141.

52:227 Sorption Processes 2 a.h.
Theory and calculations for equipment for absorption of gases in liquids and absorption of gases in solids. Two lectures. Prerequisite, 52:140, 141.

52:228 Solids Processing 2 a.h.
Comprehensive problems in drying, filtration, and other operations involving treatment of solid materials. Two lectures. Prerequisite, 52:140, 141.

52:241 Separations Processes 2 a.h.
Basic theory of multistage separation; applications to separations in the nuclear industry; design and experiment in separations processes research. Two lectures. Prerequisite, 52:140, 141.

52:242 Advanced Chemical Engineering Thermodynamics 2 a.h.
Application to internal and external, and other operations involving treatment of solid materials. Two lectures. Prerequisite, 52:140, 141.

52:243 Transport Phenomena I 2 a.h.
A unified treatment of momentum, mass, and energy transport in chemical engineering problems. Applications of vector and tensor analysis to continuum mechanics. Prerequisites, 52:140, 141.

52:244 Transport Phenomena II 2 a.h.
Continuation of 52:243. Equations of change, unsteady flow, turbulent transport, and interface transfer. Prerequisite, 52:140, 141.

52:250 Chemical Engineering Design I 2 a.h.
Design, cost, estimation, and selection of chemical process equipment. Filling, pressure vessels, condensers, heat exchangers, distillation columns, and other equipment. Two lectures. Prerequisite, 52:150. May be repeated.

52:251 Chemical Engineering Design II 2 a.h.
Continuation of 52:250. Plant layout, preconstruction cost estimation, product cost estimation, economic evaluation of processes, and special design methods. Two lectures. Prerequisite, 52:150. May be repeated.

52:252 Industrial Instrumentation 2 a.h.
Theory and operation of industrial control instruments as applied to the chemical industry. Two lectures. Prerequisite, 52:155.

52:253 Reactor Design 2 a.h.
Theory and problems in design of equipment for carrying out chemical reactions or for producing nuclear reactions. Two lectures or lecture and laboratory. Prerequisite, 52:252.

52:354 Special Topics 3 cr. att.
Problems of a comprehensive nature similar to those encountered in chemical industry. Prerequisite, consent of instructor. May be repeated.

52:282 Seminar: Chemical Engineering 0 or 1 a.h.
Discussion of latest advances in chemical engineering. One conference. Prerequisite, consent of instructor.

52:292 Research: Chemical Engineering 1-3 a.h.
Thesis work for advanced degrees. Conference and laboratory work arranged. Prerequisite, consent of head of department and major advisor.

CIVIL ENGINEERING
Chairman of Department, Rolf T. Skrinde
Office, 4136 Engineering Building

STAFF

Professors:  Dan R. Benson, Howard W. McCusker, Rolf T. Skrinde
Associate Professors:  Harrison Kase, Lena H. Shavu, Donald B. McMillan, Bernard L. Meyers, John J. O'Mara, Werner L. Paulson, Marcus F. Powell
Assistant Professors:  George W. Brown, Richard R. Daug, Robert L. Fisher

Undergraduate Curriculum

Semester Hours

Freshman Year

Principles of Chemistry I 4
Principles of Chemistry II 4

Sophomore Year

Mathematics I, II 5
Mathematics III, IV 6
Dynamics I 4
Dynamics II 5

Junior Year

Probability and Statistics for

Engineering and Physical Sciences 3

Colleges of Engineering and Architecture

52:180 Introduction to Nuclear Science and Engineering 3 a.h.
52:221 Heat Transfer 2 a.h.
52:222 Fluid Flow I 2 a.h.
52:223 Fluid Flow II 2 a.h.
52:224 Distillation I 2 a.h.
52:225 Distillation II 2 a.h.
52:226 Extraction 2 a.h.
52:227 Sorption Processes 2 a.h.
52:228 Solids Processing 2 a.h.
52:241 Separations Processes 2 a.h.
52:242 Advanced Chemical Engineering Thermodynamics 2 a.h.
52:243 Transport Phenomena I 2 a.h.
52:244 Transport Phenomena II 2 a.h.
52:250 Chemical Engineering Design I 2 a.h.
52:251 Chemical Engineering Design II 2 a.h.
52:252 Industrial Instrumentation 2 a.h.
52:253 Reactor Design 2 a.h.
52:354 Special Topics 3 cr. att.
52:282 Seminar: Chemical Engineering 0 or 1 a.h.
52:292 Research: Chemical Engineering 1-3 a.h.

Total 34
### COURSE DESCRIPTIONS

**Primarily for Undergraduates**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>53:1</td>
<td>Introduction to Engineering I</td>
<td>4 h.</td>
</tr>
<tr>
<td>53:2</td>
<td>Introduction to Engineering II</td>
<td>4 h.</td>
</tr>
<tr>
<td>53:22</td>
<td>Surveying</td>
<td>3 h.</td>
</tr>
<tr>
<td>53:35</td>
<td>Structural Analysis I</td>
<td>3 or 4 h.</td>
</tr>
</tbody>
</table>

### Undergraduates and Graduates

**53:100 Civil Engineering Design I**
- Principles of civil engineering design and their applications in structural (Sec. 1), structural (Sec. 2), and transportation (Sec. 3) engineering.

**53:105 Technology and Society**
- Same as Engineering 53:105 and American Civilization 45:120.

**53:110 Special Studies**
- 1 to 3 h.
- Design or investigation. Problems selected by student under supervision of instructor.

**53:125 Man and His Environment**
- 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**
- Maxwell's law of mechanical equilibrium, Mueller-Strains principle, conjugate beam, moment distribution and slope deflection methods, including nonuniform members; column analog methods; temperature stress; introduction to structural analysis by computers.

**53:132 Structural Analysis III**

**53:135 Structural Dynamics**

**53:137 Structural Engineering**
- Materials Science 3 h.
- Properties of engineering materials with emphasis on steel and concrete. Relation of physical and chemical properties to mechanical properties. Prerequisite, consent of instructor.

---

**GRADUATE PROGRAMS**

The Department of Civil Engineering offers graduate study leading to the degrees of Master of Science and Doctor of Philosophy.

Admission requirements. The prerequisite for admission to candidacy for the master's degree is normally the earning of a baccalaureate degree in civil engineering or a physical science, with a cumulative grade-point average of 2.5 (based on a 4.0 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 study 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 (GRE). 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' credit, with or without thesis as determined by the candidate and his graduate committee. Work offered at the master's level in the general areas of environmental engineering, environmental and recreational science, structural engineering and foundations, traffic and transportation planning, public works engineering, and water resources engineering. Environmental engineering and science programs are an approved interdisciplinary undergraduate program carried out cooperatively with the Department of Environmental and Human 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 dissertation. A working knowledge in his field. No foreign language is required.

**Financial aid.** A number of fellowships, research assistantships, and other forms of aid are available. Selection of recipients is usually based on scholastic achievement and research interest.

---

**by the methods of virtual work, Castigliano's Theorem, moment-area, conjugate beam; analysis of statically indeterminate structures by the methods of superposition, and moment distribution. Prerequisite, Mechanics and Hydraulics I.**

**53:41 Civil Engineering Design 1**
- Basic clarifier and precipitator behavior of structural elements; design of reinforced concrete beams, slabs, columns; design of steel tension members, compression members, design of columns; foundations. Applications to the design of structures. Prerequisite, 53:33.

**53:51 Elementary Bio-Engineering**
- The elements of basic biology with emphasis on its application to problems in engineering.

**53:53 Flow Systems in Environmental Engineering**
- Application of hydraulic and hydrologic principles to the general area of water, wastewater, and stormwater flow systems. Consideration of air and solids transport systems.

**53:72 Route and Earthwork Engineering**
- 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**
- Reports on selected topics from current journals. Required of juniors and seniors in civil engineering. Prerequisite, junior standing.

---

**COLLEGE OF ENGINEERING**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>53:2</td>
<td>Physical L II</td>
<td>3</td>
</tr>
<tr>
<td>53:33, 94</td>
<td>Professional Seminar</td>
<td>3</td>
</tr>
<tr>
<td>53:110</td>
<td>Civil Engineering Design II</td>
<td>4</td>
</tr>
<tr>
<td>53:126</td>
<td>Civil Engineering Design III</td>
<td>4</td>
</tr>
<tr>
<td>53:22</td>
<td>Surveying</td>
<td>3</td>
</tr>
<tr>
<td>53:35</td>
<td>Structural Analysis I</td>
<td>3 or 4 h.</td>
</tr>
</tbody>
</table>

[284]
COLLEGE OF ENGINEERING

53:142 Structural Design 3 s.h.
Steel and concrete bridge design, composite design, high-rise building design, limit analysis and plastic design, yield-line theory of slabs, fundamentals and design of simple and indeterminate prestressed concrete structures, concrete shell roof design. Prerequisite, consent of instructor.

53:144 Advanced Metal Structures 3 s.h.
Analysis and design of rigid frames by elastic and by plastic methods; light gage structural members. Prerequisite, consent of instructor.

53:147 Prestressed Concrete 3 s.h.
Analysis and design of statically determinate and indeterminate structures and structures under live loads; review of current literature and specifications. Prerequisite, consent of instructor.

53:151 Environmental Engineering Microbiology 3 s.h.
Elements of microbiology for environmental engineers. Applications in water quality control. Lectures and laboratory. 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 biological and ecological principles 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 in the modern era. Environmental regulation of food and drink, air pollution, waste disposal, water, safety, occupational health, noise, communicable diseases, etc. is stressed. Same as Preventive Medicine and Environmental Health 63:155.

53:156 Environmental Engineering Chemistry I 3 s.h.
Lecture covering the application of general, qualitative, analytical, organic, physical, colloid, bio, and radio chemistry to environmental problems. Same as Preventive Medicine and Environmental Health 63:156.

53:157 Environmental Engineering Chemistry II 3 s.h.
Laboratory study of the standard methods for the examination of water and waste water with their specific application in the control of water and wastewater treatment operations. Same as Preventive Medicine and Environmental Health 63:157. Prerequisite, 53:156 or equivalent.

53:161 Principles of Environmental 3 s.h.
Physical, chemical, and biological principles applied to water quality control, air pollution, 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 the physical, chemical, and biological systems applied to water quality monitoring. Consideration of specific problems and techniques. Prerequisite, 53:157; corequisite, 53:156 or consent of instructor.

53:164 Environmental Engineering II: Design 3 s.h.
The application of physical, chemical, and biological principles to the design of water quality control systems. Consideration of design aspects of control and solid waste systems. Prerequisite, 53:163.

53:165 Environmental Engineering III: Air Pollution and Solid Wastes 3 s.h.
Analysis and design of air pollution and solid waste control systems. Sources and characteristics of air pollutants and solid wastes. Need for control to protect the total environment.

53:167 Solid Waste Technology 3 s.h.
Principles of design and operation of solid wastes collection and disposal systems. Determination of solid wastes characteristics. Studies of solid wastes disposal processes, including incineration, composting, and incineration. Salvaging and utilization of converted solid wastes.

53:168 Limnology 3 s.h.
Chemical, physical, and biological characteristics of natural waters with emphasis on relationships between biota and water chemistry as it affects the aquatic environment.

53:171 Traffic Systems Analysis 3 s.h.
The formulation and analysis traffic models. The application of statistical techniques to traffic trends, projection, and programming of traffic systems. Prerequisites: permission of instructor 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; measurements and computations; topographical and hydrographic field data; map interpretation; use of charts; surveys; earthwork and drainage; property rights and acquisition.

53:174 Transportation Engineering II 3 s.h.
Studied and systems of transportation; transportation in the United States; economics, regulation and control; financing, taxation, subsidy and public policy; traffic studies, design and construction of pavements, structures 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 operative in the accident event; resultant injuries to persons; strains and deformations in materials and structures. Prerequisites: consent of instructor.

53:177 Traffic Engineering 3 s.h.
The operation of rural and urban roads, streets and highways. Analysis and control of traffic for safety and efficiency. Elective for civil engineering seniors and graduate 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 to minimize injury to human control are included in design considerations. Prerequisite, consent of instructor.

53:184 Soil Mechanics 3 s.h.
Soil engineering properties of soils; subsurface exploration; natural soil deposit; slope stability. Same as Preventive Medicine and Environmental Health 63:184.

53:185 Advanced Soil Mechanics 3 s.h.
Steady state and transient flow through soils; stress-strain behavior of soils; percolation and drainage of soils. Prerequisite, 53:184 or consent of instructor.

53:186 Foundations of Structures 3 s.h.
Application of soil mechanics to foundations of buildings, bearing capacity and settlement analyses; stability of earth slopes; earth pressures and retaining walls; bored caissons. Prerequisite, consent of instructor.

53:189 Measurement of Soil Properties 1 s.h.
Advanced laboratory experience including permeability, consolidation, and triaxial shear, with pore pressure and volume change measurements.

265
53:100 Procedures in Public Works
Engineering 2 s.h.
Project organization, feasibility considerations, financing methods, reports, specifications, contract documents. Prerequisite, senior standing or consent of instructor.

53:310 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 s.h.
Reports on research and recent advances in the fields of science and engineering by advanced students, faculty, and visiting engineers.

53:331 Advanced Theory of Structures 3 s.h.
Matrix analysis of structures; two- and three-dimensional frames; section analysis; structural analysis by finite element. Prerequisite, 53:132.

53:344 Advanced Structural Analysis by Numerical Methods 3 s.h.
Finite difference methods applied to beams, plates, skewed 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, plastic stress 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.

53:440 Research: Civil Engineering cr.arr.
Experimental and analytical investigation of an approved problem in civil engineering.

53:443 Model Analysis and Experimental Design 3 s.h.
Similarity requirements for direct, indirect, and distorted models; elastic and inelastic modeling for reinforcement concrete structures; general research techniques; experimental design, measurement of forces, and deformation; analysis and interpretation of data. Prerequisite, consent of instructor.

53:443 Structural Design for Dynamics 3 s.h.
Evaluation of the effects of oscillating machinery, impellers, and rotating devices on the design of buildings and engineering structures. Prerequisite, Engineering 53:117, courses 53:132.

53:445 Advanced Structural Design 3 s.h.
Advanced topics in the design of steel, aluminum, and concrete structures; concrete shell roofs. Prerequisite, consent of instructor.

53:447 Stability of Structural Systems 3 s.h.

53:350 Seminar: Environmental Engineering 0 or 1 s.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 s.h.
Characteristics and ecology of organisms of importance in water quality control operations. Prerequisite, 53:131.

53:355 Environmental Engineering Chemistry III 2 s.h.
Lectures and laboratory dealing with advanced instrumental methods of analyzing water and wastewaters.

53:360 Water Quality Control 3 s.h.
Industrial water and wastewater treatment systems. Water quality needs for various industrial uses and the unit operations to achieve these requirements. The sources and characterization of industrial wastes, and the unit operations as applied to treatment of industrial wastes. Prerequisites, 53:131, 53:214.

53:361 Applied Limnology cr.arr.
The practical application of limnological techniques to stream sanitation and water quality investigations. Prerequisite, 53:188.

53:369 Environmental Engineering Systems Special Topics 2 s.h.
Detailed study of selected topics in water quality control, air pollution control, and solid waste disposal. Evaluation of current research reports and advances in environmental engineering practice. May be repeated for credit. Prerequisite, consent of instructor.

53:372 Urban Transportation Planning 3 s.h.
Services and systems based upon the analysis of traffic, land use, economic and other survey data, and the preparation of mathematical models. Emphasis for qualified graduate students in civil engineering and in urban and regional planning.

53:373 Transportation Systems I 3 s.h.
The design, construction, and operation of unique and integrated transportation systems and their terminal and exchange facilities. Prerequisite, consent of instructor.

53:395 Earth Pressures and Retaining Structures 3 s.h.
Earth pressures and soil stability theories; experimental studies of earth pressures and unique soil failure theoretical and empirical ideas for the design of retaining walls, basal cut-offs, anchored tiebacks, cantilevers, and culverts. Prerequisite, 53:136 or consent of instructor.

53:395 Seminar: Water Resources Development 3 s.h.
An interdisciplinary seminar on the sociological, economic, and engineering aspects of water resources management. Same as Mechanics and Hydraulics 53:395. Prerequisite, approval of Department.

ELECTRICAL ENGINEERING
Chairman of Department, E. D. Eymann Office, 4460 Engineering Building STAFF
Professors: Donald L. Ekley, Earl D. Eymann.
Assistant Professors: Edwin R. Kurtz, Carl H. Messer, Lawrence A. Wey.

Undergraduate Curriculum Semester Hours Total
Freshman Year
Total Principles of Chemistry I 4 4 4 4 4 8
Literature and Composition I, II 4 4 4 4 4 8

Same as Preventive Medicine and Environmental Health 62:520. Prerequisite, 52:137.

53:260 Environmental Engineering IV: Systems Laboratory 2 s.h.
Laboratory study and analysis of the physical, chemical, and biological systems utilized in environmental engineering with emphasis on the interpretation of theoretical concepts in real systems. Prerequisites, 53:137, 53:215; consent, 53:184.

53:261 Industrial Water Quality Control 3 s.h.
Industrial water and wastewater treatment systems. Water quality needs for various industrial uses and the unit operations to achieve these requirements. The sources and characterization of industrial wastes, and the unit operations as applied to treatment of industrial wastes. Prerequisites, 53:131, 53:214, 53:184.

53:364 Applied Limnology cr.arr.
The practical application of limnological techniques to stream sanitation and water quality investigations. Prerequisite, 53:188.

53:369 Environmental Engineering Systems Special Topics 2 s.h.
Detailed study of selected topics in water quality control, air pollution control, and solid waste disposal. Evaluation of current research reports and advances in environmental engineering practice. May be repeated for credit. Prerequisite, consent of instructor.

53:372 Urban Transportation Planning 3 s.h.
Services and systems based upon the analysis of traffic, land use, economic and other survey data, and the preparation of mathematical models. Emphasis for qualified graduate students in civil engineering and in urban and regional planning.

53:373 Transportation Systems I 3 s.h.
The design, construction, and operation of unique and integrated transportation systems and their terminal and exchange facilities. Prerequisite, consent of instructor.

53:395 Earth Pressures and Retaining Structures 3 s.h.
Earth pressures and soil stability theories; experimental studies of earth pressures and unique soil failure theoretical and empirical ideas for the design of retaining walls, basal cut-offs, anchored tiebacks, cantilevers, and culverts. Prerequisite, 53:136 or consent of instructor.

53:395 Seminar: Water Resources Development 3 s.h.
An interdisciplinary seminar on the sociological, economic, and engineering aspects of water resources management. Same as Mechanics and Hydraulics 53:395. Prerequisite, approval of Department.

ELECTRICAL ENGINEERING
Chairman of Department, E. D. Eymann Office, 4460 Engineering Building STAFF
Professors: Donald L. Ekley, Earl D. Eymann.
Assistant Professors: Edwin R. Kurtz, Carl H. Messer, Lawrence A. Wey.

Undergraduate Curriculum Semester Hours Total
Freshman Year
Total Principles of Chemistry I 4 4 4 4 4 8
Literature and Composition I, II 4 4 4 4 4 8

Same as Preventive Medicine and Environmental Health 62:520. Prerequisite, 52:137.

53:260 Environmental Engineering IV: Systems Laboratory 2 s.h.
Laboratory study and analysis of the physical, chemical, and biological systems utilized in environmental engineering with emphasis on the interpretation of theoretical concepts in real systems. Prerequisites, 53:137, 53:215; consent, 53:184.

53:261 Industrial Water Quality Control 3 s.h.
Industrial water and wastewater treatment systems. Water quality needs for various industrial uses and the unit operations to achieve these requirements. The sources and characterization of industrial wastes, and the unit operations as applied to treatment of industrial wastes. Prerequisites, 53:131, 53:214, 53:184.

53:364 Applied Limnology cr.arr.
The practical application of limnological techniques to stream sanitation and water quality investigations. Prerequisite, 53:188.

53:369 Environmental Engineering Systems Special Topics 2 s.h.
Detailed study of selected topics in water quality control, air pollution control, and solid waste disposal. Evaluation of current research reports and advances in environmental engineering practice. May be repeated for credit. Prerequisite, consent of instructor.

53:372 Urban Transportation Planning 3 s.h.
Services and systems based upon the analysis of traffic, land use, economic and other survey data, and the preparation of mathematical models. Emphasis for qualified graduate students in civil engineering and in urban and regional planning.

53:373 Transportation Systems I 3 s.h.
The design, construction, and operation of unique and integrated transportation systems and their terminal and exchange facilities. Prerequisite, consent of instructor.

53:395 Earth Pressures and Retaining Structures 3 s.h.
Earth pressures and soil stability theories; experimental studies of earth pressures and unique soil failure theoretical and empirical ideas for the design of retaining walls, basal cut-offs, anchored tiebacks, cantilevers, and culverts. Prerequisite, 53:136 or consent of instructor.

53:395 Seminar: Water Resources Development 3 s.h.
An interdisciplinary seminar on the sociological, economic, and engineering aspects of water resources management. Same as Mechanics and Hydraulics 53:395. Prerequisite, approval of Department.

ELECTRICAL ENGINEERING
Chairman of Department, E. D. Eymann Office, 4460 Engineering Building STAFF
Professors: Donald L. Ekley, Earl D. Eymann.
Assistant Professors: Edwin R. Kurtz, Carl H. Messer, Lawrence A. Wey.

Undergraduate Curriculum Semester Hours Total
Freshman Year
Total Principles of Chemistry I 4 4 4 4 4 8
Literature and Composition I, II 4 4 4 4 4 8

Same as Preventive Medicine and Environmental Health 62:520. Prerequisite, 52:137.
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, magnetostatics, wave theory, and circuit theory.

Admission requirements: The normal admission requirements of the department are:
1. A grade point average of 3.0 on all courses in electrical engineering, mathematics, and physics for M.S. students; for Ph.D. students, a 3.0 average is required.
2. An M.S. student with a grade point average less than 3.0 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. Exceptional circumstances may permit deviations from the normal standards in individual cases.

Master of Science in Electrical Engineering. Both thesis and course work programs are available. The degree requirements are:
1. At least 30 semester hours of credit in an approved, coherent program acceptable to the advisor and the graduate committee. The following items are required in the program:
   a. At least 21 semester hours of coursework in electrical engineering, including courses required for electrical engineering undergraduates.
   b. At least 9 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 24 semester hours of coursework may be taken.
2. Qualification of the M.S. or the Ph.D. level in the electrical engineering graduate qualifying examination.
55:42 Electromechanical Machines and Systems 3 a.h.
Principles of operation of electromechanical machines used for energy conversion and control; analysis of electromechanical control systems. Prerequisite, M5:24 or M5:26.
55:50, 60, 70, 80 Professional Seminar no cr. Four semesters required. For junior and senior electrical engineers.
55:51 Electrical Engineering Laboratory 1 2 a.h.
Corerequisite, M5:23.
55:52 Introduction to Electrical Engineering Analysis 4 a.h.
Mathematical methods used in the analysis of electrical systems, including matrix theory, vector calculus, functions of a complex variable, theory of residues, and special functions. Prerequisites, M5:52 and Mathematics 322M-37.
55:51 Electrical Engineering Laboratory II 2 a.h.
Prerequisite, M5:51; corerequisite, M5:42.
55:72 System Theory 4 a.h.
Application of Laplace transforms and other methods to the analysis of feedback control systems and distributed parameter systems. Prerequisite, M5:52.
55:71 Electrical Engineering Laboratory III 2 a.h.
Prerequisite, M5:52.
55:74 Elements of Electrical Engineering III 3 a.h.
Principles of electronics, circuits, and fields for engineers other than electrical.
55:51 Electrical Engineering Laboratory IV 2 a.h.
Special individual laboratory projects for advanced seniors. Prerequisite, M5:71.
55:82 Topics in Electrical Engineering 1 to 3 a.h.
Special topics in electrical engineering for undergraduates only. Prerequisite, consent of instructor.
55:84 Elements of Electrical Engineering 3 a.h.
Continuation of M5:74, which is prerequisite.
55:95 Honors Senior Laboratory 2 a.h.
Individual laboratory projects for Honors senior students. Prerequisite, M5:92.
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. Prerequisite, M5:84.
55:92 Electrical Engineering Design II 3 a.h.
Prerequisite, M5:92 with emphasis on the project. Prerequisite, M5:92.

For Undergraduates and Graduates
55:100 Elements of Applied Electronics 2 or 3 a.h.
A survey course of topics in electrical engineering, including direct-current circuits, alternating-current circuits, computer analysis of circuits, diodes, vacuum tubes, and transistors. The emphasis is on practical applications. Prerequisite, Mathematics 222M or consent of instructor.
55:101 Elementary Electronic Instrumentation 2 or 3 a.h.
A continuation of M5:100. Topics include amplifiers, measurement circuits, feedback, oscillators, and power and digital circuits. Prerequisite, M5:100.
55:133 Principles of Communication Engineering I 3 a.h.
A unified approach to principles underlying digital communication systems. Bandwidth, waveforms, optimum receiver principles, and efficient signaling for message sequences. Prerequisite, M5:125 or consent of instructor.
55:150 Topics in Electrical Engineering 1 to 3 a.h.
Special topics in electrical engineering offered by arrangement 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, multichannel, modulation, detection, etc. Prerequisite, M5:67.
55:160 Control Systems Analysis 3 a.h.
Analysis and synthesis with applications. An integrated treatment using both frequency and time domain techniques is emphasized. The relative advantages of Lagrange Transforms and State Variable formulations are illustrated by the treatment of real physical problems. Same as Mechanical Engineering M5:130. Prerequisite, senior status or consent of instructor.
55:161 Control Systems Synthesis 3 a.h.
55:162 Control Systems Laboratory 2 or 3 a.h.
Correlation between theory and practice is obtained through investigation of component and overall system behavior. Specification and design of complete systems is carried out with emphasis on correlating imposed by the physical system. Same as Mechanical Engineering M5:242. Prerequisites, M5:160 and consent of instructor.
55:170 Theory of Linear Networks I 3 a.h.
Systematic formulation of active network equilibrium equations, N-port descriptors, interconnections, and equivalence. Synthesis of active 1-ports. Open to seniors and graduate students only. Prerequisite, M5:43.
55:171 Electromagnetic Theory 3 a.h.
Continuation of M5:25, which is prerequisite.
55:172 Electromagnetic Theory 3 a.h.
Statics 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 switching circuits; hardware and design of digital combinational circuits. Prerequisite, senior standing.
Logic and system design of computer systems and subasys.
55:175 Digital Circuits and Systems I 3 a.h.
Introduction to digital circuit principles including logic gates, multivibrators. Basic combinational switching cir-
55:176 Digital Circuits and Systems II 3 a.h.
Continuation of M5:175. Integrated digital circuit principles.
55:177 Digital Systems Laboratory 2 a.h.
Experiments on combinational logic circuits and digital systems. Prerequisite, M5:175 or consent of instructor.
55:180 Theory of Linear Networks II 3 a.h.
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
55:185 Introduction to Statistical Communication Theory 3 a.h.
Representation of deterministic and random signals; analysis of modulation systems, multiplex systems and digital systems; introduction to information theory. Prerequisite, Calculus 205/230 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 scope 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 nonlinear systems we are treated throughout the course. Prerequisite, 55:55 or consent of instructor.

55:187 Hybrid Computers and Applications 3 a.h.
Analog and digital computer capabilities, hybrid computer system components, linkage systems, and applications. Problem formulation for hybrid systems. Prerequisite, 55:186 or consent of instructor.


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, primarily by groups, through special arrangements with individual faculty members.

55:213 Recent Advances in Electrical Engineering 1 to 3 a.h.
Concentrated study, normally on an independent individual 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 perturbative techniques; nonlinear mode expansions. Solution principles, special propagation, identical topics as time permits. Prerequisite, consent of instructor.

55:217 Switching Theory II 3 a.h.
Continuation of 55:173, covering advanced topics. Prerequisite, 55:173.

55:226 Advanced Electromagnetic Theory II 1 a.h.
Continuation of 55:216.

55:227 Advanced Topics in Plasma Physics 2 or 3 a.h.
Selected topics in plasma physics. Prerequisite consent of instructor.

55:230 Noise Theory 3 a.h.
Mathematical analysis, statistical theory of random signal theory, Wiener filter, matched filter, and detection devices. Prerequisite, 55:185 or consent of instructor.

55:331 Information Theory 3 a.h.
Quantitative measure of information; discrete and continuous sources; source encoding and decoding; discrete and continuous channels; channel encoding and decoding. Prerequisite, 55:185 or consent of instructor.

55:332 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 computation in the presence of noise. Prerequisite, 55:185 or 55:212.

55:333 Principles of Communication Engineering II 3 a.h.

55:341 Research: Electrical Engineering (M.S. Thesis) 1 to 6 a.h.

55:342 Research: Electrical Engineering (Ph.D. Thesis) 1 to 6 a.h.
Credit arranged from 1 to 10 semester hours.

55:352 Seminar: Communication Systems 1 to 3 a.h.
Selected topics in communication systems theory. Prerequisite, consent of instructor.

55:353 Seminar: Digital Computer Systems 1 to 3 a.h.
Discussion of recent advances in digital computer organization and design. Prerequisite, consent of instructor.

55:354 Seminar: Switching Theory 2 or 3 a.h.
Individual or group study of advanced problems in switching theory. Prerequisite, consent of instructor.

55:355 Seminar: Coding 2 or 3 a.h.
Selected topics in coding theory and techniques. Prerequisite, consent of instructor.

55:360 Sampled Data Control Systems 3 a.h.

55:361 Nonlinear Control Systems 3 a.h.
Same as Mechanical Engineering 26:361. Offered in alternate years beginning in 1969-70.

55:363 Optimal Control Systems 3 a.h.
Variational methods, the calculus of variations, dynamic programming, and the maximum principle. Same as Mechanical Engineering 26:363. Prerequisite, 55:160. Offered in alternate years beginning in 1969-70.

55:365 Stochastic Control Systems 3 a.h.
Probability theory and random variables, including probability axioms, jointly distributed random variables, and conditional probabilities and expectations; stochastic processes, including random differential equations, normal, Markov, and other processes; optimal estimation theory including smoothing, filtering and prediction; and stochastic optimal control theory. Same as Mechanical Engineering 26:365. Prerequisite, consent of instructor.

55:366 Seminar: Control Systems 2 or 3 a.h.
Formal discussion of recent advances in control system analysis and synthesis. Same as Mechanical Engineering 26:366. Prerequisite, consent of instructor.
Undergraduate Curriculum

Freshman Year

1st Semester
4:1 Principles of Chemistry I 4 4 0
4:6, 5:6 Literature and Composition I, II 4 4 0
9:22, 9:22, 36 Mathematics III, I 3 3 0
11:1, 2 Introduction to Engineering I, II 4 4 0
11:6 Thermodynamics I 4 4 0

Total 17 17 0

2nd Semester
20:17, 36 Mathematics III, IV 3 3 0
51:11, 12 Dynamic Systems Analysis I, II 3 3 0
51:15 Materials Science 3 3 0
51:17 Mechanics of Solids 4 4 0
11:18 Mechanics of Fluids and Transfer Processes 4 4 0
58:34 Materials Processing I 3 3 0

Total 15 15 0

Sophomore Year

225, 290 Mathematics III, IV 3 3 0
11:11, 12 Dynamic Systems Analysis I, II 3 3 0
51:15 Materials Science 3 3 0
51:17 Mechanics of Solids 4 4 0
11:18 Mechanics of Fluids and Transfer Processes 4 4 0
58:34 Materials Processing I 3 3 0

Total 15 15 0

Juniors Year

225:10 Probability and Statistics for Engineering and Physical Sciences 3 3 0
29:62 Physics I 3 3 0
29:61, 22 Principles of Design I, II 3 3 0
29:65 Electromagnetics I 4 4 0
56:61 Professional Seminar 1 1 0

Total 16 15 1

Senior Year

29:63 Physics II 3 3 0
29:62 Professional Seminar 1 1 0
56:141 Introduction to Research 1 1 0
56:144 Information Systems Design and Management 4 4 0
29:61 Design of Methods and Measurements Systems 4 4 0
51:15 Materials Science II 4 4 0
51:122 Engineering Statistics 2 2 0

Total 16 16 12

Strongly recommended elective: 

11:356 Human Engineering 3 3 0
51:90 Psychology in Management 3 3 0

Graduate Program

The purpose of the industrial and management engineering graduate programs at both M.B. 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 allowed for emphasis in engineering, management, human factors, operations 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 2.5 of 4.0 or an acceptable score on the Graduate Record Examination Aptitude Test (minimum 450 Verbal, 450 Quantitative). Students may also be recommended by industrial advisors with a 2.5 or 4.0 grade-point average. Students may also be recommended by industrial advisors with a minimum M.S. program requires 30 semester hours of coursework and research. Students may choose either a thesis or a non-thesis option. Each option will be evaluated on an individual basis. To be eligible for the M.S. degree, the student is required to maintain a minimum grade-point average of 3.25 of 4.0 on a minimum of 30 semester hours of graduate work.

The nature of the final examination will be specified by the examining committee. It may be comprised of both written and oral exams. The examination will explore further the student's course preparation and/or the student's defense of his thesis or appropriate individual investigations.

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 500 Verbal, 700 Quantitative). Students may also be admitted from baccalaureate or master's programs on an individual basis. A qualifying examination may be required.

Admission of degree candidates will require a minimum grade-point average of 3.5 of 4.0 on a minimum of 30 semester hours of graduate work and the demonstration of capability for individual investigations.

Upon completion of the coursework specified by his committee, the student is required to present a dissertation. The dissertation will be evaluated by the student's advisor and three additional faculty members. The student will be evaluated on the ability to analyze and synthesize the subject area and the ability to conduct original research and make a contribution to the scientific community.

The dissertation will be evaluated by the student's advisor and three additional faculty members. The student will be evaluated on the ability to analyze and synthesize the subject area and the ability to conduct original research and make a contribution to the scientific community.

Financial assistance is available through a limited number of fellowships, fellowships, University, townships, and private foundations. The University also participates in a student loan program and has an honorarium program for students who are members of the professional faculty.

COURSE DESCRIPTIONS

Primary for Undergraduates

36:15 Materials Science I

3rd Year: Spring 1971
56:11 Principles of Design I
Same as Engineering 51.21.
3 s.h.

56:22 Principles of Design II
Same as Engineering 51.22.
3 s.h.

56:24 Materials Processing I
2 or 3 s.h.

56:81 Professional Seminar
no cr.

56:82 Professional Seminar
1 s.h.
Guest lecturers, student reports, and assemblies. Required of juniors and seniors in industrial engineering.

For Undergraduates and Graduates
56:101 Introduction to Industrial and Management Engineering 4 s.h.
Methods of analysis of engineering and economic factors encountered in the development of a product, process, or service. Prerequisites: junior standing.

56:105 Engineering Administration 3 s.h.
Human and economic factors. Related behavioral science research, wages, taxes, nature of the engineering function. Prerequisite, consent of instructor.

56:107 Engineering and Management
3 s.h.
Projects and problems related to implementation of engineering in manufacturing, distribution, and service.

56:110 Individual Investigations
2 to 5 s.h.
Prerequisite, special departmental permission.

56:126 Procedure Analysis I
3 s.h.
Conventional methodology of work simplification and design. Brief consideration of time study. Primarily for non-engineering students. Prerequisite, senior standing.

56:128 Materials Science II
2 to 4 s.h.
Physical metallurgy and consideration of nonmetallic materials of engineering importance. Prerequisite, 51.13 or consent of instructor.

56:133 Statistical Operations Analysis
3 to 4 s.h.
Emphasis on construction, data collection, and optimization of models representing hospital situations. Course material and project building upon principles of the principles and approach of industrial engineering and operations research to the study of hospital management systems.

56:131 Probability and Statistics for Engineering and Physical Sciences 4 s.h.
Probability models, general probability models, random variables, functions of random variables, expectations, joint distributions, discrete distributions, continuous distributions, estimation, hypothesis testing, regression, correlation, correlation response surfaces, introduction to experimental design. Same as Statistics 52.53, 52.54. Prerequisite: Calculus.

56:135 Quality Control and Reliability 3 s.h.
Basic control charts, their purpose, comparison, various tests based on charts, sampling inspection, reliability data systems, reliability estimation, discrete and continuous models, structure models, reliability decisions. Same as Statistics 52.52, 52.53, 52.54. Prerequisite, 56.131 or equivalent.

56:141 Introduction to Operations Research
3 or 4 s.h.
Topics in operations research including linear programming, dynamic programming, queuing, inventory, and simulation. Primarily for engineering undergraduates and business and economics graduate students desiring a one-semester treatment. Prerequisite, 56.131, Statistics 25.39, or equivalent.

56:142 Production-Inventory Models 3 s.h.
An introduction to production-inventory models with emphasis on construction, problems of practical application and optimization. Topics include deterministic and stochastic models, dynamic inventory models, and multi- echelon problems. Prerequisites: 56.121 or equivalent.

56:143 Digital Systems Simulation I 3 s.h.
Simulation of the operating characteristics of complex systems using computer and computer languages. Topics include random number generation and file maintenance. Emphasis on the design of computer simulation experiments and the statistical analysis of simulation data. Prerequisite, 56.121 or equivalent.

56:144 Information Systems Design 3 s.h.
Study of the effect of digital computer upon the organization, its information and management requirements and problem-solving processes. Prerequisites: 56.141 or equivalent.

56:155 Human Engineering 3 s.h.
Design of man-machine systems and the development of an optimum work environment by applying principles of behavioral science, emphasis on sensory and perceptual processes, motor skills, and experimental methodology. Same as Psychology 51.15.

56:159 Psychology in Management 2 s.h.
Prerequisite, senior standing.

56:161 Design of Methods and Measurement Systems 4 s.h.
Problems of analysis and design encountered in integrating the human and productive systems. Prerequisite, 56.121, 56.131.

56:164 Work Methods and Measurements 2 or 3 s.h.
Continuation of 56.161. Emphasis on measurement of in-task activities. Prerequisites: 56.161.

56:181 Nondestructive Testing
2 to 4 s.h.
Theory and management of nondestructive testing. Prerequisite, Engineering 51.13 or consent of instructor.

56:182 Industrial Engineering Laboratory 3 s.h.
Analysis, design, and timing of materials processing systems. Prerequisite, senior standing.

56:184 Materials Processing II
2 to 4 s.h.
Theoretical and design aspects of thermal-interaction. Prerequisite, 56.134.

56:185 Industrial Automation
2 to 4 s.h.
Theory and application of control and power characteristics of fluid, mechanical, and electrical devices utilized in the design of mechanized production facilities.

56:186 Materials Science III
2 s.h.
Structure and properties of emerging engineering materials. Prerequisite, Engineering 51.13.

56:196 Seminar: Applications of Engineering in Management 1 or 3 s.h.
Prerequisites: 56.135 or consent of instructor.

56:197 Seminar: Topics in Human Factors Engineering 3 s.h.
Prerequisite, 56.135 or consent of instructor.

56:199 Seminar: Management Engineering 3 s.h.
Formal reports and discussions on recent scientific contributions to the field. Prerequisite, senior standing.

271
Primarily for Graduates

56.203 Advanced Topics in Industrial and Management Engineering 3 to 6 s.h.
Solving optimization and operating problems utilizing current industrial and management science techniques such as linear programming, simulation, computer and statistical applications, queueing and decision making. Prerequisite: Consent of instructor.

56.212 Engineering Administration II 3 s.h.
Techniques of financing, controlling, and optimizing research and development efforts. Prerequisite: Consent of instructor.

56.214 Human Factors in Production Systems 2 to 4 s.h.
A critical consideration of current problems and the art for easing man into productive systems. Prerequisite: Consent of instructor.

56.211 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 255/159. Prerequisite: Math 161 or equivalent.

56.232 Regression Analysis 3 s.h.
Empirical construction and testing of models using linear and nonlinear regression techniques. Emphasis on selection of significant variables and on use of regression equations. Same as Statistics 255/159. Prerequisites: Math 161 or equivalent.

56.233 Statistical Decision Theory 3 s.h.
The general problem of statistical decision theory and its applications. The comparison of decision rules including Bayes and minimax rules; the decision-theoretic viewpoint of statistical inference; multiple decision procedures. Applications to problems in inventory, capital investment, quality control, and production. Same as Statistics 255/159. Prerequisites: Math 252/153 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 systems, scheduling, and flow networks. Prerequisites: Consent of instructor.

56.241 Operations Research 3 s.h.
A one-semester survey for M.S. level engineering or related students. Optimization: topics from both linear and nonlinear programming. An introduction to queuing from the fields of operation, inventory theory, and decision theory. Prerequisites: Graduate standing in engineering, mathematics, or science.

56.242 Mathematical Programming I 3 s.h.
An introduction to optimization topics and mathematical programming applied to decision problems covering linear and nonlinear optimization. Linear and nonlinear programming. Prerequisites: Graduate standing and knowledge of multivariable calculus.

56.243 Mathematical Programming II 3 s.h.
Continuation of 56.242. Coverage includes primal-dual methods, integer linear programming, separable and dynamic programming and other current topics in the field. Prerequisites: 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 multistage decision models. Prerequisites: 56.242.

56.245 Stochastic System Design I 2 to 4 s.h.
Stochastic-based problems in the fields of queueing, renewal, and other service systems. Prerequisites: Math 164 or equivalent.

56.246 Stochastic System Design II 2 to 4 s.h.
Continuation of the study of stochastic problems from the fields of queuing, renewal, and reliability theory. Emphasis on data analysis and parameter estimation. Prerequisites: 56.245.

56.247 Theory of Scheduling 3 s.h.
Scheduling problems in machine shops, computer systems, and other complex systems; optimal scheduling rules for deterministic models; heuristic disciplines for stochastic models. Prerequisites: Math 252/153 and 56.246.

56.248 Branch and Bound Methods 3 s.h.
The use of branch and bound, heuristic and integer algorithms or problems of optimization research and management science. Prerequisites: Math 252/153.

56.249 Simulation for System Analysis and Design 3 s.h.
Continuation of 56.248 including Monte Carlo methods. Prerequisites: Math 252/153.

56.251 Materials Science IV 2 to 4 s.h.
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.

56.264 Design for Production 2 to 4 s.h.
Tool, product, and process design from standpoint of ease of manufacture and operation. Prerequisite: Consent of instructor.

56.299 Research: Industrial and Management Engineering cr.arr.
Prerequisite: Consent of instructor.

MECHANICAL ENGINEERING
Chairman of Department, Thomas P. Anderson
Office, 2204 Engineering Building
c

Undergraduate Curriculum

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>1st and Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshmen Year</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Principles of Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>Statics and Mechanics I, II</td>
<td>4</td>
</tr>
<tr>
<td>Introduction to Engineering I, II</td>
<td>4</td>
</tr>
<tr>
<td>Thermodynamics I</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
</tr>
</tbody>
</table>
Collage of Engineering

Senior Year

520-29 Probability and Statistics for Engineering and Physical Sciences 3 3 0
520-82 Physics I 3 3 0
521-32 Principles of Design I, II 3 3 0
521-33 Electromagnetic Theory 3 3 0
561-52 Experimental Engineering 3 3 0
561-53 Thermodynamics I 3 3 0
561-62 Thermodynamics II 3 3 0
Technical Electives 0 3 3
Total 18 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 Catalog section of this Catalog. No explicit requirements are specified in the graduate program. Information about the graduate programs and all requirements can be found in the Graduate Catalog. 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 the required courses of study.

Admission requirements. The minimum requirements for admission to a graduate program in mechanical engineering are, in general, as those for the Graduate College. Although graduate students in mechanical engineering will ordinarily have a baccalaureate degree in mechanical engineering or a closely related field, students who are interested in interdisciplinary programs may be admitted, if a careful review of their qualifications and objectives finds them suitable.

Master of Science in mechanical engineering. The Master of Science degree with thesis requires a minimum of 36 semester hours of acceptable credit including not more than 6 semester hours of credit for thesis work. Completion of a thesis and satisfactory examination are required. A Master of Science degree will ordinarily be available only to certain well qualified students who have the approval of their department advisor.

Doctor of Philosophy. The Doctor of Philosophy degree is granted primarily on the basis of achievement rather than on the accumulation of semester hours of credit. However, the candidate is normally expected to have completed three years of graduate study, or two years of graduate study if he already holds a recognized master's degree. The candidate is also normally expected to have completed the preliminary examinations, an oral examination and a final examination which is a defense of his thesis.

COLLEGE OF ENGINEERING

Junior Year

520:39 Probability and Statistics for Engineering and Physical Sciences 3 3 0
520:82 Physics I 3 3 0
521:32 Principles of Design I, II 3 3 0
521:33 Electromagnetic Theory 3 3 0
561:52 Experimental Engineering 3 3 0
561:53 Thermodynamics I 3 3 0
561:62 Thermodynamics II 3 3 0
Technical Electives 0 3 3
Total 18 15 31

Senior Year

520:29 Probability and Statistics for Engineering and Physical Sciences 3 3 0
520:82 Physics I 3 3 0
521:52, 56 Mechanical Engineering Design I, II 4 3 7
Technical Electives 0 3 3
Total 16 15 31

8th semester 128

58:11 Thermodynamics I 4 3 0
58:11 Thermodynamics II 3 3 0
58:12 Thermodynamics I 3 3 0
58:12 Thermodynamics II 3 3 0
58:15 Experimental Engineering 4 3 0
58:54 General principles of physical measurement, standards, calibration, and estimation of error. Static and dynamic performance of measuring elements. Laboratory experiments on weights, strain, and radiation phenomena. Planning for experiments including individual experimental projects.

8th semester 128

58:02 Thermodynamics I 3 3 0
58:02 Thermodynamics II 3 3 0
Elemental aspects of thermodynamics; basic concepts, heat transfer, and ideal gases; applications of the laws of thermodynamics. An introduction to the fundamentals of radiative and Convection heat transfer.

58:15 Experimental Engineering 4 3 0
Solutions of design problems with emphasis on the overall design approach developed in the preceding analysis and design and design courses. Selection and preliminary definition of design projects suitable for use as projects in Mechanical Engineering Design II. Prerequisite, senior standing or consent of instructor.

58:16 Mechanical Engineering Design II 3 3 0
Continuation of 58:15 with primary effort devoted to completion of a student-designed design project. Prerequisite, 58:15 or consent of instructor.

58:17 Professional Seminar 3 3 0
Seminar to discuss selected topics of current interest. Prerequisite, consent of instructor.

58:101 Thermoelectricity 3 3 0
A series of topics varying from basic theory to device applications. Emphasis on elements used as thermocouples, temperature measurement, and refrigeration. Prerequisite, consent of instructor.

58:105 Analog Methods in Mechanical Engineering 3 3 0
Demonstration and use of various analog devices and models for the analysis and design of mechanical and electrical systems. Prerequisite, 58:10.

58:106 Aerodynamics 3 3 0
Fundamental principles of flow applied to airplane, helicopter, and missile aerodynamics. Bernoulli equation, vortex flow, lift, and drag. Prerequisites, 58:10, Mathematics 118A, and 118B.

58:110 Laboratory Investigations 2 0 5
Advanced course for students who have completed 58:10. Given only by special permission and arrangements.

58:111 Gas Dynamics 3 3 0
Thermodynamics of compressible fluid flow with applications of the energy, momentum, and continuity equations, flow with variable and constant area, flow with and without friction, and flow with and without heat transfer.

58:120 Heat and Mass Transfer 3 3 0
Analysis of heat and mass transfer by conduction, convection, and radiation; principles of mass transfer and applications to...
the solutions of engineering problems. Prerequisites: M142 or consent of instructor.

58:151 Intermediate Mechanics of Fluids 3 a.h.

58:152 Intermediate Heat Transfer 3 a.h.

58:153 Control Systems Synthesis 2 or 3 a.h.

58:154 Statistical Thermodynamics 2 or 3 a.h.

58:155 Engineering Analysis 3 a.h.

58:161 Control Systems Synthesis 2 or 3 a.h.

58:162 Control Systems Laboratory 0 to 2 a.h.

58:175 Fatigue 2 or 3 a.h.

58:180 Propulsion 3 a.h.

58:190 Seminar: Mechanical Engineering 1 to 3 a.h.

For further information, please consult the departmental bulletin or the student handbook.
semester hours are devoted to the dissertation, and 18 or more semester hours to mathematics or other closely related areas, leaving approximately 20 semester hours of major courses to be taken in the department. Choice of major subjects is based on the particular line of interest 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 1 hour of English at the appropriate level. Candidacy is decided upon the basis of grade-point average. A candidate must be appointed for each graduate student with considerable attention to the student's desires in the matter, although some adjustments may have to be made in case of overloading of a particular staff member. The comprehensive examination, following the Graduate College regulations, must be taken by the next to the last academic 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, NSF or NIH, graduate research assistantships are available from the graduate college upon recommendation from the department, and, a considerable amount of contract work relies on initiating a number of graduate students as research assistants. Cur- rently, the income from these sources is in the neighborhood of $50,000 and in the soldees 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.

COURSE DESCRIPTIONS

Prereqs for Undergraduates

59:17 Mechanics of Solids 4 s.h.
Same as Engineering 53:17.

59:18 Mechanics of Fluids and Transfer Processes 4 s.h.
Same as Engineering 53:18.

59:21 Computational Methods 1 or 2 s.h.
Logic and arithmetic of digital computers, flow charts, computer programs, applicability to simple problems.

59:49 Fluid Mechanics Laboratory 1 s.h.
Experiments illustrating elementary principles of fluid mechanics. One-three-hour period per week. Prerequisite: 59:21.

For Undergraduates and Graduates

59:111 Hydrology 3 to 5 s.h.*
Climatological and stream-flow data, frequency and intensity of storms and floods, infiltration and runoff estimates. Storage problems. Prerequisite: 59:18.

59:112 Hydrogeophysical Development 3 to 5 s.h.*
Hydrologic problems of power development structures, selection of machinery, economic considerations.

59:114 Hydraulic Machinery 3 s.h.
Theory, design, and selection of hydraulic machines. Draft tubes. Prerequisite: 59:18.

59:115 Analog and Digital Techniques 3 s.h.
Data Reduction Systems 3 s.h.
Utilization of the combined techniques of analog and digital computers to compute, linearize and perform analytic computations on electrical signals derived from physical systems.

59:118 Irrigation and Drainage 2 s.h.
Engineering aspects of irrigation systems.

59:129 Floats in Open Channels 3 to 6 s.h.
Fundamentals of gradually varied and rapidly varied flow both steady and unsteady. Prerequisite: 59:21.

59:131 Continuum Mechanics 3 s.h.
Geometrical foundations; concept of stress and strain tensors; analysis of stress and strain; fundamental physical laws; constitutive equations; applications in solid and fluid mechanics. Prerequisite: senior standing or consent of instructor.

59:141 Numerical Calculations 3 s.h.
Algorithm development, algebraic equations, numerical differentiation and integration, solution of initial and boundary value problems, emphasis on digital computation. Prerequisite: Mathematics 52:30.

59:152 Compressible Flow I 3 s.h.
Same as Mechanical Engineering 52:32.
Prerequisite, 59:21.

59:155 Intermediate Mechanics of Deformable Bodies 3 s.h.
The application of equilibrium analyses, strain-displacement relations, constitutive relations to complex structural systems. Prerequisite, 59:43.

59:156 Dynamic Analysis of Structures 3 s.h.

59:157 Energy Methods in Structural Analysis 3 s.h.
Prerequisite, 59:156.

59:161 Mathematical Methods in Continuum Mechanics I 3 s.h.
Analysis, approximate methods for developing solutions to problems of continuum mechanics. Primarily for first-year graduate students in engineering or science.

59:162 Mathematical Methods in Continuum Mechanics II 3 s.h.
Continuation of 59:161.

59:173 Theory of Elasticity 3 s.h.

59:180 Porous Media Hydrodynamics 3 s.h.
Flow of an equivalent of 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, berm dams, geology.

59:189 Earth Dams and Apportionments 2 to 4 a.h.*
Rolled fill dams, chute spillways, outlet works, diversions, dams on pervious foundations, movable dams.

59:190 Intermediate Dynamics 3 a.h.
Theoretical and applied Newtonian and Lagrangian dynamics of particles and rigid bodies. Prerequisites: Math 235, Math 236.

59:191 Advanced Dynamics 5 a.h.
Lagrangian and Hamiltonian formulations for the dynamical analysis of discrete and continuous systems, with emphasis on applications. Prerequisites: Math 235 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. Prerequisites: Math 235 or consent of instructor.

59:193 Nonlinear Mechanics II 3 a.h.
Continuation of 59:192. Emphasis on problems of continuum mechanics. Prerequisites: Math 235 or consent of instructor.

59:195 Experimental Stress Analysis 2 a.h.
Stress analysis by means of strain measurements. Mechanical, electrical, and optical strain gages. Stress contouring and photoelasticity. Prerequisites: Math 235.

The regular course carries the minimum credit unlisted. Advanced students may earn additional credits 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 nonmechanics majors who desire reduced credit in 59:215, 59:25, and 59:24. May be repeated.

59:204 Hydraulic Analysis of Unsteady 2 to 4 a.h.

59:213 Theory of Elasticity 3 a.h.
Selection of topics in the mathematical theory of elasticity. Prerequisites: Math 235.

59:217 Advanced Mechanics of Fluids 2 a.h.
Fundamentals of inviscid irrotational and potential flow, conformal transformation. Prerequisites: Math 235, Math 236.

59:218 Advanced Mechanics of Fluids 2 a.h.

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: Math 235.

59:230 History of Mechanics, Hydraulics 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.

Experimental and/or analytical investigation of an approved problem in mechanics, hydraulic engineering, or related areas.

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. Prerequisites: Math 235.

59:231 Continuum Mechanics 3 a.h.
Foundations of the general (continuum) 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. Prerequisites: Math 235.

59:239 Flood Control 3 a.h.
Flood runoff characteristics, damns, reservoirs, flood alleviation and protection, economic considerations. Prerequisites: Math 235.

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, stress, and displacement constraints on structures treated. Organized design methods developed. Prerequisites: Math 235.

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.
Stability criteria, theory of buckling, bifurcation theory, variational methods, beams, plates, rigid frames. Post buckling behavior. Plastic buckling. Some as Civil Engineering 59:247. Prerequisites: Math 235 or consent of instructor.

59:249 Mechanics of Sediment Transport 2 to 5 a.h.*
Laws governing fall velocity, applications to particle-size analysis, current motion, bed forms, bed load and suspended load, natural river processes. Theory and practice of movable-bed model experiments.

59:250 Environmental Dispersion 2 a.h.
Review of classical diffusion theories; dispersion of dissolved and particulate matter in open channel flow; selected topic including mechanisms of respiration and chemical pollution. Prerequisites: Math 235 or equivalent.

59:251 Wave Mechanics 3 a.h.
Analysis of wave propagation phenomena in continuous media, with engineering applications. Prerequisites: Math 235 or consent of instructor.

59:253 Surface Waves in Fluids 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.

277
59:260 Theory of Plates 3 s.h.

59:261 Theory of Shells 3 s.h.

59:272 Plasticity 3 s.h.

59:275 Theory of Viscoelasticity 3 s.h.

59:275 Seminar: Water Resources Development 2 s.h.
An interdepartmental seminar on the sociological, economic, and engineering aspects of water resources development. Prerequisite, approval of department. Same as Civil Engineering 59:295.
The University of Iowa has been a leading center of advanced study for three-quarters of a century. Presently, one-fourth of its enrollment is in the Graduate College. This unusually high ratio reflects the breadth of the University’s graduate programs and resources, the strength of a graduate faculty with a long tradition of personal and professional concern for students, and the opportunities afforded graduate students for involvement, recognition, and support.

Graduate courses are offered in all colleges of the University, both professional and nonprofessional. The Graduate College provides the framework through which graduate degree programs are supervised and coordinated.

The 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 nine-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.
- Biochemistry—M.S., Ph.D.
- Biophysics—M.S., Ph.D.
- Business Administration—M.A., M.B.A., Ph.D.
- Computer Education—M.S., M.ED.
- Computer Engineering—M.S., Ph.D.
- Chemical Physics—M.S., Ph.D.
- Chemistry—M.S., Ph.D.
- Child Behavior and Develop- mental—M.A., Ph.D.
- Chinese Language and Civilization—M.A.
- Civil Engineering—M.S., Ph.D.
- Classics—M.A., Ph.D.
- Comparative Literature—M.A., Ph.D.
- Computer Science—M.S., Ph.D.
- Crown and Bridge Pres- sures—M.S.
- Cultural Anthropology and Linguistics—Ph.D.
- Dental Hygiene—M.S.
- Dentistry—M.D.
- Drama—M.F.A., Ph.D.
- Dramatic Art—M.A., Ph.D.
- Education—M.A., M.A.T.
- Electrical Engineering—M.S., Ph.D.
- English—M.A., M.F.A.
- Environmental Engineering—M.S., Ph.D.
- French—M.A., Ph.D.
- Geography—M.S., Ph.D.
- Geology—M.S., Ph.D.
- Geotechnical—M.S., Ph.D.
- Geophysical—M.S., Ph.D.
- German—M.A.
- History—M.A., Ph.D.
- Home Economics—M.A., Ph.D.
- Hospital and Health Ad- ministration—M.S., Ph.D.
- Industrial and Management Engineering—M.S., Ph.D.
- Journalism—M.A.
- Latin—M.A.
- Law Enforcement and Cor- rections—M.A.
- Library Science—M.A.
- Linguistics—M.A.

- Mass Communications—Ph.D.
- Mathematics—M.S., Ph.D.
- Mechanical Engineering—M.S., Ph.D.
- Mechanics and Hydraulics—M.S., Ph.D.
- Microbiology—M.S., Ph.D.
- Nuclear Science and Technology—M.S.
- Nursing—M.A.
- Nutrition—M.S., Ph.D.
- Obstetrics and Gynecology—M.S.
- Office Management—M.A.
- Operative Dentistry and Endodontics—M.S.
- Ophthalmology—M.S.
- Oral Diagnosis—M.S.
- Oral Pathology—M.S.
- Oral Surgery—M.S.
- Orthodontics—M.S.
- Orthopedic Surgery—M.S.
- Otorhinolaryngology—M.S.
- Paediatrics—M.S.
- Periodontology—M.A.
- 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.
- Physiology—M.S., Ph.D.
- Political Science—M.A., Ph.D.
- Preventive Medicine and Public Health—M.S., Ph.D.
- Psychology—M.A., Ph.D.
- Psychiatry—M.S., Ph.D.
- Public Health—M.S., Ph.D.
- Russian—M.A.
- Scientific Communication—M.S., Ph.D.
- Social Work—M.S.
- Speech—M.A., Ph.D.
- Speech Pathology and Audiology—M.A., Ph.D.
- Statistics—M.S., Ph.D.
- Surgery—M.S.
- Urban and Regional Planning—M.S.
- Zoology—M.S., Ph.D.
- Ecology—M.S., Ph.D.
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 the Catalog.

The University Computing Center. Located in East Hall, the Center has a system capable of handling a wide variety of scientific data-processing applications. At present the major computer system is the IBM 360/65 with three-quad- rants of one million positions of high-speed core memory and one million positions of slow-speed core memory, two large disk, 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 Computing Center is available to all students, faculty, and staff members of the University. The Center provides educational and consultative services, and training is given to students and faculty in the use of its resources, to assist users in preparing projects for computer analysis.

The University Libraries. The University's libraries comprise 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 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 assistantships. 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 summer, recipients have full time to pursue studies, research, or writing.

Scholarships. Up to full tuition and fees.

Graduate fellowships. $3,000 for the academic year.

NDEA Title IV fellowships. For prospective college teachers; up to three years' support, with a first-year stipend of $2,400, second year $3,600, and third year $2,800, plus $200 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 $2,600 each intermediate year and $2,800 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 Aids.

Many departments offer additional support through traineeships, part-time employment in research, or part-time teaching appointments. The Office of the Vice-President for Research maintains a library of information on public and private agencies which provide funds for research and graduate study. A considerable amount of material has been collected concerning awards for overseas study.

GRADUATE STUDENT SENATE

The Graduate Student Senate is the University graduate student body's representative organization. Representatives are elected annually from
each department of the University having a graduate degree program. The Senate's primary purpose is to serve the interests of the graduate student body in matters affecting its welfare. The Senate advises the Graduate Dean on matters pertaining to the Graduate College.

RULES AND REGULATIONS OF THE GRADUATE COLLEGE

The Academic Program

Section 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. Admission applications 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 Graduate Record Exam (GRE). Applicants for whom admission data are complete, with the exception of scores on the GRE or the ATGSB, may be admitted if they meet all other requirements. In the case of the GRE or the ATGSB, it must be taken within one semester after registration. The test is given several times a year at test centers established under the direction of the 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 the University Evaluation and Examination Service; and inquiries about the requirement of the Advanced Test should be addressed to the executive of the department in which the applicant is interested.

C. English for Foreign Students. Prior to consideration for admission, foreign student applicants whose native language is other than English must take and pass TOEFL (Test of English as a Foreign Language) unless they have received a degree from an accredited college or university in the United States, the United Kingdom, Canada (except Quebec), Australia, or New Zealand. The examination is given at various times of the year and in many centers throughout the world. Inquiries should be addressed to The Director, TOEFL, Educational Testing Service, Princeton, New Jersey 08540.

Foreign students transferring from unfinished degree programs of other universities in the United States who have not taken 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 4 semester hours of having satisfied all the requirements for the bachelor's degree at The University of Iowa or any other accredited college may be given conditional admission.

E. Candidacy. Admission to the Graduate College is not the equivalent of acceptance as a candidate for an advanced degree, which must be earned through work successfully completed at The University of Iowa. (See Section X, Master's Degrees, and Section XII, Doctoral 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 status" in next paragraph.) Changes in the major or degree status may be made in the course of a student's graduate study with the approval of the department to which the transfer is proposed. To initiate such action the student must file a change of major or degree status in the Office of Admissions.

G. Status upon admission. All students upon admission fall into one of the following categories:

1. Regular. Students who have met the minimum requirements for admission and who have been accepted by a department, or interdepartmental degree program, for work leading to a graduate degree, or certificate, or 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 I, H.) The student on conditional status must achieve regular status within two sessions of registration in the Graduate College by achieving 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 committees of interdepartmental degree programs, may, and often do, set higher minimum admission requirements than those set forth above for the University as a whole. Information concerning departmental or program requirements may be obtained directly from the executive of the department concerned.

For State Board of Regents 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 18 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 15 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 is announced credit. Graduate students may not register for more credit in any course than was indicated 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 15 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 5 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 5 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
GRADUATE COLLEGE

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 at a university or college outside Iowa.
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 credit does not count as residence credit. 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 deans at both institutions will be fully informed by the adviser and have the power to approve or disapprove.
3. A CIC Traveling Scholar will be registered at 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 College.

C. Conditions. CIC Traveling Scholars will normally be limited to one semester or two quarters on another campus. Each university retains its full right to accept or reject any student who wishes to study under its auspices.

Section IV. Academic Standing, Probation, and Dismissal

A. Master's, Specialist, or Certificate Students. A student on regular status shall be placed on probation if, after completing 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. Determination of academic standing on probation. A student on probation shall not be permitted to take comprehensive or final examinations leading to any degree or certificate, nor may he 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 Regents' University may be counted as residence credit in this institution, provided such work is acceptable by the student's major department on the basis of the department's determination of its applicability toward the degree. (See Sections X, D, and XII, C, for minimum semester hours required on campus for the master's and doctor's degree.)

C. Reduction in credit. For courses or seminars in independent study, thesis, and research an instructor may report less credit than the number of semester hours for which a student is registered.

D. Graduate credit for veterans. Credit may be granted for studies pursued in war and military situations under such regulations as may be formulated by the national educational agencies and under such 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 ½ credit.

3. Students who leave within the period of ten to twelve weeks receive ¾ credit.

4. Grade reports for the ¾ and ½ 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.

F. 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 the report card.

7. In each instance the instructor reports the student's credit, grade, and date of cancellation. No credit is granted unless the student's work is satisfactory at the time of leaving.

8. The amount of credit in thesis and research registration is to be reported to the Registrar by individual instructors on the above basis except that less than one credit may be assigned.

Section VI. Marking System

A. Marks carrying advanced degree credit. These are A, B, C, and S—satisfactory.
B. Marks carrying no credit for advanced degree. These are D—poor, F—failed, I—incomplete, W—withdrawn without discredit, R—registered, and U—unsatisfactory.

C. Incomplete. The grade of I is to be used only when a student’s work during a session cannot be completed because of illness, accident, other circumstances beyond the student’s control. In registrations for thesis, research, or independent study, the I/U grade may be applied. (See next paragraph.) E. Students who receive the mark of I must remove that mark within the first session of registration after the closing date of the session for which it is given, else the grade becomes F, except that students with I’s from the spring semester are exempt from completing the course during the succeeding summer session.

Specific deadlines for the submission of student work to the faculty and for the faculty’s report on I grades to the Registrar will be set by the Graduate Dean for each session and published in the academic calendar. Courses may not be repeated to remove incompletes; removal of an I is accomplished only through the completion of the specific work for which the mark is given.

E. Thesis, research, and independent study. Grades of S and U may be used for registrations in research, thesis, and independent study. S—satisfactory means that the student receives credit for the work; U—unsatisfactory means that he receives no credit. Neither S nor U’s used in computing grade-point averages. At a later date, the instructor may change the S to a letter grade.

F. Grades of S and U may be used for courses taken by a graduate student outside his major department or interdepartmental degree program provided that the instructor of the course and the student’s departmental adviser approve the registration. The arrangement of the S/U grading is a course is limited to a student’s original registration in the department.

G. Computed grade-point average. This is based only upon graduate work graded A, B, C, D, and P. (A=4, B=3, C=2, D=1, P=0.)

Section VII. Graduate Appointments

A. Scholarships. Scholarships are competitive and are awarded on merit.

1. Eligibility for graduate scholarships and fellowships will include: (a) registration in the Graduate College, (b) cumulative grade-point average of at least 3.0, (c) a GRE score of an ATUSB score above a point to be designated by the Graduate Dean, (d) a satisfactory rate of progress in completing the program for the degree.

2. Preference will be given to candidates for the doctoral degree.

3. Members of the University staff in the rank of assistant professor or above or those receiving a salary at the rate of $4,050 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 to the student not in 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 will 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 services to professional members of the academic staff, and (b) to provide apprenticeship experience for graduate students who are in training in research. No 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 nine-month academic year, but appointments may be made for other periods of time by special arrangement. Stipends vary with the qualifications of the appointee and services rendered. Faculty research assistants appointed by the Graduate College pay their own fees. Graduate appointments beginning in September are usually made by the Graduate Dean upon recommendation of the various departments in March of each year, although applications may be considered at any time. Applications should be made on the form provided by the Graduate College, and should be accompanied by recommendations and/or a letter summarizing the student’s qualifications.

D. Graduate assistantships 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
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 promoted or
terminated an appointment until after approval for
admission to the Graduate College by the Director
of Admissions.

X. 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.

1. 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. Swallowment in final 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 can-
didates 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. Kind of degree. Master's 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 requirement. Of the minimum of
30 semester hours required for the degree, at
least 24 semester hours must be completed in
residence at this University, of which 6 semester
hours on campus are required. (See Section II,
Residence Registration.)

E. Reduction of old credits. Credits for a master's degree taken 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 medicine or dentistry will not be counted as
part of the residence requirement for non-
doctoral degrees in the Graduate College.
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.

II. Master's degree with thesis. Not more than
6 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, in typewritten 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 Gradu-
ate 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-
voation.

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, Examinining 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 examina-
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. Examinining 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; E, Reduction of Old Credits; H, Master's
Degree with Thesis; J, Final Examination; and
K, Examinining 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.

Of the minimum of 60 semester hours required
for the degree, at least 24 semester hours must be
completed in residence at this University of which
15 semester hours must be earned while the 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

287
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 Committee.

A. Master's degree may be earned while in residence for the educational specialist degree provided the student meets all the requirements for the master's degree in question.

C. Master of Social Work degree. The M.S.W. degree is conferred by the University upon those students who give evidence of knowledge and competence in the professional practice of social work by meeting the following requirements:

1. A minimum of 34 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 Credit; 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 record and assessment of fees, student registration should reflect accurately the amount and kind of work undertaken in the Graduate College. All doctoral programs, including acceptable transfer credit, will contain a minimum of 75 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 developed.

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.
G. Joint program for master's and doctoral degrees. Those students who expect to continue their training through the doctoral degree may file a joint program for the masters' and doctors' degrees. The master's examination may be combined with the comprehensive examination for the doctorate for these candidates. The examining committee will file separate reports of its actions on the final examination for the master's degree and for the comprehensive examination. Upon recommendation of the department and approval of the Dean, students who are well qualified by previous training may submit a Plan of Study that leads directly to the doctoral degree without earning the master's degree as an intervening part.

H. Requirement in foreign languages. There is no Graduate College-wide requirement in foreign languages. Those departments which do require competence in one or more foreign languages establish standards as to the extent and level of competence, as well as methods of testing. Specific requirements will be found in the University Catalog under the doctoral programs of each department. Departmental executive officers are responsible for reporting completion of requirements to the Registrar for entering on the student's record.

Specifications of departmental requirements in foreign languages are filed in the Graduate College Office and may be changed upon the initiative of the departments.

I. Comprehensive examination. The candidate must pass a comprehensive examination, consisting of written or oral parts or both, at the discretion of the major department. Admission to the comprehensive examination is granted upon the recommendation of the major department, the filing of the Plan of Study, and the approval of the Dean of the Graduate College. A student must be registered in the University at the time of the comprehensive examination, which must be passed not later than the sesison prior to the session of his graduation. This examination, administered only on campus, is intended to be an inclusive evaluation of the candidate's mastery of the major and related fields of study, including the tools of research in which competence has been certified.

The comprehensive examination is not a deferred-qualifying examination. It is intended to evaluate the candidate's mastery of his subject at or near the end of his formal preparation and prior to the completion of his dissertation. The comprehensive examination and the final examination, which is concerned chiefly with defense of the thesis and related subjects, are the two principal examinations for the doctoral degree.

The comprehensive examination will be evaluated by a convened meeting of the committee and reported as satisfactory, satisfactory with reservations, or unsatisfactory to the Graduate College Office within fourteen days after the completion of the examination. Two "unsatisfactory" votes will make the committee report unsatisfactory. The report of a satisfactory necessity should contain the name of the supervising professor for the candidate's dissertation.

In the event of a tie vote of two or more votes of "satisfactory with reservations," the exact stipulations of the committee should be recorded in the report. In the event of 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 stipulations. 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 for 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. This fee is intended to support registration for the summer session is required unless the student is taking a degree at the end of that session. A student who has been granted extension will be readmitted to candidacy until he has submitted an application and been approved by his adviser, the department 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-
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. Examining 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 professional rank from another academic institution. A member of the graduate faculty 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 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: Duane C. Spethmanlach
Dean of Graduate Studies: Martin R. Good
Associate Dean: James F. Hoehn, Charles M. Mason
Graduate Examiners: Rhea J. Van Veen
Members of the Graduate Council: William C. Ames (Mechanics and Thermodynamics), Eric H. Bergeon (Law); Thomas W. Conrey (Biochemistry); Lloyd J. Filler (Philosophy); Nicholas H. Hadi (Anatomy); Albert W. Horenstein (Education); James C. Spaniel (Religion); John C. Walke (Political Science); Darryl 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.

220
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 Admission Test.

Summer session. A six-week summer session, offering a limited number of courses, is available to students who have completed at least one year of law school at Iowa or elsewhere. The session runs from early June to mid-July. Students may enroll for one or more courses.

To be eligible to attend, an applicant from another school must submit a statement from the dean of that school, indicating that student 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, habeas corpus and civil projects at the Men's Reformatory in Anamosa, a habeas corpus project at Fort Madison State Penitentiary, an Iowa Civil Liberties Union referral project, 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 percent of the senior class; the Iowa Society of International and Comparative Law; Phi Delta Phi and Phi Alpha Delta, national law fraternities, Kappa Beta Phi, national law 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 $130 per year. Housing costs and personal expenses will vary with individual circumstances. (See Admission-Registration-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 are 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

Prelaw 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 objective 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
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 ap-
plications 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 under-
taken. 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 accept-
able 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 ad-
mission listed above does not insure admission to
the College of Law. From the applicants meeting
the minimum requirements, the Admissions Com-
mitee 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 Univer-
sity's Educational Opportunities Program and con-
siders 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 Ameri-
can 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 at-
tended. No more than two semesters of residence
credit and no more than 30 semester hours may be
transfered 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
weeks after being notified of favorable action on
their applications. For those who enroll, the de-
posit is credited toward the student's first Uni-
versity bill. An applicant who fails to make the
deposit within the 48 hours of notification by the
student to the entering class. The $50 fee will be re-
funded if an applicant cannot enroll because of
understanding or other circumstances beyond the
control 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 re-
Admission upon timely application at the conclu-
sion of his service.
Applicants who are accepted and who are new
to The University of Iowa must submit a satis-
factory physical examination report to the Uni-
versity 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, been
and completed all required courses, achiev-
ed a weighted cumulative average of 65, and
received a passing grade in at least one 3-ses-
son-hour research and writing project.
Residence requirements. To satisfy the resi-
dence requirements, a student must enroll for
a minimum of 26 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
a student to 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, to-
gether 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:
96-100=A 92-95=B 88-91=C 85-88=F
A first-year student who fails to maintain a
cumulative weighted average of 65 after
registering for 24 or more semester hours of work,
shall be ineligible to continue in the College of
Law. All other students must maintain a cumu-
llative weighted average of 65 to be eligible to
continue in the College.
Students whose cumulative weighted average is below 65 for the first two semesters, but whose weighted average is 65 or better during the second semester, will be 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 64 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. Verno.
Dean Emeritus: Mason Ladd.
Associate Dean: Charles W. Davidson, Paul M. Neal.
Associate Professors: Ernest P. Lordwell, C. M. Udeagriff.
Assistant Professor: Richard G. Hitchins, Philip J. Melich, Geoffrey W. R. Palmer, Mark C. Schachts, George D. Reade.
Research Professor: Marshall Harris.
Litigation: Richard G. Hitchins.
Assistant Librarian: James H. Glitzen.
Foreign Law Librarian: Stephen A. Sears.

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.

91:118 Constitutional Law I 3.0 h.

Allotment of governmental powers according to the national constitution; judicial function in constitutional cases; relationships among the several branches of the national government; the federal system; powers delegated to the national government; powers reserved to the states. Role of the judicial process in structuring the limits within which our society can operate; institutional development of our legal system and the relationships among the several institutions within that system.

91:132 Property I 3.0 h.

Concept of ownership as one of the basic foundations of our system of economy; limitations on the use of property; problems of fixture, use and disposition with an analysis of traditional common law, statutes, and case law. Inheritance and taxation of property, as well as the asserted need for continuity and stability of property relationships. Historical development of the law.
91.512 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 constitution; right to vote and other rights participants in the political process; freedom from physical abuse; women's rights; and students' rights. Prerequisites, RL 322.

91.514 Collective Bargaining
3 a.h.
Legal aspects of collective bargaining process of organizing collective bargaining agreements; arbitration and other means of labor disputes settlement in both private and public sectors of the economy.

91.520 Common Market Seminar
Seminar 2 a.h.
Institutional and legal structure of the Common Market, with emphasis on the power of community organs to make laws 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.

91.524 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 one foreign country; France, including planning, direct price and product control, competition, taxation, and subsidy programs. The seminar is open to graduate students in economics and business administration and to senior students in law.

91.526 Corporate Control Seminar
Seminar 2 a.h.
Advanced work in corporations through an examination of the newly emergent concept, corporate control. Fiduciary obligations of those persons at the absolute top of the policy-making hierarchy in the modern business corporation. Prerequisite, RL 560 or 242.

91.527 Criminal Appeals--Habeas Corpus
Seminar 2 a.h.
Significant problems of criminal law and procedure in the context of the presentation of such issues as: appellate selection of counsel, adequacy of appellate advocacy, substantive discussion of several major aspects of state criminal law, e.g., confrontation, the insanity defense, suppression of evidence, and trial publicity. Presentation of criminal appeals to state supreme courts and habeas corpus with particular emphasis on the federal habeas corpus. Discussion of habeas corpus appeals before the United States Court of Appeals, and collateral procedure in the Supreme Court of the United States.

91.528 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.

91.532 Economic Regulation of Business
Seminar 2 a.h.
Building on the foundation laid in RL 206. The specific problems to be discussed differ from year to year and will be announced prior to registration.

91.533 Family Law Seminar
Seminar 2 a.h.
Particular areas in family law needing reform, and detailed proposals leading to such reforms. Summary report. Prerequisite, RL 246.

91.540 Federal Tax Policy Seminar
5 a.h.
Consideration, primarily through group discussion and in connection with the reading of selected materials, of traditional and contemporary policy questions bearing upon the structure and implementation of the federal tax system. Prerequisites, RL 372.

91.544 International Law and Policy
Seminar 2 a.h.
Current problems of international law and policy. Con- cerned with both individual experience and group study bases, with emphasis upon research and writing.

91.545 International Monetary and Financial Control
3 a.h.
Monetary assets, their quantity and ownership, and their role in controlling the economy. The international monetary problems, with emphasis upon the analysis of international problems in the area of monetary assets. Prerequisites, RL 321.

91.546 Judicial Behavior Seminar
Seminar 2 a.h.
A study of the factors in judicial behavior which influence the role of courts in the political system, the determinants of judicial behavior, and the impact of their decisions on the political system.

91.552 Land-Use Planning Seminar
Seminar 2 a.h.
Specific case studies in the planning of land in an urban area. Traffic, utilities, zoning and variances, parks, and aesthetic values. Intergovernmental conflicts.

91.554 Law and Morality
Seminar 2 a.h.
Relationship between morality and the law, with particular emphasis on the determination and enforcement of norms.

91.556 Law in a Changing Society
Seminar cr.arr.
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.

91.558 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. Jumsell and Myres S. McDougal and their associates.

91.560 Legal History Seminar
Seminar 2 a.h.
Major episodes which have had an important influence in the shaping of the modern American law jury, the origins of the Common Law, the royal courts, and the entire common law system, the beginning of Parliament, ancient law and equity, and the 17th-century context for supremacy of the Crown. The Colonial Court of Appeals, the King, and other organs of government out of which many of our concepts of civil liberties arose. Processes of legal development, the means employed, and the limitations encountered in the study of legal history.

91.562 Legislation
Seminar 2 a.h.
Legislative procedure, statutory construction, and legislative drafting; the legislative process from identification of a problem to its solution by legislation. The technique of drafting of proposed legislation and explanatory reports will be used.

91.564 Legal Problems of Public Education
Seminar cr.arr.
Selected legal problems which have a significant impact upon public education. Torts and contract liability of school districts and school district employees; "collective bargaining" between school districts and teachers; constitutional claims of absentees, parents, and teachers relating to race, religion, speech, association, or other private activity; roles of local, state, and federal government in administering schools and determining educational policy. Influence of the law on the administration of schools and the content of education and upon the influence of educational considerations in the development of educational policy.

91.605 Personal Injury Trials and Appeals
Seminar 2 a.h.
Significant aspects of personal injury law, including jury selection, effective opening statements and closing arguments, and techniques in cross-examining medical witnesses from medical texts. Evidentiary guidelines
The University of Iowa is the only institution in Iowa offering the degree Doctor of Medicine. Its College of Medicine, which marked its centennial year in 1976, was one of the first university-based centers of medical education established in the Midwest. It has earned international recognition for its pioneering contributions to medical science, and for its general excellence.

The College of Medicine is accredited by the American Medical Association and the Association of American Medical Colleges.

The College meets the requirements of all state licensing boards; its diploma admits the holder to all privileges granted to graduates of all medical colleges before such boards.

Because the College is both physically and administratively an integral part of a major university, its students have opportunities to pursue a full range of academic and cultural interests. At the same time, the College contributes significantly to the strength of the University; for example, more than 1,500 non-medical students enroll each semester in basic science courses administered by the College of Medicine.

**DEGREE PROGRAMS**

The M.D. program. The Doctor of Medicine program which the College introduced in the fall of 1969 differs in several significant ways from the traditional format of medical education. Its two-year introductory phase comprises three semesters of basic medical science and one semester of progressive orientation in clinical medicine. The third year comprises a summer session and two semesters of clinical clerkships, in which the student participates in patient care under supervision of staff physicians. Except for a nine-week clerkship in four areas, the fourth year is devoted to an individual Intensive Study Program in which the student focuses on whatever facet of medical education best relates to his professional interests.

Combined M.D.-Graduate programs. Students who want to pursue the M.D. degree in combination with an M.A., M.S., or Ph.D. program may do so by gaining admission both to the Graduate College and to the College of Medicine, and by making detailed arrangements with the graduate department chairman and the Associate Dean for Medical Student Affairs of the College of Medicine.

Graduate programs. Programs leading to graduate degrees through the Doctor of Philosophy are offered in anatomy, biochemistry, microbiology, nutrition, pharmacology (including toxicology), physiology and biophysics, preventive medicine and environmental health science (including health education, environmental health science, health laboratory science, public health, parasitology, industrial hygiene, comparative medicine and environmental toxicology), and in radiobiology. In addition, graduate degree programs leading to the Master of Science are offered in ophthalmology, orthopedic 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 in excess of 30,000 in-patients and serves more than 110,000 out-patients annually. An addition scheduled for 1974 completion will increase its capacity from 410 to 1,200 beds, and will also house several clinics, an operating suite, and a diagnostic radiology laboratory.

Children's Hospital. Children's Hospital houses orthopedic surgery, physical medicine and dermatology; a rehabilitation center; and the University's physical therapy training unit. It has a 187-bed capacity.

Psychiatric Hospital. With clinical and research laboratories in neurophysiology, biochemi-
Including the permissible limits of advocacy and limitations on the use of demonstrative good and visual aids. The appellate phase will deal with effective record-making as well as techniques of brief preparation.

91:656 Poverty and the Law

Urban environmental control, the concept of democracy in the planning process, various land use programs designed to meet the needs of the ghetto.

91:658 Problems of Doing Business Abroad Seminar

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

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

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

Thorough analysis and study of the income tax consequences which flow from various kinds of corporate reorganizations including statutory mergers, asset acquisitions, and stock acquisitions.

91:674 Trade Regulation Seminar


Special Course

91:650 Law in a Technological Society

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, procedure, 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 admission 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 $10 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.

Fulfillment of the specific requirements for admission listed below does not insure 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 completed the baccalaureate degree or
2. Have completed three years of a combined baccalaureate-medical 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 an 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 include at least three years (96 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: a minimum of a complete introductory course in organic chemistry, which would ordinarily follow a complete introductory course in modern general chemistry 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 the advanced level.

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, art history, sociology, the fine arts, 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 access to 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 returned 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 accredited 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 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. Roberts.
Associate Dean: Woodrow W. Morris, Paul M. Szelebach.
Associate Dean: Community Programs: John C. MacQueen.
Assistant Dean, Student Affairs: George J. Baker.
Assistant Dean, Veterans Hospital Affairs: Richard D. Eldredge.

DEPARTMENTS AND COURSES

Each course is designated by a code or department number and a course number. Codes or department numbers assigned to courses described in this section of the Catalog:

00: Nondepartmental
01: Anatomy
02: Biochemistry
03: Botany
04: Chemistry
05: Clinical Chemistry
06: Medical History
07: Oral Surgery
08: Biochemistry
09: Physical Therapy

Nondepartmental Courses:

00: Genetics for Medical Students 1 h.
Introduction to medical genetics and case descriptions for first-year medical students. Emphasizes 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: Endocrinology for Medical Students 1 h.
A core course for medical students in their second semester. Offered in the first half of the spring semester.

00: Scientific Methods and Bioinformatics 3 h.
This combined course for second-year medical students presents introductory material in bioinformatics 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 complete 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: 110 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, 337 Medical Laboratories Building

STAFF

Assistant Professors: Ull L. Klinek, James R. Scurtson.
Assistant in Instruction: Nishi P. Metcalf.

Work leading to an advanced degree in anatomy in the Graduate College may be taken by properly qualified students. For admission procedures, see Graduate College.

COURSE DESCRIPTIONS

60: 1100 Elementary Human Anatomy 4 h.
Primarily for students of nursing and dental hygiene.

60: 2100 Elementary Human Histology 3 or 4 h.
Primarily for students of dental hygiene.

365
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 Students 6 s.h.
Regional dissection, demonstrations, lectures, and conferences. For graduate students. Prerequisite, consent of instructor. First semester.

60:105 Microscopic Anatomy for Medical Students 7 s.h.
The cell and fundamental tissues and microscopic study of the organ systems. For medical students, first and second years. Prerequisites for graduate students, consent of instructor. First semester.

60:107 Neurobiology and Behavior 5 s.h.
Interdisciplinary 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. Prerequisites, 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 60:108, which is prerequisite.

60:115 Human Development cr.arr.
Lectures and demonstrations including the experimental bases for understanding morphogenesis. Offered upon sufficient demand. Prerequisite, consent of instructor.

60:201 Advanced Human Medical Students 7 s.h.
Specialized aspects of gross or microscopic anatomy. Prerequisite, consent of department head.

60:203 Research cr.arr.
Open to graduate students with suitable background. Prerequisite, consent of department head.

60:303 The Endocrine Glands 2 s.h.
Discussion of selected topics. Open to graduate, postgraduate, and medical students. Prerequisites: 60:108, Physiology 7212, biochemistry major course or equivalent; consent of instructor. Will not be offered in 1976-77.

60:505 Teaching Workshop in Anatomy 2 s.h.
The practical application of educational psychology to the teaching of anatomy. Open to course objectives, teaching methodology, and test construction and evaluation will be discussed. First semester.

60:506 Problems cr.arr.
Prerequisite, consent of department head.

60:507 The Visceral Nervous System cr.arr.
Autonomic system as to components, structural relationships, and functions, including central mechanisms. Prerequisite for medical graduate. Offered upon sufficient demand.

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.

60:210 Anatomical Research Techniques cr.arr.
Techniques commonly used in investigative work, histology, histochemistry, tissue culture, isolate methodology, phase-contrast and electron microscopy. Offered annually. Second semester.

60:217 Cellular Immunology 3 s.h.
The biology and chemistry of cells of the lymphoid tissues. 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 development anomalies in experimental animals and man. Offered alternate years; offered spring 1969. Consent of instructor required.

60:220 History of Anatomy 1 s.h.
Readings and seminar discussions of noteworthy medical-anatomical events with accounts of the individuals responsible from ancient civilizations to the present. 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, tissue, and organs. Taught the same semester as 60:108. Consent of instructor required.

ANESTHESIA
Head of Department, Jack Moyer Office, 8312 General Hospital

STAFF
Professor: Jack Moyer
Associate Professor: Leo J. Del bankruptcy, Amy R. Boutin, Martin D. Bekelis

BIOCHEMISTRY
Head of Department, Carl S. Ventling 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 undercut a minimum grade-point average of 2.8 with a 3.0 average in science courses, and a score of 220 on the combined verbal and quantitative parts of the Graduate Record Examination Aptitude Test. In addition, there are prerequisites of college-level courses in mathematics through calculus, physics, biology, and physical chemistry. During the first year of graduate study, all biochemistry graduate students take 95:208 and 95:204. In their first semester and 95:208, 95:204, and 95:202 in the second semester. After consultation with the staff, a new student is assigned to a research laboratory for 95:208. Ordinarily, no more than two students are assigned to the same lab.
COLLEGE OF MEDICINE

STAFF


COURSE DESCRIPTIONS

The Professional Course

All students in the dental, pharmacy (90:412), and medical (90:415) programs participate in a two-part biochemical course. The first part is offered to the combined medical, dental, and pharmacy classes as a lecture course on the basic biochemical core of information needed by every professional student. The second part is presented to small subgroups of each professional class and covers selected clinical-relevance of the principles to the particular group. These small group conferences are directed by a faculty member.

99:161 Biochemistry 5 a.h.
Primary for dentistry and pharmacy students; others by permission of staff. Metabolism and control mechanisms in water and electrolyte balances, acid-base balance, and nutrient metabolism. The basic principles of biochemistry are presented in a course which is complemented by discussions in small conference groups and laboratory demonstrations pertinent to the disciplines of dentistry and pharmacy. First semester. Prerequisites: Chemistry 4:4 or 4:5 and 4:122 or equivalent.

99:163 Biochemistry 5 a.h.
Primary for medical students; others by consent of staff. Metabolism and control mechanisms in water, electrolyte, and nutrient balances. The basic principles of biochemistry are presented in a course which is complemented by discussions in small conference groups and laboratory demonstrations pertinent to the discipline of medicine. First semester.

99:165 General Biochemistry 4 a.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, organs, cells, and subcellular systems. The living principle of life is discussed in terms of the metabolic cycles and enzymatic reactions which sustain life. A laboratory course is included and is open to all students. Second semester. Prerequisites: Chemistry 4:1 and 4:122 or consent of instructor; course in physical chemistry and biology recommended.

99:167 Experimental Biochemistry 3 a.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, conferences, and assigned readings. Second semester. Prerequisites, credit or registration in 99:165 or consent of instructor.

99:261 Research Techniques 6 a.h.
For graduate students in biochemistry only. Tutorial instruction in the application of the principles of research to biochemical problems in the laboratory of a staff member. First and second semesters.

99:262 Physical Biochemistry 3 a.h.
Applications of basic biochemical knowledge to problems in the biochemistry of disease. A comparison of normal function and processes with abnormal is stressed. First semester.

99:266 Biochemistry 4 a.h.
For graduate students in biochemistry only. Provides, together with 99:266, an intensive and integrated picture of present knowledge concerning chemical structures and functions of enzymes and their control mechanisms. Four lectures, discussions, and assigned readings. First semester.

99:268 Biochemistry 4 a.h.
For graduate students in biochemistry only. Continuation of 99:266, which is prerequisite. Four lectures, discussions, and assigned readings. Second semester.

99:267 Special Topics 1 to 3 a.h.
Lectures or discussions in special areas of current importance. Typical topics are: structures and functions of ribonucleic acid; molecular biology; the basic mechanisms of membrane permeability; membrane transport; and structures of cellular compartments. 120-130 credits. Consent of instructor.

99:269 Neurobiochemistry 3 a.h.

99:282 Seminar: Biochemistry 1 a.h.
Selected graduate students in biochemistry, weekly discussions by visiting and local speakers. For credit, participants must attend a small student-faculty groups to be arranged.

99:293 Research: Biochemistry 4 a.h.

DERMATOLOGY AND SYMPHILIOLOGY

Head of Department, Robert G. Carney

Office, S160 Children's Hospital

STAFF


COURSE DESCRIPTIONS

62:1 Dermatology 1 a.h.
An introductory course. Sophomore year. Lectures, laboratory, slides, case presentations.

62:5 Dermatology Clerkships 1 a.h.
Each senior student spends two weeks full time in dermatology clerkships.

305
78:134 Medical Clinic 1 s.h.
Weekly presentation of patients from medical service by the resident staff for open discussion by senior staff, residents, interns, and senior students.
78:135 Cardiovascular Research Seminar cr.arr.
For discussion of instrumentation research and clinical research pertaining to cardiovascular physiology and disease. Participation by staff, research and clinical fellows, and summer students.
78:136 Allergy, Infectious Disease, Pulmonary Disease Seminar cr.arr.
One hour per week. Presentation of patients with special problems in the areas of allergy, infectious, or pulmonary disease.
78:137 Resident Rounds no cr.
Teaching rounds four hours a week by staff and residents.
78:138 Research Symposium no cr.
Each staff member in rotation discusses some current aspect of his research with all staff members, residents, interns, and junior and senior students assigned to internal medicine. One hour a week.
78:139 Cardiovascular Disease Rounds no cr.
Daily morning teaching rounds at University and Veterans Hospitals.
78:130 Research Problems in Medicine cr.arr.
Open to a limited number of students of high scholastic standing.
78:131 Gastroenterology Pathology Conference cr.arr.
78:132 Gastroenterology Rounds no cr.
78:133 Gastroenterology Research Seminar cr.arr.
78:135 Cardiac Pathology Conference cr.arr.
78:136 Infectious Disease Rounds no cr.
78:137 Hematology-Oncology Clinic (UH) cr.arr.
Four hours per week. Instruction of fellows, residents, interns, and junior and senior medical students.
78:138 Basic Mechanisms in Internal Medicine Lecture Series cr.arr.
78:139 Infectious Disease Seminar cr.arr.
78:140 Lymphoma Conference cr.arr.
Continuing conference covering the treatment of lymphoma. One hour per week.
78:141 Hematologic-Oncology Clinic (VAH) cr.arr.
Three hours per week.
78:142 Hematology In-Patient Service (VAH) cr.arr.
Daily.
78:143 Hematology Research cr.arr.
For medical students, interns, fellows, residents, by arrangement.
78:144 Hematology General Out-Patient Clinic cr.arr.
Four hours per week.
78:145 Pulmonary Disease Elective for Senior Students 1 or 2 s.h.
An intensive survey of pulmonary disease for 3 or 4 weeks. Students participate in the diagnosis and management of in-patients and out-patients, learn pulmonary function testing, and other special diagnostic and therapeutic procedures related to diseases of the lungs.

COLLEGE OF MEDICINE

78:146 Research in Pulmonary Disease cr.arr.
A 3-month period in pulmonary disease research for freshmen, sophomores, junior, and senior students. Open to a limited number of students of high scholastic standing.
78:147 Seminar on Pulmonary Function cr.arr.
One hour per month. Presentation of patients with pulmonary disease. Discussion of the pulmonary function test and how they aid in the diagnosis and management of these patients.
78:148 Medical-Surgical Pulmonary Disease Conference cr.arr.
One hour per week. Presentation of patients with pulmonary disease. A diagnosis of the disease, differential diagnosis, therapy, radiology, pathology, and pathophysiology of lung disorders of interest to both surgeons and internists.
78:149 Pulmonary Disease-Radiology Conference cr.arr.
One hour per week. Presentation of interesting radiographs from patients with pulmonary disease. Emphasis on the radiologic diagnosis and evaluation of patients with lung disease.
78:150 Nephrology Seminar cr.arr.
78:151 Electrocardiography (UH and VAH) no cr.
A two-week elective for senior students in electrocardiographic interpretation.
78:152 Cardiology Clinic (UH and VAH) no cr.
A two-week elective for senior students in the care of patients with heart disease.
78:153 Cardiology Conference no cr.
A series of four weekly one-hour conferences are held covering clinical, histologic, anatomic, and surgicopathological aspects of heart disease in adults. Available to junior and senior medical students, staff, and fellows.
78:154 Coronary Care Training no cr.
Four to six courses of one-week duration are held annually for physicians for training in the specialized procedures of modern coronary care units. Registration is by advance arrangement.

MEDICAL HISTORY

COURSE DESCRIPTIONS

80:130 History of Medicine 2 s.h.
Medical ideas and practices from prehistoric times to the 17th century. Freshman year, second semester.
80:150 History of Medicine 3 s.h.
Medical development from 1700 to the present, including specialization, socialized medicine, and medical cults. Senior year, second semester.

MICROBIOLOGY

Head of Department, J. R. Porter.
Office, 156 Medical Laboratories Building

STAFF
Professor: J. R. Porter.
Visiting Professor: Edward S. Meeh.
Assistant Professor: George E. Becker, William Johnson, J r., James R.8. Rechigan, Donald P. Staub, Donald H. Walker.
Undergraduate Majors in Microbiology

Requirements for a B.S. degree with a major in microbiology: Basic Skills as required. Core courses: Literature, social science, historical-cultural studies, 24 semester hours. German or Romance language: 9 or 12 semester hours. Required Courses:

Botany
2101 Introduction to Botany 5 s.h.

Zoology
212 Principles of Animal Biology 5 s.h.

Chemistry
411 and 441 Principles of Chemistry I and II 8 s.h.

4.5 Principles of Chemistry 3 s.h.

plus 4.6 Elementary Chemistry Laboratory 2 s.h.

411 Quantitative Analysis 4 s.h.

412 Organic Chemistry I 3 s.h.

4122 Organic Chemistry II 3 s.h.

4121 Intermediate Chemistry Laboratory I 2 s.h.

Biochemistry
2112 Biochemistry 4 s.h.

2141 General Biochemistry 4 s.h.

1417 Experimental Biochemistry 4 s.h.

Physiology
111 College Physics 4 s.h.

211 College Physics 4 s.h.

212 College Physics 4 s.h.

Microbiology
6112 Microbiology 5 s.h.

6132 Microbiology 5 s.h.

Other courses in microbiology to total 15-16 semester hours

Mathematics
M2 M3 Mathematical Techniques II 3 s.h.

Elective sufficient to meet the degree requirements from the following:

Mathematics
M2M5 Analytic Geometry 3 s.h.

M2M7 Calculus 4 s.h.

Botany
2129 Mycology 4 s.h.

Chemistry
4111 Physical Chemistry I 3 s.h.

4112 Physical Chemistry II 3 s.h.

4122 Intermediate Chemistry Laboratory I 2 s.h.

Zoology
2111 Fundamental Genetics 2 or 4 s.h.

2112 Parasitology 4 s.h.

2115 Genetics Seminar c.o.r.e.

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 junior standing and a grade point of 3.0 (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 direct readings, attends the laboratory sessions, and under the laboratory supervision of a special problem chosen in consultation with a member of the staff.

2. An examination is given on the area of microbiology by the activities of the student.

3. Each participant submits to the department a report covering his project.

4. This work is covered in 8 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 electives 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. (See Graduate College for dissertation 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 doctoral dissertation.

The M.S. degree (with thesis) may be awarded upon 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
2107 Mycology 4 s.h.

2108 Experimental Mycology 4 s.h.

Biochemistry
6123 Physical Biochemistry 3 s.h.

6125 Microchemical Analysis 3 s.h.

6135 Special Topics 1 to 5 s.h.

6136 Neurochemistry 2 s.h.

Chemistry
4123 Introduction to Organic Research 3 to 5 s.h.

4125 Qualitative Organic Analysis 3 or 4 s.h.

4121 Physical Chemistry I 3 s.h.

4122 Physical Chemistry II 3 s.h.

4114 Instrumental Methods of Analysis 3 or 4 s.h.

Preventive Medicine
6213 Principles of Epidemiology 4 s.h.

6215 Biostatistics 2 or 3 s.h.

Zoology
2118 Parasitology 4 s.h.

2119 Bacteriology 4 s.h.

2121 Genetics Seminar c.o.r.e.

Computer Science
2128 Introduction to Computers and Programming I 3 s.h.

2129 Computers and Programming II 3 s.h.

2121 Computers and Programming III 3 s.h.

Biological Sciences
7722 Radiobiology 4 s.h.

7723 Radiobiology 4 s.h.

7724 Radiobiology 4 s.h.

7725 Introduction to Mathematical Biology 4 s.h.

2125 Introduction to Mathematical Biology 4 or 6 s.h.

2126 Introduction to Mathematical Biology 4 or 6 s.h.

COURSE DESCRIPTIONS

6110 Medical Microbiology 3 or 6 s.h.

Principles and methods essential to study of microorganisms, their isolation and identification. Microorganisms involved in infectious diseases. Clinical virological procedures and current concepts of immunology. Sophomore year; first semester. Prerequisite: Students are enrolled in the College of Medicine, second-year medicine or dentistry.

6117 General Microbiology 4 s.h.

Lectures, radiation, and laboratory. The more important recent advances in microbiology and the experimental principles governing microbial action are reviewed, with emphasis on bacterial physiology. Open to liberal arts and graduate students. First semester.
61:118 Microbiology 5 s.h.
A fundamental course designed primarily for undergraduate
and graduate majors in microbiology. Open to stu-
dents with an adequate background from other scientific
disciplines on consent of department. Three lectures and
two laboratory hours weekly. Prerequisites: 61:159.

61:159 Microbiology 5 s.h.
Continuation of 61:118, which is a prerequisite.

61:160 Microbial Physiology 3 s.h.
Lectures and discussions dealing with chemistry and
and physiology of microbial cells, including growth, effects
of physical and chemical agents on host, enzymatic, meta-
bolism, and microbial fermentations. Fundamental aspects of
physiological processes. Prerequisite: 61:159. Second
semester.

61:161 Problems in Microbiology cr.arr.
For undergraduate students with substantial background.
Prerequisite: 61:120 or its equivalent.

61:162 Dental Microbiology 5 s.h.
Lecture, discussion, and laboratory course in microbiology
open only to dental students.

61:163 Seminar: Microbiology 1 s.h.
Current literature on microbiology, serology, and immu-
nology. One hour a week throughout the year. Prerequis-
te, 61:159 or 61:160.

61:164 Microbiology 4 s.h.
Lecture, discussion, and demonstration course open only to
nurses and dental hygienists.

61:165 Bacteriological Taxonomy 1 s.h.
Conferences, assigned reading, and some laboratory. His-
tory of bacterial classification. International Rules of
Nomenclature, and methods of reporting unknown species.
Registration limited; departmental majors given prefer-
ence. Prerequisite; 61:150.

61:166 Diagnostic Microbiology 5 s.h.
Laboratory course, giving fundamental training in includ-
ing and identifying organisms from materials received in a
bacteriological laboratory. Prerequisite: 61:160.
Registration limited; departmental majors given prefer-
ence.

61:167 Experimental Immunology 3 s.h.
Practical experience with quantitative immunochemical
methods and an understanding of their theoretical founda-
tions. One lecture and one laboratory per week. Prerequi-
te, Chemistry 6:113 plus one of the following: 61:157, or Biochemistry 66165, and consent of instructor.

61:168 Virology 3 s.h.
A lecture and seminar course emphasizing the basic
mechanisms associated with virus-cell interactions. Pre-
requisites, 61:159, 160, and consent of instructor. 61:159
may be taken concurrently.

61:169 Medical Mycology 4 s.h.
Lecture, conference, and laboratory. Basic techniques
used in the study of fungi which are pathogenic for man.
Registration on consent of instructor.

61:170 Topics in Microbial Genetics 3 s.h.
Lectures and seminars on selected topics of special inter-
est, Prerequisites, basic knowledge of microbial genetics
and consent of instructor.

61:171 Honors in Microbiology 2 to 4 s.h.
First semester. Prerequisites, senior standing, 2.5 grade
point average.

61:172 Honors in Microbiology 2 to 4 s.h.
Second semester. Prerequisite: 61:171.

61:207 Molecular Biology 3 s.h.
A seminar course, meeting once a week for three hours.
Physical-chemical and mathematical aspects of sigmna-
structural, genetic, and functional aspects of antibodies.
Recommended prerequisites, 61:167, Biochemistry 6-165, and Chemistry 6-130.

61:211 Cellular Immunology 3 s.h.
A seminar course, meeting once a week for three hours.
Structure, development, and function of immunocytes;
active formation, hypersensitivity, immunopathology; graft
rejection. Same as 61:217. Prerequisite, 61:120 or
61:167.

61:260 Advanced Microbial Physiology cr.arr.
Discussion and laboratory. Metabolic activities of micro-
bacteria. Prerequisite, 61:162.

61:261 Research Microbiology cr.arr.
Open to candidates for advanced degrees in bacteriology.

61:270 Molecular Mechanisms of Heredity 3 s.h.
Lectures on the molecular mechanisms for the transmis-
sion and expression of genetic information. Prerequisites,
61:158, 160 or 61:159, 165, or consent of instructors.

61:215 Genetics Seminar cr.arr.
Same as Zoology 37:215.

61:272 Microbial Physiology 5 s.h.
A seminar course, meeting once a week for three hours.
Structure, development, and function of immunocytes;
active formation, hypersensitivity, immunopathology; graft
rejection. Same as 61:217. Prerequisite, 61:120 or
61:167.

61:280 Advanced Microbial Physiology cr.arr.
Discussion and laboratory. Metabolic activities of micro-
bacteria. Prerequisite, 61:162.

61:281 Research Microbiology cr.arr.
Open to candidates for advanced degrees in bacteriology.

61:270 Molecular Mechanisms of Heredity 3 s.h.
Lectures on the molecular mechanisms for the transmis-
sion and expression of genetic information. Prerequisites,
61:158, 160 or 61:159, 165, or consent of instructors.

61:215 Genetics Seminar cr.arr.
Same as Zoology 37:215.

NEUROLOGY
Head of Department, Adolph L. Saks
Office, CA12 General Hospital

STAFF
Professor: Arthur L. Hassen (Psychology and Neu-
rology), William M. Khachigian (Anatomy and Neurology), Adolph L. Saks,
Maurice W. Van Allen, Associate Professor: William Bell (Pediatrics and
Neurology), Richard W. Finncham, Assistant Professors: Richard A. Calhoun, Horace Las-
keveci (Neurology and Physiology), Daniel Nibbelink, Instructors: Robert Roditych,
Henry Dee, Robert Roditych, Instructor; Regional Medical Program on Stover: Robert
Taylor.

COURSE DESCRIPTIONS
64:1 Neurology 1 s.h.
Principles and practices of neurology. Relations of neu-
rology and neurophysiology to clinical neurology.

64:3 Interdepartmental Correlated Clinic 3 s.h.
Case demonstrations and clinics of representative dis-
seases of the nervous system. Junior and senior years.

64:5 Lectures to Nurses cr.arr.
Annual demonstrations in various phases of neuro-
logic disease of importance to nurses.

64:7 Neurology Outpatient Clinic 2 s.h.
Diagnosis and treatment of the ambulatory neurologic
patient. Junior year.

64:9 Physical Diagnosis 1 s.h.
Lectures and demonstrations. Emphasis on examination
of the normal subject. Sophomore year.

64:11 Clinical Neurology for Junior
Medical Students 2 s.h.
Weekly teaching and bedside examinations in small groups.
Two hours each, daily. Junior year, and Neurology.

64:15 Lectures to Occupational Therapists cr.arr.
Fundamentals of neurology as applied to occupational
therapy. Second trimester.

64:101 Neurology "Check Clinic" 8 s.h.
Weekly neurological examinations of patients in manage-
ment for, patients to be discharged from the neurologic service.
Junior year.

309
64:303 Advanced Basic Neurology 1 S.H.
Special lectures, demonstrations and seminars in basic neurology, particularly neuroanatomy and neuropathology. For resident staff and limited number of senior students.

64:305 Pathology of the Nervous System 1 S.H.
Gross and microscopic demonstrations from recent autopsy material. Department of Neurology and Pathology.

64:307 Neurology-Neurosurgery Conference 1 S.H.
Review of patients presenting diagnostic problems common to both departments.

64:112 Principles of Neurology 2 S.H.
Lectures, demonstrations, and case presentation of neurological disorders usually treated by therapists. Anatomy of nervous system reviewed, and methods of electrical testing of nerve injuries demonstrated.

64:201 Research: Neurology 2 S.H.
Current literature available for limited number of senior students of high scholastic standing for investigation under supervision of member of staff.

64:303 The Apathetic Disorders 2 S.H.
Analysis of symptoms, classification, and clinicopathological correlations.

64:205 Clinical Neuropsychology 3 S.H.
Concepts of brain-behavior relationships in man; analysis of behavioral disturbances associated with central abnormality; current application of psychological test methods for inferring central states.

64:207 Neurology Seminar 1 S.H.
Presentation of original papers and review topics by residence and staff.

NUTRITION
Faculty in Charge
Administrator: R. E. Hodges
Office, C306 General Hospital

Head of Dietetics: Ann M. Crowley
Office, C147 General Hospital
Advisory Committee: Thomas A. Anderson, Ann M. Crowley, L. J. Filer, R. E. Hodges, Margaret Osborn, Eleanor Sanders

STAFF
Professors: W. B. Brandt, M. Casare, R. E. Hodges, D. B. Stone (Internal Medicine); L. J. Filer, C. H. Reed (Pediatrics); R. D. Perry (Biochemistry); E. C. Shear (Biochemistry); D. S. Schwartz (Laboratory and Management)

Associate Professors: Ann M. Crowley (Internal Medicine); Margaret Osborn (Home Economics); T. A. Anderson (Pediatrics)

Assistant Professors: Eleanor Sanders, A. A. Specter (Internal Medicine); A. Healy, D. H. Heggel (Pediatrics)

Instructor: J. Hood (Internal Medicine)

Affiliations
Affiliated activities with the Hospital School, Iowa City Visiting Nurse Association, Iowa State Services for Crippled Children, the University Bureau of Health, Iowa Regional Medical Program, Iowa Diabetic Association provide the student opportunity for training in teaching and patient care skills.

The Dietetic Internship
The dietetic internship is a program of the Graduate College and the College of Medicine. It is designed to prepare the student for membership in The American Dietetic Association, to establish a basis 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 intern rotates in the Graduate College and earns a minimum of 25 semester hours of graduate credit in nutrition with 12 semester hours in nutrition and hospitality administration. As a student and apprenticing dietary staff member, opportunities are readily available for personal individual interests in clinical, metabolic, and administrative research and study.

Interns are paid a stipend by the University Hospitals which partially covers registration fees and subsistence.

*Send for information from The American Dietetic Association, 222 N. Desmoines, 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, subject to the rules and regulations of that College. A minimum of 30 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 32 semester hours. Graduate College credits 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 interests. This will depend on professional orientation, other academic interests, and the dietetic advisory committee. Students may pursue research programs under the supervision of a member of the Department of Nutrition. Research may be directed toward physical or chemical methods to biological systems. As a prerequisite for this M.S. program, a semester of analytical chemistry (or its equivalent) is essential, and a full year of statistical training. Courses in dietetics, biochemistry, and nutrition, and two semesters of physics are also highly desirable. Similarly, an orientation in medical biochemistry 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 Master's degree or who will combine the Ph.D. program with the M.D. or D.O.D. requirements. The exceptional student may be allowed to enroll in the Ph.D. program 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, biology, biochemistry, and food science. Further courses in nutrition and microbiology are highly desirable. Each student must select a particular major area in which he can concentrate his research. Areas of research may be selected from the following: growth and development of both animal and human nutrition in health and disease; nutrition and human performance; clinical nutrition; and food and nutritional cost. The individual field of specialization may relate to any of a wide variety of subjects including epidemiology, ecology.
OBSTETRICS AND GYNECOLOGY

Head of Department, W. C. Keetel
Office, WATT General Hospital

STAFF

Professor: James T. Bradhury, C. P. Copeland, William C. Keetel, M. E. Tannen, C. A. White
Associate Professor: Robert M. Krueckerman, R. M. Alden
Assistant Professor: H. J. Borkowski, R. P. Gauck, L. A. Hughes, Diane R. Van Orden

The courses in obstetrics and gynecology are designed to provide a broad coverage of specialties. This is done through a series of didactic lectures, in-patient and out-patient assignments, ward rounds, and teaching seminars. The basic lectures during the sophomore year emphasize the physiology and functional pathology of the female reproductive organs, the physiology of pregnancy and labor, and abnormal childbirth. During the junior year the students are assigned exclusively to a gynecology clerkship. Patients are seen in the out-patient clinics and followed on the ward pre- and post-operatively. During the senior year the students are assigned to the obstetric clerkship. Prenatal care, labor and delivery management, and postpartum care are emphasized. The student performs deliveries with assistance, ward rounds, demonstrations, seminars, small-group conferences, manikin demonstrations, and movies are utilized extensively. Positions as residents and fellows in obstetrics and gynecology are available for medical graduates.

COURSE DESCRIPTIONS

65:201 Nutrition Seminar 1 s.h.

65:202 Nutrition Seminar 2 s.h.

65:203 Critical Nutrition Seminar 2 to 4 s.h.

65:204 Critical Nutrition Seminar 2 to 4 s.h.

65:205 Projects in Nutrition 2 s.h.

65:206 Projects in Nutrition 2 s.h.

65:207 Nutrition Research 2 s.h.

65:208 Hospital Dietary 2 s.h.

65:209 Hospital Dietary 2 s.h.

65:210 Nutrition of the Child 2 s.h.

65:211 Nutrition of the Child 2 s.h.

65:212 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.
68.331 Department Seminar. cr. art.

Tuesday evening. Twenty-seven special lectures by resident staff preceded by a special staff lecture.

OPHTHALMOLOGY

Head of Department, Frederick C. Blodi
Office, CM4-1 General Hospital

STAFF

Professor: Frederick C. Blodi, Paul Bender, Hermann M. Burian, Herbert W. Lederer, B. C. Widner.
Associate Professors: H. J. Koeller, R. E. Harvey.
Assistant Professors: Charlotte Boren, H. Stanley Thompson.
Research Associate: E. Lee Allen.
Assistant: Gene Brown, C. Ogden Frazier.
Instructors: T. C. Burton, D. Gries.

COURSE DESCRIPTIONS

67.1 Ophthalmology. 1 cr.
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.

67.2 Ophthalmology. cr. art.
A clinical course in ophthalmoscopic diagnosis in medical and neurological cases and in diseases of the eye and adnexa. Junior year, first and second terms.

67.3 Ophthalmology. cr. art.
Clinical work in sections throughout the senior year.

67.301 Graduate Course in Advanced Ophthalmology. 6-8 cr.
Intensive course in the basic and clinical sciences of ophthalmology, limited to the resident physicians who have completed at least one year of general internship and have been accepted for a 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 physiological optics. Each resident spends six months half time in the pathology laboratory and two to three months in the laboratory of physiological 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 cr.
All physicians taking course 67.301 are required to spend at least six months in 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 then 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 and thesis which has to be defended before a committee consisting of members of other departments. During the first year the resident is required to take a course in certain fields of research such as statistics, electronics, animal care, etc.

ORAL SURGERY

Head of Department, Merle L. Hale
Office, 2300 General Hospital

STAFF

Professor: Merle L. Hale.
Associate Professor: John C. Montgomery.
Assistant Professors: Leslie H. Higa, James W. Thatcher.

COURSE DESCRIPTIONS

For Graduates

67.201 Hospital Procedures. 1 cr.
Hospital rules and regulations, patient and department records, and general information related to hospitalized patients.

67.202 Basic Science Review. 4 cr.
Includes head and neck anatomy with dissection. Bacteriology, pathology, etc. Special lectures by medical and dental staff.

67.203 Principles of Oral Surgery. 2 cr.
Basic surgical principles in detail. To include inspection classifications and techniques, flap designs, suturing, etc.

67.204 Clinical Oral Surgery. cr. art.
Clinical practice on assigned patient problems.

67.305 Pathology. cr. art.
General pathology for two trimesters.

67.306 Tumor Conference. cr. art.
A review of tumors of the head and neck and all current clinical specimens.

67.307 Surgical Anatomy. cr. art.
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.

67.308 Maxillofacial Rehabilitation. cr. art.
A review of cleft lip and palate and facial deformities.

67.309 Principles of Anesthesia. cr. art.
A review of the literature on general anesthesia with a study of the agents used and their effects on the respiratory and cardiovascular systems.

67.310 Advanced Oral Surgery Seminars. cr. art.
Includes seminar participation on assigned subjects.

67.311 Literature Seminars and Journal Club. cr. art.
Special attention to material covered in assigned journals.

67.312 Surgical Case Reports. cr. art.
Case reports of selected surgical problems.

67.313 Research: Thesis Project. cr. art.
Satisfactory evidence must be provided for the oral surgery staff to evaluate a candidate progress with the thesis project.

67.314 Roentgen Interpretation. 2 cr.
A review of theory and techniques in x-ray with laboratory assignment.

67.315 Physical Diagnosis. cr. art.
A review of principles of physical diagnosis. Second semester.

67.316 Principles of Surgery. cr. art.
Theoretical principles of diagnosis and therapeutic techniques.

67.317 Bone Pathology Seminar. cr. art.
A weekly seminar for the study of bone lesions from surgical and macroscopic specimens. Same as 72A.E.

67.318 Oral Pathology Conference. cr. art.
Review and discussion conference of current clinical specimens.

67.319 Teaching Project. cr. art.
Special assignments by the staff.
ORTHOEPIDIC SURGERY
Head of Department, Carroll B. Larson
Office, 3111 Children's Hospital.

STAFF
Professor: Michael Bunnell, Adrian O. Flat, Carroll
B. Larson, L. F. Prado.
Professor Emeritus: Genevieve Stearns, W. D. Field.
Assistant Professor: Edward M. Cooper, Donald R.
Kettelman, William Pedretti.
Assistant Professors: M. D. Schrnell, Merlin F. Strentz.
Research Associates: John McKnight, Angela Pedretti.

COURSE DESCRIPTIONS
76:1 Principles of Orthopedics 1 s.h.
For junior medical students through the year.
76:2 Clinical Orthopedics for Junior Medical Students 2 s.h.
For senior medical students. Two weeks' assignment for clinical
experience in orthopedic surgery.
For allied health science students only. Prior approval
of instructor required. Lectures, demonstrations, and
observations of orthopedic disorders from the standpoint
of etiology, clinical signs and symptoms, treatment,
and prognosis.
76:210 Postgraduate Course in Orthopedic Surgery cr. arr.
Observation of all phases of clinical orthopedic, clinics,
ward care, operations, seminars, and basic science
conferences. Arranged individually for periods of 3, 6, or 12
months. Write Director of Postgraduate Medical Studies,
College of Medicine, Iowa City 52240.

Program for Graduate Training in Orthopedic Surgery
Graduate training in orthopedic surgery is available to
a limited number of applicants. The course provides
training in keeping with the requirements of the American
Board of Orthopedic Surgery and satisfies the require-
ments 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 Uni-
versity. The application must be made by September 1 for
admission the following year. A thesis is required, and the
work must be approved by the department head and the
Graduate College. The student must have had one year of
graduate work in anatomy and biochemistry as a pre-
xquisite. The nature of the thesis must be approved by
the department head, and the candidate must pass a thesis
examination. The thesis must be submitted to the Graduate
College at least three months before the candidate receives
the degree. It is recommended that the candidate have
had at least one year of postgraduate study in orthopedic
surgery before applying for admission to the graduate
program.

76:205 Kinesiology 2 s.h.
The kinetics of normal and pathological motion. For
graduates in medicine and physical education.
76:206 Advanced Principles of Orthopedics 2 s.h.
Didactic lectures and demonstrations concerning problems
of orthopedic care.

76:211 Postgraduate Conference 2 s.h.
A weekly conference to review and discuss all cases
operated upon in the preceding week. Registration is held
respective of registration in each case under his supervision.
76:212 Indications 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.

COURSE DESCRIPTIONS
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
Departments of Radiology, Pathology, Orthopedics, and
Surgery participate.
76:215 Clinical Experiences in Patient Care cr. arr.
Course is divided into services of approximately three
weeks' assignment each. Assignments arranged by de-
partment head. Registrant is given responsibility for care
of patients in the assigned area under close supervision
of staff. Course is required and continues a full
year. Any change in the time of this course is
to be announced.
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.
76:212 Advanced Orthopedic Pathology 2 s.h.
A weekly seminar for the systematic study of problems
of orthopedic pathology. Registrant is responsible for
presentation and discussion of specific problems.
76:250 Thesis cr. arr.
Note: The program also includes the following courses in
other departments: Pathology 69:201, Graduate Instruc-
tion in Pathology; Physiology 72:202, Advanced Physi-
ology of Exercise.

OTOLARYNGOLOGY AND MAXILLOFACIAL SURGERY
Head of Department, Brian F. McCabe
Office, 2503 Medical Hospital.

STAFF
Professor: Brian F. McCabe; Barry J. Anson, Leslie
Kerr, H. Lincoln, Ross W. Oliver, Diane C.
Ryktekikh.
Professor Emeriti: Dean M. Luchs, Scott N. Neger.
Fellow for the American Academy of Otolaryngology.
Assistant Professor: Charles V. Anderson, Charles R.
Kawashima, William H. Litten, James H. Smith, Diane R.
Van Denmark.
Assistant Professors: Marshall Armstrong, Patrick J.
Carney, Lee A. Harker, Charles J. Krause, Richard J.
Voske.
Research Associates: Tari A. Tari, Tori Sekitsui, Hosaya-
Suzumasa.

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, in sections 2 or 3 s.h. per year.

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:
the 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.
It is conducted during the first three and one-half months of residence, usually July 1 to October 15 of each year. After passing an oral and/or written examination, the student enters the clinical phase of the course, which includes supervised clinical and operative work, clinical teaching, and participation in the practice of otology and its related fields. A limited number of resident positions can be accepted each year. Applicants must be graduates of a recognized Class A medical school and should have completed an internship of one year and one year of general surgical training in an approved program. Upon successful completion of the five-year course, which must include an acceptable thesis, candidates will be awarded the degree Master of Science. To complete the requirements, a minimum of 10 seminars must be attended, one-third of which must come from the basic science group. Elective courses of study to broaden the individual's cultural knowledge may be taken by these students capable of additional work in the science of their graduate study advisor. For general requirements for the master's degree and admission procedures, see Graduate College. Certain residents may be invited to remain for a fifth year. In addition to serving as senior residents, these students are given opportunity for advanced work (endoscopic surgery, advanced tumor surgery, and maxillofacial surgery).

68:300 Basic Otology and Rhinology Science 4 s.h.
A preclinical course with special reference to the head and neck, upper gastrointestinal tract, respiratory tract, and ears, including lectures on descriptive anatomy and physiology, surgical anatomy of the head and neck, anatomy, histology, microsurgery, physiology, anatomy, pharmacology, immunology, allergy, oral surgery, radiology, medicine, pathology, and radiology; and scientific method (research and experimental methodology, design of experiments, and statistics). Laboratory work includes head and neck dissection, histology of the ear, and temporal bone surgery.

68:301 Research Techniques in Otology and Rhinology 3 s.h.
A laboratory course designed to familiarize the student with research philosophy, equipment, and procedures. Students are required to spend two months on a full-time basis, working in departmental research laboratories concerned with otology, rhinology, psychoacoustics, vestibular physiologist, anatomy and physiology of the larynx, microscopy, and the physiology of the temporal bone. They will be instructed in and familiarize themselves with the operation of equipment and the use of techniques in the laboratory.

68:310 Clinical Conference in Otology and Rhinology, and Maxillofacial Surgery 1 s.h.
Presentation of the diagnostic methods and outlines of management for selected patients. May be repeated.

68:311 Clinical Otology, Rhinology, and Maxillofacial Surgery 3 s.h.
Practicum course involving diagnosis and treatment of patients in the areas of rhinology, rhinology, otology, and maxillofacial surgery. A systematic review and refinement of ENT examination techniques including endoscopy. May be repeated.

68:315 Head and Neck Surgery 1 s.h.
Same as Surgery 450. May be repeated.

68:320 Basic Clinical Audiology 2 s.h.
Clinical techniques of pure tone air conduction and bone conduction thresholds, including masking. Consideration of the relationships between various aural pathologies and ears and configuration of hearing loss.

68:221 Advanced Clinical Audiology 2 s.h.
Special clinical tests of hearing such as Bekesy Audiometry, PGRIL, Delayed Feedback, BISF Test, BRAF Test, tests of loudness recruitment, and other developments in audiology.

68:250 Seminar: Otology and Related Fields 1 s.h.
A critical and systematic review of current literature in otology and related fields. May be repeated.

68:250 Research: Otology and Related Fields cr.arr.
Research completed in conjunction with the thesis required for the M.S. degree involving the preparation of a prospectus which must be approved by the faculty. May be repeated.

68:400 Dental Treatment of Maxillofacial Deformities 1 s.h.
Clinical orthodontics for patients with maxillofacial deformities. Limited to graduate students in dentistry.

68:401 Seminar in Maxillofacial Rehabilitation 1 s.h.
Weekly seminar discussing the various types of facial deformities. Limited to medical and dental graduate students.

68:430 Maxillofacial Prosthesis 1 s.h.
Clinical prosthodontic treatment for patients requiring intra- or extra-oral prostheses including facial and body prostheses.

PATHTOLOGY
Head of Department, Emory D. Warner Office, 133 Medical Laboratories Building

STAFF

Professor: William F. McCormick, Frederic W. Stumler, Emory D. Warner, George H. Rimmers
Associate Professor: Thomas H. Kent, Kent F. Ross, Robert L. O'mara, Michael R. Korver, Donald F. Nicholson, Sidney B. Schochet, Jr.

Assistant Professor: David L. Karon, Kenneth R. Cross, Alan K. Fisher, William H. Yeh.

COURSE DESCRIPTIONS

Note: All courses by consent of instructor.

68:01 General and Systemic Pathology 4 or 5 s.h.
Lectures, conferences, demonstrations, and laboratory. Use of current autopsy and biopsy material. Sophomore year medical students. May be repeated once for credit, second semester.

68:02 General and Systemic Pathology 4 or 5 s.h.
Lectures, conferences, demonstrations, and laboratory. Use of current autopsy and biopsy material. Freshman year medical students.

68:03 Introduction to Medical Technology 1 s.h.
Lectures, conferences, demonstrations, and laboratory. Use of current autopsy and biopsy material. For dental students, sophomore year.

68:11 General and Systemic Pathology cr.arr.
Lectures, conferences, demonstrations, and laboratory. Use of current autopsy and biopsy material. For dental students, sophomore year.

68:101 Pathology of the Nervous System 1 s.h.
Same as Neurology 64. May be repeated once for credit, second semester.

68:201 Graduate Instruction in Pathology cr.arr.
May be repeated once for credit, second semester.
<table>
<thead>
<tr>
<th>COURSE DESCRIPTIONS</th>
</tr>
</thead>
</table>

#### 70:1 Introduction to Pediatrics  
Lectures and demonstrations presenting fundamental bases for examination and care of infants and children, including nutrition, appraisal of growth and development, psychopathology, history, and physical signs.  

#### 70:2 Clinical Pediatrics for Juniors  
Medicinal Students 4 a.h.  
Daily rounds, and ward work. Principles and practices required for maintenance of health in children; immunizations, physical care, nutrition, mental hygiene, and utilization of public health facilities. Relation of economics and pediatrics to pediatric practice. Feeding, behavior problems, and care of important disorders affecting infants and children.  

#### 70:7 Clinical Pediatrics for Seniors  
Medical Students 4 a.h.  
An out-patient experience in care of patients and instruction in clinical practice. Four weeks.  

#### 70:103 Pediatric Research cr.arr.  
Laboratory or clinical investigation.  

#### 70:105 Pediatric Clinic cr.arr.  
Clinical problems and admitting patients in hospital to staff for diagnosis, treatment, discussion.  

#### 70:106 Pediatric Paltry  

#### 70:107 Convulsive Disorders  

#### 70:108 Diabetes  

#### 70:109 Pediatric Endocrinology cr.arr.  

#### 70:110 Infant Nutrition cr.arr.  

<table>
<thead>
<tr>
<th>COLLEGE OF MEDICINE</th>
</tr>
</thead>
</table>

#### 70:111 Pediatric Neurology cr.arr.  

#### 70:112 Pediatric Rheumatology cr.arr.  

#### 70:113 Mental Retardation cr.arr.  

#### 70:114 Pediatric Cardiology cr.arr.  

#### 70:115 Pediatric Hematology cr.arr.  

<table>
<thead>
<tr>
<th>PHARMACOLOGY</th>
</tr>
</thead>
</table>

#### Head of Department, J. A. Woods  
Office, 111 Medical Laboratory Building  

<table>
<thead>
<tr>
<th>COURSE DESCRIPTIONS</th>
</tr>
</thead>
</table>

#### 71:3 Medical Pharmacology  
Lecture-laboratory course covering pharmacodynamic action and therapeutic uses of drugs. Does not include drugs acting on the central nervous system. First semester, sophomore year.  

#### 71:11 Pharmacology for Dental Students  
Lecture-conference-laboratory course correlating the pharmacology covered in the above course with emphasis on those of special interest to dentists. Second semester, sophomore year.  

#### 71:50 Introduction to Pharmacology  
Pharmacological and experimental approaches to drug research will be discussed. Research will be directed toward the concepts and tools of biological research. In-
71:214 Renal Pharmacology 1 s.h.
Discussions of the mechanisms of action of drugs affecting renal transport systems. Prerequisite: 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. Hodgson,
Office, 240 Medical Laboratories Building

STAFF

Professor: Frederick P. J. Deches, C. Edwin Pop, Jr., Nicholas S. Hamilton, C. Adrian M. Hodgson, Byron A. Schel-

iting, Robert D. Stinrud, Visiting Professor: J. Claudley-Thompson.

Assistant Professors: John N. Dvern, Charles J. Imig, Gordon W. Bower, Joe D. Thom-

son, Charles M. Tippan, Charles C. Wunderer.


Instructors: P. Duane Ingram, C. Michael Merlot.

Graduate Study
Graduate training in physiology and biophysics usually prepares students to the Ph.D. degree. Qualified students are accepted who have baccalaureate degree in biological, chemical, physical, or engineering sci-

ences. Prerequisites for graduate study include a year each of biology, physics, organic chemistry, physical chem-

istry, 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 Bio-

phy.)

In preparatory work for the comprehensive examina-
tions, students must have a working knowledge of all of the formal coursework advanced study is phy-

siology. Additional coursework may be taken in one or two of the several areas such as biochemistry, pharmacology, chemistry, sociology, engineering, medical electron-

ics, or radiation research. Most students may anticipate taking their comprehensive examination by the end of their second year of graduate study.

The doctoral student must complete his or her program under the immediate supervision of his or her advisory committee. No candi-

date may be required to take a written examination under the immediate supervision of his or her advisory committee.

Detailed information concerning research opportunities in physiology and other programs for graduate study can be obtained from the department. Fellowship sup-

port is available for students accepted for graduate study.

72:13 Introduction to Human Physiology 4 s.h.

Basic concepts of human physiology. Open to under-

graduate students with prerequisites of Biology 103, Chemistry 471, 48 or equivalent, and consent of instructor. Two courses and one three-four-hour laboratory per week. Offered first semester.

72:102 Physiology of Exercise 4 s.h.

A course for physiology majors and other interested students. Emphasis is placed on the application of fundamental knowledge to problems in physiology and medicine. Topics include the role of exercise in the normal control of body function and the evaluation of impaired function. Prerequisites: 71:09, 71:15. Second semester.

71:214 Renal Pharmacology 1 s.h.
Discussions of the mechanisms of action of drugs affecting renal transport systems. Prerequisite: 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. Hodgson,
Office, 240 Medical Laboratories Building

STAFF

Professor: Frederick P. J. Deches, C. Edwin Pop, Jr., Nicholas S. Hamilton, C. Adrian M. Hodgson, Byron A. Schel-

iting, Robert D. Stinrud, Visiting Professor: J. Claudley-Thompson.

Assistant Professors: John N. Dvern, Charles J. Imig, Gordon W. Bower, Joe D. Thom-

son, Charles M. Tippan, Charles C. Wunderer.


Instructors: P. Duane Ingram, C. Michael Merlot.

Graduate Study
Graduate training in physiology and biophysics usually prepares students to the Ph.D. degree. Qualified students are accepted who have baccalaureate degree in biological, chemical, physical, or engineering sci-

ences. Prerequisites for graduate study include a year each of biology, physics, organic chemistry, physical chem-

istry, 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 Bio-

phy.)

In preparatory work for the comprehensive examina-
tions, students must have a working knowledge of all of the formal coursework advanced study is phy-

siology. Additional coursework may be taken in one or two of the several areas such as biochemistry, pharmacology, chemistry, sociology, engineering, medical electron-

ics, or radiation research. Most students may anticipate taking their comprehensive examination by the end of their second year of graduate study.

The doctoral student must complete his or her program under the immediate supervision of his or her advisory committee. No candi-

date may be required to take a written examination under the immediate supervision of his or her advisory committee.

Detailed information concerning research opportunities in physiology and other programs for graduate study can be obtained from the department. Fellowship sup-

port is available for students accepted for graduate study.

72:13 Introduction to Human Physiology 4 s.h.

Basic concepts of human physiology. Open to under-

graduate students with prerequisites of Biology 103, Chemistry 471, 48 or equivalent, and consent of instructor. Two courses and one three-four-hour laboratory per week. Offered first semester.

72:102 Physiology of Exercise 4 s.h.

A course for physiology majors and other interested students. Emphasis is placed on the application of fundamental knowledge to problems in physiology and medicine. Topics include the role of exercise in the normal control of body function and the evaluation of impaired function. Prerequisites: 71:09, 71:15. Second semester.
72.110 Neurobiology and Behavior cr.arr.

72.142 Analytical Study of Physiology 3 s.h.

72.151 Membranology Physiology 6 s.h.

72.196 Research in Physiology and Biophysics cr.arr.

72.201 Medical Physics 3 s.h.

72.221 Advanced Systemic Physiology 3 or 5 s.h.

72.223 Advanced Respiratory Physiology 3 or 5 s.h.

72.231 Advanced Membrane Transport 2 s.h.

72.353 Advanced Gastrointestinal Physiology 3 s.h.

72.362 Environmental Physiology 3 s.h.

72.371 Advanced Cardiovascular Physiology 3 s.h.

72.381 Advanced Neurophysiology (Muscle) 3 s.h.

72.382 Advanced Neurophysiology (Biophysics of Excitable Membranes) 3 s.h.

72.383 Advanced Physiology (Sensory Physiology) 3 s.h.

72.384 Advanced Neurophysiology (CRS, Control of Locomotion and Posture) 3 s.h.

72.391 Seminar: Physiology cr.arr.

72.401 Special Topics cr.arr.

72.41 Seminar: Physiology cr.arr.

317
COLLEGE OF MEDICINE

72:342 Seminar: Physiology
Second semester.

72:401 Thesis
First semester.

72:402 Thesis
Second semester.

PREVENTIVE MEDICINE AND ENVIRONMENTAL HEALTH
Head of Department, Franklin H. Top, Sr.
Office, 106 Medical Laboratories Building

STAFF


Professors Emeriti: Milford L. Barnes Irving H. Berts, Chester J. Miller.

Associate Professors: W. J. Hanauer, T. R. Lloyd, Paul D. Leawer, Kenneth MacDonald, Donald McDonald, Robert Morris, Marcus Paul.


Associate: William E. McCallum.

Instructors: Gutmane Baranka, Dean P. Bordenan, Leon F. Bumsell, Josephine Jerny, Melvin Daniel Rockwell.

Visiting Lecturers: Tore Einar (Radiological Research Laboratory), Henry R. Hamilton (Department of Internal Medicine), Isaac Horowitz (Department of Internal Medicine), VA.

Advanced Degree Potentials or Requirements
Graduate courses and criteria are offered in preventive medicine and environmental health. Programs leading to the M.S. and Ph.D. degrees are available for qualified students. The following areas of study provide students programs which are designed to equip them for specialized 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 in junior and senior 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 involved 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 a facility providing health laboratory-type services. Areas of specialization include clinical chemistry, bacteriology, virology, and environmental sciences. Programs leading to the master's degree. Only the initial training will be conducted by the senior staff of the State Hygienic Laboratory. A background in biological sciences, and in M.S. and Ph.D.

Public health parasitology. A curriculum for students who expect to specialize in teaching and research in the parasitic diseases common to man. A background in parasitology, botany, animal pathology, bacteriology, and immunology is recommended. (M.S. and Ph.D.)

Industrial hygiene. Designed for the individual student based upon the background of the student and the area in which he plans to work. Candidates must be unusually well motivated and possess a baccalaureate degree in chemistry, engineering, or the biological sciences. Summer field work, for credit, is a part of the program. Ph.D. test 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 pathology are given. The program is designed for individuals already at moving public health problems associated with man-animal interaction. Some previous background in a basic applied or clinical science is given. (M.S. and Ph.D.)

Environmental toxicology. An opportunity is provided for students to study the epidemiology of environmental toxics particularly pesticides. Both field and laboratory studies are available to provide depth and insight in characterizing the cause-and-effect relationship of environmental pollutants and other hazards to human health. Students desiring work in this area should possess a strong background in toxicology, biochemistry, biological science, or medicine. (Ph.D. only)

COURSE DESCRIPTIONS

63:101 Health Science I
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
(Environmental Biology) 3 s.h.
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 microbiology of specific environmental systems. Same as Civil Engineering 53:102.

63:103 Health Science III
(Environment Control) 3 s.h.
Lectures and demonstrations covering the adjustment of the environment to the individual. Municipal supervision of sanitary measures. Prerequisite, 63:101 or equivalent. Enrollment limited. Second semester.

63:104 Health Education Workshop
3 s.h.
Open to students majoring in public health.

63:120 Public Health Parasitology
3 s.h.
Parasites of public health importance; life cycles, ecology, intermediate hosts, diagnosis, and prevention. Lectures, demonstrations, conferences, and laboratory. Enrollment limited.

63:122 Public Health Entomology
3 s.h.
Aspects of the control of arthropods in the causation and transmission of disease. Arthropod ecology and control.

63:133 Mills and Food Sanitation
3 s.h.
Sanitary aspects of the growth, production, and preparation of food and food products.

63:140 Fundamentals of Pathogenesis
3 s.h.
Mechanisms of biological adaptation. Host factors, environmental factors.

63:151 Parasitology for Medical Students
3 s.h.
Helminths, 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 Health Education
3 s.h.

63:154 Preventive Medicine and Health Education
3 s.h.
Public Health
Principles involved, methods, and official organization
by control of diseases in a community. Illustrated lectures, demonstrations, and readings. Junior year, 20 clock hours. Dental students only.

63:155 Sanitary and Health Surveys cr.arr. Student surveys and reports on a community. Field work, emphasizing vacation periods. May be taken by propered registration with consent of instructor. Both semesters.

63:156 Fundamentals of Community Health cr.arr. Lecture and laboratory. Nurse only.


63:199 Reading in Epidemiology cr.arr. Prequ: resize, 63:158 or equivalent. Consent of instructor required to register.

63:300 Biostatistics 2 or 3 cr. An elementary course in statistical methods primarily for students engaged in research in medical and related subjects. May be taken by qualified individuals interested in research in biological fields. Same as Statistics 226:100 and 226:101.

63:311 Elementary Statistical Inference in Medicine 2 cr. Same as Statistics 226:100. First and second semester.


63:382 Environmental Health Science II 3 cr. Laboratory study of the more usual chemical and bacteriological methods for examination of water and wastewater, and the application of these analytical methods to control of water and wastewater treatment operations. Prequ: resize, 63:180 or equivalent. Same as Civil Engineering 226:104.

63:384 Environmental Health Science III 3 cr. Lectures covering the major problems confronting environmental health control in the community. Governmental regulation of food and drugs, air quality, sanitation, waste disposal, radiation, safety, occupational health, housing, and health insurance. Prequ: resize, 63:180 or equivalent. Same as Civil Engineering 226:104.

63:386 Environmental Health Science IV 3 cr. Lectures covering water and wastewater treatment, including processing and control, problems of water distribution including plumeant hazards, industrial wastes and storm pollution. Prequ: resize, 63:180 or equivalent. Same as Civil Engineering 226:104.

63:388 Environmental Health Science—Special Studies cr.arr. Study in laboratory and/or field of some special problem related to environmental control. Students may register either semester or summer. May be repeated. Note: Registration in courses 63:191 through 63:200 is limited to students majoring in hygiene.

63:191 Industrial Hygiene 3 cr. Lectures, discussions, demonstrations, and field trips dealing with health and safety factors in the industrial environment.


63:230 Environmental Health Science V 2 cr. Lectures and laboratory dealing with more sophisticated instrumental methods of analyzing waters and wastewaters. Prequ: resize, 63:180, 63:185, and 63:180 or equivalent.

63:240 Environmental Toxology cr.arr. Consent of instructor required to register. 63:270 Occupational Medicine cr.arr. Consent of instructor required to register. Independent study course.

63:241 Public Health Administration cr.arr. Organization of official health agencies to meet health needs of cities, counties, and states. Health laws and regulations and their enforcement. Prequ: consent of instructor.

63:300 Thesis cr.arr.

PSYCHIATRY
Head of Department, Paul R. Ruston Office, 115-120 Psychopathic Hospital

STAFF


Associate Professor: Hunter R. Comly, Eugene R. Geer, Herbert L. Nelson.


COURSE DESCRIPTIONS

72:5 Clinical Psychiatry 4 cr. The class is in session Monday, Wednesday, and Friday mornings. Students are required to attend all classes and to submit work for examination. Students are also required to attend conferences and to render service for patients in the Psychopathic Hospital during a four-week period. History-taking, mental examination, and interviewing, Section year.
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. Prerequisite: permission of 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 psychological, related to psychiatry.

73:106 Research: Psychiatry cr.arr.
Continuation of 73:105, but may be taken as an independent unit.

Graduate Course in Psychiatry

The postgraduate psychiatric training program is designed 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 College of Medicine and must have completed an internship of one year. Physicians with previous psychiatric experience or academic training of a suitable character may apply for advanced standing. Those who desire shorter training periods, either to begin their psychiatric experience at the level of graduate students or as a preparation for the practice of general medicine, pediatrics, surgery, obstetrics, or other fields, may arrange residencies of less than three years.

Candidates who successfully complete the course of clinical experience, of lectures, conferences, and seminars, and who write acceptable essays, are awarded a degree of Master of Science. To complete these requirements, a total of 30 semester hours must be earned. The graduate 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 accompany the degree when such proficiency has been demonstrated to the satisfaction of the department.

Students are registered in the Graduate College. (See Graduate Regulations for admission procedures and degree requirements).

Basic Group of Courses

73:202 Advanced Clinical Psychiatry 2 s.h.
Residence instruction. Patients under active treatment used in clinical psychopathology, Mechanisms of adjustment and maladjustment, and application of psychoanalytic techniques. Two times a week throughout the year.

73:203 Advanced Clinical Psychiatry II 2 s.h.
Lectures and seminars discussing psychopathology, diagnosis, psychotherapy, and treatment of major psychiatric disorders.

7:1904 Clinical Conferences 3 s.h.
Admission and discharge case presentations by residents in house patients. Contributions from various professors allied with psychiatry considered as applied to diagnosis, treatment, and prognosis of patients. Five times a week throughout the year.

73:205 Seminar: Advanced Psychopathology 2 s.h.
Psychopathology of the various psychiatric syndromes, psychiatric aspects of medical systems and depth psychologies. Schools of psychiatric thought.

73:306 Seminar: Psychopathology 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 basis of behavior general, introspective, somatic, psychological, biochemical, pathological, and pharmacological facets related to normal and abnormal behavior and the relation of these factors to therapy.

73:308 Psychophysiological Relations 2 s.h.
Psychodynamics in the production of physical signs and symptoms, interrelations of physical disease and malad-

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 throughout the year.

73:411 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.

73:411 Child Psychiatry II 2 s.h.
Supervised experience in practical problems of diagnosis and treatment of children's behavioral disorders. Diagnostic interviews with parents and children. Supervised experience in interviewing and play therapy techniques. Group and individual discussions on specific problems of therapy. Three times weekly throughout the year.

7:321 Seminar: Administratrive Medico-

Legal Psychiatry 1 s.h.
Public health laws relating to commitment, care, and treatment of mentally ill persons; organization and administra-
tion of state hospitals; private sanitariums, psychopathic hospitals, psychiatric units in general hospitals; medico-

73:216 Theory and Methods of Psychological Examining in Clinical Psychiatry 2 s.h.
Evolution of basic ideas of the individual, variations in psychological test results, the influence of personality char-

73:318 Readings in Psychiatry 1 s.h.

73:319 Journal Club 1 s.h.

73:320 Special Topics Seminar 1 or 2 s.h.

73:223 Electroencephalography 2 s.h.
Electroencephalography in diagnosis and therapy, practical experience in clinical and experimental electroencephalography. Oral examina-
tions on techniques, qualitative interpretation, and quantitative research. Prerequisite, consent of instructor.

73:325 Thesis 4 s.h.

73:223 Law and Psychiatry 1 s.h.
A clinic open to seniors in Colleges of Law and Medicine. Mental disease considered from a medico-legal point of view by means of clinics and test study. Same as Law 807.

The Basic Group also includes: Anatomy Zoology; Medical and Natural History; Neuroanatomy; Neuro-physiology of the Nerv-

73:330 Research in Psychiatry cr.arr.

73:211 Problems in Psychiatry cr.arr.

The Elective Group also includes courses in other de-

73:330 Research in Psychiatry cr.arr.

The Elective Group also includes courses in other de-


330
RADIATION RESEARCH LABORATORY
(RADIATION BIOLOGY)

Head of Department, Titus C. Evans
Office, 14 Medical Laboratories Building

STAFF

Assistant Professors: Kenneth L. Coop, Brian S. Mathews.
Research Associate: Dorothy D. Schottelius.
Instructor: Donna Beckey.

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 evaluated on an individual basis.

Ph.D. candidates must satisfy the requirements of the Graduate College and the following specific requirements:

At least 20 of the required 30 semester hours of graduate credit should be earned in radiation biology. Other graduate science courses to improve a background of knowledge in the natural sciences, such as those in language Arts of French and German, or a science acceptable to the advisor, are 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 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 s.h.
Characterization and biological effects of ionizing radiations, properties and use of radiocentics, medical 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 s.h.
Lectures, discussions, and laboratory deals with radiation hazards, control regulations, problems of design and use of radiation facilities in medical, academic, and industrial situations, and related research problems for controlling radiation hazards with emphasis on those involved with medical and biological investigations. Consent of instructor. Prerequisite: Principles of physics or chemistry or consent of instructor.

77:307 Seminar 1 s.h.

77:311 Physics of Radiobiology I 4 s.h.
Lectures and laboratory exercises. Review of relevant physical principles. Atomic structure, chemical, and radioactive properties of nuclei. Nuclear structures and reactivity. Interactions of alpha, beta, gamma, and neutron radiation with matter. Prerequisites: 77:200, 4 semester hours of physics, calculus desirable.

77:218 Physics of Radiobiology II 4 s.h.
Continuation of 77:211. Radiation detection devices, instrumentation and technique for radiobiological research and for clinical procedures. Prerequisite: 77:211.

77:220 Mammmalian Radiobiology 4 s.h.
Further development of mammalian radiobiology portion of 77:202. Lectures and laboratory exercises dealing with radiation effects on organ systems in mammals. Topics include spleen and bone marrow transplantation, irradiation of selected organ systems, and use of agents which modify the radiation responses. Prerequisites: 77:205 and consent of instructor.

77:223 Cellular Radiobiology 4 s.h.
Lectures and laboratory: influence of radiation on cell growth, multiplication, differentiation, and function. Modification of radiobiological effects by alteration of radiation environment under various factors. Prerequisite: 77:205 or consent of instructor.

77:324 Radiocentics in Biological Research 4 s.h.
Further development of the radiocentics portion of 77:303. Lectures and laboratory exercises on the use of isotope in biology and medicine. Consent of instructor required. The isotope studied includes I-131, Fe-59, Cu-64, P-32, Co-60, At-219, Sc-46, Ga-68, and H-3. Counting equipment and techniques include liquid scintillation counting, gas flow counting, and use of pulse height analyzers. Prerequisites, 77:303 and consent of instructor.

77:229 Radiocentics in Clinical Investigations 4 s.h.
Lectures and laboratory exercises dealing with properties and uses of radioactive isotopes (excluding I-131, Co-57, Fe-59, Cu-64, At-219, Sc-46, Ga-68, H-3, and labeled compounds) in clinical investigations. Prerequisite: 77:303 or consent of instructor.

77:305 Research: Radiobiology cr.arr.
77:306 Research: Radiobiology cr.arr.
77:307 Special Topics cr.arr.
77:308 Special Topics cr.arr.
77:309 Thesis cr.arr.
77:310 Thesis cr.arr.

RADIOLOGY

Head of Department, James H. Christie
Office, C192 General Hospital

STAFF


Associate Professor: Robert E. Hyer.


Instructor: Donna Beckey.

Instructor: Glenn Luegenbeil, Donna Beckey.

COURSE DESCRIPTION

74:154 Atherosclerosis 1 s.h.
Diseases reflecting certain aspects of response interpretation and radiation therapy.

321
SURGERY

Acting Head of Department, S. E. Ziffren
Office, E138 General Hospital

STAFF

Clinical Assistant Professors: N. P. Sendall.

Courses Descriptions

75:5 Clinical Surgery for Junior Medical Students 8 h.
Each fifth of the junior class serves on the surgical service in the junior 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 patients' care and takes part in informal teaching exercises conducted by the surgical staff members of the ward unit to which the clerk is assigned. Daily one-hour lecture demonstration conferences are held six days per week with senior staff members. Each clerk is assigned for four weeks at a time to a minor staff member who, through personal conferences and case workout sessions, assists in the student's progress. Regularly scheduled exercises in surgical craftsmanship and in the animal laboratories are held during the clerkship.

75:31 Surgical Clerkships for Seniors 4 h.
Each senior student is assigned for one month in the surgical service to examine patients and participate in various phases of the patients' care in the Surgical Orthopedic and Emergency Service. Reserve on the wards or operating rooms 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 4 cr. (Exp.)
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 surgery residency. They may concurrently serve in one of the various grades of residency or as Fellow in Surgery.

Admissions requirements. For admission the applicant must have the permission of the department head and the approval of the Director of Admissions. In general, the applicant must present evidence of an M.D. degree, service of an internship of one year or its equivalent, and satisfactory academic standing in the surgical sciences. The applicant must pass entrance examinations in physics and biology. Applicants who have been accepted by the Director of Admissions must be required to attend a night class 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 receipt of degree. 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 to 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 by approved special registration in the Graduate College for admission procedures and degree requirements.

69-201 Graduate Instruction in Pathology cr. (Exp.)
Either six- or twelve-month course in autopsy and surgical pathology. The study of Pathology for full-time work equivalent to resident training.

60-208 Review of Anatomical Neurology cr. (Exp.)
Important elements of the central nervous system with emphasis on functional relationships. Offered only upon sufficient demand.

75-301 Surgical Anatomy 1 cr.
A weekly lecture. Cadever dissection and demonstrations. Systematic review of the field of gross anatomy with emphasis on surgical application. Anatomy of the extremities, first semester; anatomy of trunk, pelvic, and perineal, second semester; anatomy of mechanisms, neck, head, limb musculature.

75-303 Mortality and Morbidity Conference 1 h.
A weekly conference. Cadever dissection and demonstrations. Systematic review of the field of gross anatomy with emphasis on surgical application. Anatomy of the extremities, first semester; anatomy of trunk, pelvic, and perineal, second semester; anatomy of mechanisms, neck, head, limb musculature.

75-205 Daily Surgical Conference 3 h.
One-hour session five days each week for presentation of surgical problems with emphasis on diagnostic and operative management. May be repeated.

75-306 Surgical Anatomy 1 h.
Continuation of 75:206.

75-280 Breast Clinic 4 cr.

75-281 Oncology Clinic 4 cr.

75-282 Neurosurgical Conference 2 h.
Weekly two-hour conference primarily for graduate students in neurology, neurosurgery, and radiology. Correlation between neurosurgical diagnostic tests and pathological and postmortem diagnosis.

75-283 Surgery Seminar 1 h.
Non-repetitive (over four years) review of basic science and clinical material of value in practice of general surgery. May be repeated.

75-284 Radiology and Clinical Case Conference 1 h.
Weekly conference for students, residents, and staff where interesting cases and radiologic findings are presented.

75-285 Research Seminar 4 cr.
Presentation of current research by members of the staff.

75-286 Interdepartmental Clinical Conference cr.
Participation in case presentations by graduate registrants is required during various periods of rotation in the various departments. These include weekly Thyroid Conference, weekly Chest Conference, and Neurosurgical Conference.

75-289 Research. Surgery cr.
Carefully selected seniors carry out individual research projects and assist members of the staff.

The following four courses are required and are scheduled on a continuous calendar-year basis. The courses
73:215 Outpatient Clinical Experience 3 s.h.
73:216 Surgical Ward and Operating Room Clinical Experience 3 s.h.
73:217 Surgical Rotation Clinical Experience 3 s.h.
73:230 Thesis cr.arr.

UROLOGY
Head of Department, Rubin H. Flocks
Office, E400-II General Hospital

STAFF
Professors: Raymond O. Buga, David A. Carl, Rubin H. Flocks.
Assistant Professors: W. Bosley, C. H. Hawrey, J. D. Schmidt.

COURSE DESCRIPTIONS

79:1 Didactic Urology
Twelve hours in sophomore year.

79:103 Clinical Urology
One hour every other week throughout year for junior and senior.

79:104 Clinical Clerkships in Urology
Two weeks every eight weeks throughout year.

79:105 Urological X-Ray Interpretation
Each junior student is required to spend two weeks full time in urological clerkship.

79:106 Urology Grand Rounds
One hour weekly throughout year.

79:107 Urologic Seminar
Two hours every week throughout year.
Education for the practice of nursing was recog-
ized as a responsibility of The University of
Iowa as far back as 1886 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 1949. 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 categorizes
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—medica-
surgical nursing, pediatric nursing, and psychi-
atrie 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 enlarging 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
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 96 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 VI 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: 96:40 Nursing of Adults and Children, 96:41 Practicum—Nursing of Adults and Children, 96:64 Public Health Nursing, 96:66 Practicum—Public Health Nursing, 96:90 Fundamentals of Community Health, 96:94 Nursing in the Social Order, 96:96 Senior Nursing, 96:97 Practicum—Senior Nursing.

Challenge examinations may be taken in medical-surgical nursing, maternal-child health nurs-

COLLEGE OF NURSING

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 will benefit, 96:99, 96:34, 96:41.

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 for the new building for nursing is part of a $70 million Health Center expansion program. Other phases of the program which will benefit, 96:99, 96:34, 96:41. students 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 30 semester hours (preferably 32) 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 requirements of the College of Liberal Arts. Students from other institutions may qualify by presenting 8 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 this 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 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 4.0 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 Admissions Committee may require personal interviews of applicants.

Address all inquiries regarding admission to the Director of Admissions, The University of Iowa, Iowa City 52242. 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 cooperative 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.

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—Fee 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 $53. 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.
OUTLINE OF UNDERGRADUATE CURRICULUM

Freshman Year

4/5, 8, 8
General Chemistry, II, and Laboratory
4
10.
Rhetoric
4
11.
Intermediate Algebra
4
12.
Cultural-Historical Care Course
3
13.
Introduction to Psychology
3
14.
Introduction to Sociology
3
Sophomore Year

15.
Introduction to Psychology
3
16.
Introduction to Sociology
3
17.
Nutrition
3
18.
Elementary Human Anatomy
3
19.
Microbiology
3
20.
Introduction to Human Physiology
3
21.
Foundations of Nursing
3
22.
Foundations of Nursing
3
23.
Human Development and Behavior
3

Junior Year

24.
Literature Care Course
3
25.
Medical-Surgical Nursing
3
26.
Practicum: Medical-Surgical Nursing
3
27.
Maturity Nursing
3
28.
Practicum: Maturity Nursing
3
29.
Nursing Care of Children
3
30.
Practicum: Nursing Care of Children
3
31.
Electives: Anthropology, Political Science, or Sociology
3
32.

Senior Year

33.
Literature Care Course
3
34.
Fundamentals of Community Health
3
35.
Psychiatric Nursing
3
36.
Practicum: Psychiatric Nursing
3
37.
Public Health Nursing
3
38.
Practicum: Public Health Nursing
3
39.
Nursing in the Social Order
3
40.
Senior Nursing
3
41.
Practicum: Senior Nursing
3

Master of Arts in Nursing

The faculty of the College of Nursing believe 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 accretion 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:

Colleges 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 nursing 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 adviser. 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

1. Medical-Surgical Nursing—30 semester hours

36.323 Advanced Medical-Surgical Nursing 8 s.h.
36.329 Research Methodology 3 s.h.
36.330 Research in Nursing 3 s.h.
36.339 Thesis 6 s.h.
36.349 Electives from one related area
(physiological or behavioral sciences) 8 s.h.

2. Nursing of Children—32 semester hours

36.343, 344
Advanced Nursing of Children 14 s.h.

36.120 Introduction to Methods of Research 3 s.h.
36.329 Research in Nursing 3 s.h.
36.320 Electives from related area: 3 s.h.
36.343 thesis 6 s.h.

(An elementary course in statistics is required prior to admission or in the first semester.)

327
3. Psychiatric Nursing—32 semester hours

96:232, 252, 254, 255
Advanced Psychiatric Nursing 18 h.
96:120
Introduction to Methods of Nursing Research 3 h.
96:220
Research in Nursing 3 h.
96:212
Theory of Nursing 3 h.
96:128
Electives from a related field 3 h.
(An elementary course in statistics is required prior to admittance.)

4. Nursing Service Administration—32 semester hours

96:260, 261
Nursing Service Administration 12 h.
96:250, 255 Clinical Nursing 6 h.
96:120 Introduction to Methods of Nursing Research 3 h.
96:220 Research in Nursing 3 h.
96:128 Issues in Nursing 3 h.
(An elementary course in statistics is required prior to admittance.)

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. Duanan.
Professor: Hazley B. Betz.
Professor Emeritus: Gladys B. Betz.
Associate Professor: Elva E. Keen, Anna Jasmon, Nancy Jerdton, Marjorie Lyford, Anna Overland, Elfa Rasmussen, Hope Sorensen, June Tipton, Ann Whitman.
Assistant Professor: Jocie Ann, Hazel Buhman, Gloria Balch, Geoffrey Baus, Carolyn Cowell, Marjorie Curtis, Betty Dales, Carolyn Elder, Mildred Frewell, Urphas Olick, Marjorie Gould, Marie Heick, Sister Stella Lyne, Merideen Matts, Betty Martin, Marilyn McMin, Margaret Moore, Patricia O'Conor, Mary Rose, Ruth Rogers, Annabelle Robb, Edith Schoenhammer, Shirley Seyfried, Marian Shafner, Dorothy Smith, Karen Strible, Pearl Zimlich.


Lecturer: Grace Theresa Gould.

Undergraduate Courses

96:24 Foundations of Nursing 3 h.
Basic concepts and skills related to health, disease, and nursing care. Lectures, seminars. Anatomy and Physiology 1213 must be taken prior to or concurrently with 96:24 and 96:25.
96:25 Practicum: Foundations of Nursing 2 h.
Laboratory, discussion, and selected nursing practice experiences. 96:24 and 96:25 must be taken concurrently.
96:26 Foundations of Nursing 3 h.
Identification and management of nursing care problems, lectures and seminars. Prerequisites, 96:24 and 96:25 or equivalents, and Anatomy and Physiology 1213.
96:27 Practicum: Foundations of Nursing 2 h.
Laboratory, discussion, and selected nursing practice experiences. 96:24 and 96:25 or equivalents. Prerequisites, 96:26 and 96:25 or equivalents.
96:28 Foundations of Nursing 4 h.
Basic concepts and skills related to health, disease, and identification and management of nursing care problems. Lectures and seminars. College of Nursing for prerequisites.
96:29 Practicum: Foundations of Nursing 4 h.
Laboratory, discussion, and selected nursing practice experiences. 96:26 and 96:28 must be taken concurrently. Consult College of Nursing for prerequisites.
96:30 Human Development and Behavior 4 h.
Developmental stages of human organism from conception through senescence. Psychological, intellectual, emotional, and social factors. Open to freshmen with consent of instructor.
96:32 Medical-Surgical Nursing 6 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 therapy are identified. Nursing care is provided and the nursing action is determined. Prerequisite, junior standing.
96:37 Practicum: Medical-Surgical Nursing 6 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 h.
Physical and behavioral sciences, mental health, and public health components and patient teaching integrated into nursing care skills. Registered nurse students.
96:41 Practicum: Nursing of Adults and Children 3 h.
Application of nursing principles to care of adults and children, and validation of nursing skills obtained through guided study to diploma or associate degree programs. Registered nurse students.
96:42 Maternity Nursing 3 h.
Application of principles and skills to care of mothers and infants during antepartum, intrapartum, and postpartum periods. Prerequisite, junior standing.
96:44 Practicum: Maternity Nursing 3 h.
Application of nursing principles to care of mothers and infants during antepartum, intrapartum, and postpartum periods. Prerequisite, junior standing.
96:46 Nursing Care of Children 3 h.
Principles of child care, common abnormalities and diseases of children, family and community aspects of illness, promotion of health, and prevention of disease. Prerequisite, junior standing.
96:48 Practicum: Nursing Care of Children 3 h.
Application of nursing principles to care of children. Prerequisite, junior standing.
96:52 Psychiatric Nursing 3 s.h.
Self-understanding, psychopathology, and problems associated with mental illness; understanding of psychiatric mental health concepts and principles in prevention and therapy.

96:54 Practicum: Psychiatric Nursing 3 s.h.
Application of theories of psychiatric nursing and related theories in the compassionate care of mentally ill individuals and groups, emphasizing communication skills and an interdisciplinary approach to patient care.

96:84 Public Health Nursing 2 s.h.
Concepts and skills of family and community nursing. Open to seniors in undergraduate program and others with permission of the instructor. Car is required. Pre-registration a year in advance.

63:155 Fundamentals of Community Health 2 s.h.
Identification of community health problems and public health methods of dealing with them.

96:94 Nursing in the Social Order 3 s.h.
Philosophical and historical basis of nursing; implications of social changes for nursing education and service. Pre-requisite, senior standing.

96:95 Senior Nursing 5 s.h.
Identification and analysis of patient needs and nursing problems in selected situations with emphasis on management principles in the organization of patient care. Pre-requisite, senior standing.

96:97 Practicum: Senior Nursing 5 s.h.
An opportunity to test results of critical analysis of patient needs and nursing problems in selected situations as a basis for implementation of management principles in the organization of patient care. Pre-requisite, senior standing.

96:110 Individual Study 1 to 8 s.h.
Supervised study and/or clinical practice adjusted to needs of student.

Graduate Courses

96:120 Introduction to Methods of Nursing Research 3 s.h.
Development 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 Issues relating to society and complexity in meeting nursing's social commitment to society.

96:220 Nursing Research 2 s.h.
Analysis and critical appraisal of nursing theories and research literature. Communication of research findings. Completion of research proposal. Prerequisite: 96:120, standing.

96:232 Advanced Medical-Surgical Nursing I 4 s.h.
Contemporary findings in natural, behavioral, and applied sciences for derivation of concepts and principles underlying the rationale for nursing intervention. Focus is upon major problem areas confronted in the care of medical-surgical patients.

96:233 Advanced Medical-Surgical Nursing II 4 s.h.
Continuation of 96:232; prerequisite, 96:232.

96:262 Advanced Nursing of Children I 4 s.h.
Growth and development of the child; philosophies of child care; health promotion and health education. Experiences with well children in a variety of settings are provided.

96:283 Advanced Nursing of Children II 4 s.h.

96:284 Advanced Nursing of Children III 2 s.h.
Individually planned experiences in selected clinical or functional areas, investigative studies, and terminal experiences. Prerequisites, 96:282.

96:292 Advanced Psychiatric Nursing I 3 s.h.
Psychiatric-Mental Health and Communication theories, concepts, and problems pertinent to psychiatric nursing specialization in various correctional and mental health facilities. Special projects. Prerequisites, 96:292.

96:294 Clinical Practice in Psychiatric Nursing I 3 s.h.
Supervised individual and group psychiatric-mental health nursing and interdisciplinary experiences in the general hospital and psychiatric care settings.

96:295 Clinical Practice in Psychiatric Nursing II 3 s.h.
Continuation of 96:294.

96:296 Advanced Psychiatric Nursing III 3 s.h.

96:298 Clinical Nursing I 3 s.h.

96:299 Clinical Nursing II 3 s.h.
Continuation of 96:298; prerequisite, 96:298.

96:299 Nursing Service Administration I 3 s.h.
Organization theory. The complex nature of the modern community hospital. Includes case discussions.

96:299 Nursing Service Administration II 3 s.h.
The functions of the nursing department and of the nursing service administrator in a complex hospital setting. Case discussions. Prerequisite, 96:299.

96:299 Nursing Service Administration III 3 s.h.
Continuation of 96:299. Application of administrative theories to the reality of nursing service administration. Class discussion, individual and group conferences, and field study projects. Prerequisite, 96:299.

96:299 Supervision in Nursing 3 s.h.
Supervisory process in providing nursing care in health institutions.

96:299 Thesis cr.arr.
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-round 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 graduate 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 passing 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
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 the 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 and prescription items are filled annually, which affords a diversified experience of great value to the graduate.

The Iowa Veteran Drugists' Museum was established at Iowa in 1951, when the Iowa College of Pharmacy was named the College of Pharmacy, the repository of historical material relating to pharmacy.

The U of I student branch of the American Pharmaceutical Association-Iowa Pharmaceutical Association is one of the student organizations that promote the scholastic and social interests of its members, and to further the objectives of the parent organizations.

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 the 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 Admissions 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 pre-pharmacy coursework.

Rhetoric: Satisfaction of the College of Liberal Arts requirement.

Inorganic chemistry and quantitative analysis: 8 semester hours.

College algebra and trigonometry: 6 to 8 semester hours.

Physics: 8 semester hours or principles of animal biology: 8 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.

331
COLLEGE OF PHARMACY

Entering transfer students. Students who transfer into the College of Pharmacy after two years in a community or liberal arts college can complete the pharmacy program in three years if they have satisfactorily completed courses in organic chemistry, physics, and animal biology. Students who plan to remain in a community college for two years before transferring into the College of Pharmacy should consult the Dean of the College of Pharmacy concerning course requirements. A maximum of 68 semester hours (or the equivalent) will be accepted from a junior college toward the Bachelor of Science in pharmacy degree.

Transfer with advanced standing. Students transferring from other colleges of pharmacy accredited by the American Council on Pharmaceutical Education receive credit toward the Bachelor of Science degree in pharmacy for satisfactorily completed coursework required in this curriculum. However, at least one academic year of residence in The University of Iowa College of Pharmacy is required for the degree.

Students transferring from nonpharmacy colleges receive credit for work required in the Bachelor of Science curriculum in pharmacy, but are still subject to the baccalaureate requirement of at least three years in an accredited college of pharmacy.

A minimum grade of C is required for work applied by transfer toward the pharmacy degree.

Graduate students. All entering graduate students in the College of Pharmacy must meet general Graduate College requirements, and in addition are required to take proficiency examinations in pharmacy, chemistry, and the biological sciences, based on undergraduate training in these areas. Entering students who hold the master's degree may petition to be excused from these three examinations.

All correspondence concerning admission should be directed to the Director of Admissions, 1 Jessup Hall, The University of Iowa, Iowa City 52240.

For the Iowa Board of Regents' formal statement of requirements for admission to the College of Pharmacy, see the Appendix of this Catalog.

STAFF

Deans: Louis C. Zepf

Dean Emeritus: Rudolph A. Komer

Professor: Seymour M. Riege, Joseph G. Canseco, David P. Carron, John L. Lath, Louis C. Zepf

Assistant Professor: Mohammad H. A. Ansari, Mary P. Baumann, Jeff Atwood, Wanda L. Kern, Eugene L. Parrott, William W. Testa

Assistant Professor: Lyle D. Burger, Harold J. Black, Richard A. Vimko, Joseph G. Norwood, John F. Romano, Robert V. Smith

Instructors: Thomas A. Ayres, David R. Carles, Larry G. Cupples, Robert W. Dink, Larry K. Fry, Joe P. B. Gallario, C. Douglas Hopper, Martin W. Hill, Duane R. Kann

Director, Pharmaceutical Services: William W. Taster

Associate Director, Pharmaceutical Services: Duane R. Kann

Coordinator, Hospital Pharmacy Services: Vandelle L. Kerr

Coordinator, Hospital Pharmacy Education Services: Vandelle L. Kerr

Director, Hospital Pharmacy Services: Arnold J. Black


Lecturer: Thomas W. Blatner

The Professional Curriculum

<table>
<thead>
<tr>
<th>Semester</th>
<th>First Quarter</th>
<th>First Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>46-15</td>
<td>Pharmacy: Calculations</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>42-15</td>
<td>Organic Chemistry I</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>37-3</td>
<td>Principles of Animal Biology</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total semester hours</td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Quarter</th>
<th>Second Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>46-14</td>
<td>Pharmacy: Orientation</td>
<td>3</td>
</tr>
<tr>
<td>46-16</td>
<td>Pharmaceutical Chemistry: Inorganic</td>
<td>2</td>
</tr>
<tr>
<td>4-122</td>
<td>Organic Chemistry II</td>
<td>2</td>
</tr>
<tr>
<td>1-112</td>
<td>Pharmaceutical Laboratory I</td>
<td>2</td>
</tr>
<tr>
<td>6E: 1 or 6E: 2 Economics</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total semester hours</td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Year</th>
<th>Second Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>46-23</td>
<td>Pharmacy: Solids</td>
<td>3</td>
</tr>
<tr>
<td>99-161</td>
<td>Biochemistry</td>
<td>5</td>
</tr>
<tr>
<td>61-157</td>
<td>Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total semester hours</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Third Quarter</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>46-26</td>
<td>Pharmacy: Institutional Practice</td>
<td>2</td>
</tr>
<tr>
<td>46-28</td>
<td>Pharmacy: Solutions</td>
<td>4</td>
</tr>
<tr>
<td>4-111</td>
<td>Elementary Quantitative Analysis</td>
<td>4</td>
</tr>
<tr>
<td>6A: 1</td>
<td>Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total semester hours</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Quarter</th>
<th>Third Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>46-131</td>
<td>Pharmaceutical Chemistry: Organic</td>
<td>3</td>
</tr>
<tr>
<td>46-33</td>
<td>Pharmaceutical Chemistry: Polyphasic Systems</td>
<td>4</td>
</tr>
<tr>
<td>Course</td>
<td>Credits</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>Human Physiology</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total semester hours</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td><strong>Second Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:132 Pharmaceutical Chemistry: Organic</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>46:36 Pharmacy</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>71:101 Pharmacology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total semester hours</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><strong>Fourth Year: First Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:41 Pharmacy</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>46:43 Pharmacy: Professional Practice</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>46:45 Pharmacy: Administrative</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>46:139 Clinical Pharmacy: Case Study and Laboratory</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>71:103 Pharmacology and Toxicology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total semester hours</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><strong>Second Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:40 Industrial Field Trip</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>46:42 Pharmacy: Agricultural</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>46:44 Pharmacy: Professional Practice</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>46:46 Pharmacy: Administrative</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>46:52 Pharmacy: Senior Seminar</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>46:110 Clinical Pharmacy: Case Study and Laboratory</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>91:150 Law in a Technological Society</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total semester hours</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td><strong>Professional Electives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:101 Pharmacy: Projects</td>
<td>1 to 3</td>
<td></td>
</tr>
<tr>
<td>46:104 Pharmacy: Biopharmaceutics</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>46:106 Industrial Pharmacy</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>46:107 Hospital Pharmacy</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>46:108 Hospital Pharmacy</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>46:135 Pharmaceutical Chemistry: Drug Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:13 Pharmacy: Calculations</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td>Systems of weights and measures used in the United States and their relationships. Calculations involve equations, proportions, fractions, and percentages. This course is offered in conjunction with other courses in mathematics, chemistry, physics, and engineering.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:14 Pharmacy: Orientation</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td>Ethics, organization, and development of the science and profession of pharmacy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:33 Pharmacy: Solids</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td>46:38 Pharmacy: Solutions</td>
<td>4 a.h.</td>
<td></td>
</tr>
<tr>
<td>Properties and mechanisms of solution, extraction, coloring and flavoring, buffers; the formulation and preparation of pharmaceutical solutions. Prerequisites: 46:25, 46:26, 46:27.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application of physical and chemical laws to the formulation and preparation of polyphatic and plastic dosage forms. Prerequisites: 46:28.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:42 Pharmacy: Agricultural</td>
<td>2 a.h.</td>
<td></td>
</tr>
<tr>
<td>A two-hour lecture course acquaints the student with the therapeutic agents used in the prevention and treatment of animal diseases. Antibiotics, fungicides, rodenticides, and herbicides for farm and home use. Prerequisites: 46:13, 46:27, 46:37.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:43 Pharmacy: Profession Practice</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td>For senior students. Two lecture and three laboratory hours per week. Development of the prescription; state and federal laws governing the dispensation of dosage forms and drug administration. Fundamental techniques of compounding, packaging, and pricing. Prerequisites: 46:13, 46:32.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:44 Pharmacy: Professional Practice</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Graduate Courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:101 Pharmacy: Projects</td>
<td>1 to 3 a.h.</td>
<td></td>
</tr>
<tr>
<td>Basic and applied research problems of pharmaceutical significance. One conference and one or two laboratory periods weekly. Prerequisites: senior or graduate standing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:102 Pharmacy: Physical</td>
<td>2 a.h.</td>
<td></td>
</tr>
<tr>
<td>Two lecture hours a week covering theology and microchemistry in disease processes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:103 Pharmacy: Physical</td>
<td>2 a.h.</td>
<td></td>
</tr>
<tr>
<td>Two lecture hours and one discussion-demonstration hour a week. Surface and interfacial phenomena, adsorption, and stabilization in pharmaceutical systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:104 Pharmacy: Biopharmaceutics</td>
<td>2 a.h.</td>
<td></td>
</tr>
<tr>
<td>Mechanism of drug absorption and the interrelationships of the pharmacological properties of pharmaceuticals, their dosage forms, and their pharmacodynamics effects. Prerequisites: open to undergraduates in the absence of mandatory graduate standing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:203 Pharmacy: Physical</td>
<td>2 a.h.</td>
<td></td>
</tr>
<tr>
<td>Application of physical principles involved in separation by liquid-liquid extraction and problems involved in preservation and stabilization of pharmaceuticals.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:206 Pharmacy: Stability of Pharmaceuticals</td>
<td>3 a.h.</td>
<td></td>
</tr>
<tr>
<td>46:221 Pharmacy: Quality Control</td>
<td>1 a.h.</td>
<td></td>
</tr>
<tr>
<td>Lecture and laboratory. Instrumental analysis as applied to pharmaceutical quality control. Theory and applications of spectrophotometer, Karl Fisher titrator, spectrophotometric titrators, chromatography, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:229 Pharmacy: Advanced Biopharmaceutics</td>
<td>2 a.h.</td>
<td></td>
</tr>
<tr>
<td>The effect of physical-chemical properties and pharmaceutical manipulations on drug availability are considered with emphasis on the role of release from various dosage forms and formulations. Prerequisites: Mathematics 2225-7, Chemistry 4132.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46:231 Pharmacy: Seminar</td>
<td>0 or 1 a.h.</td>
<td></td>
</tr>
<tr>
<td>Assigned readings and reports on the latest advances in research in pharmaceutical sciences. Required of all students doing advanced work. May be repeated.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
46:215 Medicinal Chemistry: Selected Topics 3 s.h.
Discussions from current literature, of applications of modern theoretical organic chemistry to the study and understanding of biological phenomena. Chemical and stereochemical aspects of the synthesis and metabolism of chemical agents influencing it. Prerequisite, 46:212, Physiology T181, 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 reports and need of new and 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
46:328 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 59:161.
46:41 Pharmacognosy 4 s.h.
Continuation of 46:328.
Graduate Courses
46:219 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 physiochemical screening, thin layer chromatography, extraction, distillation, and crystallization. Methods for the isolation of specific classes of substances such as alkaloids, glycosides, steroids, and cerebroside are covered. Lecture and laboratory. Prerequisite, consent of instructor.
46:220 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, uses. Prerequisite, consent of instructor.
46:222 Pharmacognosy: Biogenesis of Natural Products 3 s.h.
Discussion of the basic biogenetic pathways involved in the formation of alkaloids, steroids, glycosides, terpenoids, and aromatic compounds, and aspects of their degradation in living systems. General methods employed in studying biosynthetic processes, the role of intermediary metabolites, feeding methods, and chemical degradations will be considered. Similar methods can be adapted to study other biogenetic pathways. Knowledge of secondary plant products will be covered.
Prerequisite, consent of instructor.
46:220 Pharmacognosy: Special Topics 1 s.h.
Report of research reports of recent advances in the field of natural products. Prerequisite, consent of instructor.
46:229 Pharmacognosy: Research cr.arr.
46:240 Pharmacognosy: Research cr.arr.
46:241 Pharmacognosy: Advanced 2 s.h.
Discussion of topics pertinent to natural products obtained from natural plants. Unpublished investigations and recent literature, Lectures and selected laboratory experiments. Prerequisite, consent of instructor.
College of Pharmacy

Pharmaceutical Administration

Graduate Courses
46:105 Industrial Pharmacy: Survey 3 s.h.
Organization, challenge, and unit operations in the production of pharmaceuticals. Prerequisites: 46:03, 46:23.
46:223 Industrial Pharmacy 2 to 4 s.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.
46:224 Industrial Pharmacy 2 to 6 s.h.
Continuation of 46:223.
46:225 Industrial Pharmacy: Product Development 3 s.h.
Application of physicochemical and physiological principles to the formulation and design of pharmaceutical dosage forms. Two lectures and one laboratory a week.
46:226 Industrial Pharmacy: Research 3 s.h.
Continuation of 46:225.
46:237 Industrial Pharmacy: Research 3 s.h.
Continuation of 46:225.
46:238 Industrial Pharmacy: Research 3 s.h.
Continuation of 46:225.
Clinical Pharmacy—Hospital Pharmacy

Graduate Courses
46:26 Pharmacy: Institutional Practice 2 s.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 material includes standards of practice, institutional organization, laws and regulations, federal and state health programs, drug distribution and control, pharmacy and therapeutics committees, drug information service, and educational programs. Prerequisites: 46:25, P2 standing.
46:110 Clinical Pharmacy: Case Study and Laboratory 2 s.h.
Continuation of 46:109.
46:111 Clinical Pharmacy: Laboratory 2 s.h.
46:112 Clinical Pharmacy: Laboratory 2 s.h.
Continuation of 46:111.

Undergraduate Courses
46:45 Pharmacy: Administration 3 s.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 6A1, Economics 6A4.
46:46 Pharmacy: Administration 3 s.h.
Continuation of 46:45.
46:52 Pharmacy: Senior Seminar 1 s.h.
Current problems relevant to the practice of pharmacy. Prerequisites, senior standing.

Graduate Courses
46:121 Pharmacy Administration: Drug Development and Marketing 3 s.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. Prerequisite, consent of instructor.
46:122 Pharmacy Administration: Pharmaceutical Economics and Marketing 4 s.h.
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. Prerequisite, consent of instructor.
46:251 Pharmacy Administration: Research cr.arr.
46:252 Pharmacy Administration: Research cr.arr.
46:253 Pharmacy Administration: Research Methods 3 s.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. Prerequisite, Statistics 325:43 or equivalent; corequisites, Education 7P:242 or Economics 62:128.
46:254 Pharmacy Administration: Health Economics 3 s.h.
Analysis of supply and demand of health resources and the influence of third party payment on medical care utilization are discussed. Cost-effectiveness analysis and 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. Prerequisite, senior standing.
46:106 Industrial Pharmacy 3 s.h.
Lectures: principles and processes of pharmaceutical manufacture and equipment. Laboratory: processing on a pilot-plant scale. Open to undergraduates for elective credit. Prerequisite, 46:03.
### Required Courses from Other University Departments

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary Quantitative Analysis</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>Organic Chemistry I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Organic Chemistry II</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>Intermediate Chemistry Laboratory I</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>Principles of Economics</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>Principles of Accounting</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>College Physics</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>College Physics</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>Principles of Animal Biology</td>
<td>5 s.h.</td>
</tr>
<tr>
<td>General Microbiology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>Pharmacology</td>
<td>5 s.h.</td>
</tr>
<tr>
<td>Pharmacology and Toxicology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Mammalian Physiology</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>Law in a Technological Society</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>5 s.h.</td>
</tr>
</tbody>
</table>
AFRO-AMERICAN STUDIES

Chairman of Program, Charles T. Davis
Office, 110 Old Capitol

Vigorous efforts are being made to develop a satisfactory curriculum and attract able 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 crises with a commitment to the elimination of prejudice 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 emphasize this area in his graduate coursework, offer it as an examination field at the time of comprehensive examinations, and write an interdisciplinary dissertation on some aspect of Afro-American culture.


The Committee on Afro-American Studies also sponsors the Afro-American Cultural Center.

American Studies Program via Professors Boyd (Education), Kinser (Education), Lowery (History and the administration), Lane (Education), Van Dyke (Political Science), Armstrong (African Civilization), Etulich (Sociology), Hort (Business Administration), Burd (English), Silver (Education), Armstrong, Professors Carter (Anthropology), Duffy (Education), Mitchell (Geography), Sethi (Education), Greene (Education).

COURSE DESCRIPTIONS

Courses primarily concerned with the Afro-American Experience American Civilization

45:10 The Black Revolution and Its Leadership 3 s.h.

45:11 The Contemporary Black Experience 3 s.h.

45:15 Afro-American Literature I 3 s.h.

45:16 Afro-American Literature II 3 s.h.

45:210 The Culture of Black America: An Interdisciplinary Approach 3 s.h.

An overview of the social, economic, political, and religious experiences which have influenced the black American.

45:211 Seminar: Research in Afro-American Culture 3 s.h.

Students will be afforded an opportunity to explore and analyze social and historical distortions which perpetuate and intensify patterns of racial discrimination.

Anthropology

112:114 Spanish Speaking Peoples of the United States 3 s.h.

112:118 Social Anthropology of the Caribbean 3 s.h.

112:119 Urban Anthropology 3 s.h.

112:120 Peoples of Africa 3 s.h.

112:184 Peoples and Cultures of North Africa and the Middle East 3 s.h.

Art

11H:103 Primitive Art: Africans 3 s.h.

Business Administration

63:130 Individual Rights in an Industrial Society 3 s.h.

63:205 Business and Society 3 s.h.

63:252 Employment Relations and Public Policy 3 s.h.

Economics

5E:137 Economics of Urban Problems 3 s.h.

Education

7F:104 Education in Newly Developed Countries 2 or 3 s.h.

7F:130 Educational Sociology 2 or 3 s.h.

7F:300 Seminar: Value Problems in the Administration of American Education 3 s.h.

7F:109 Social Development of the School Age Child 2 or 3 s.h.
GENETICS
Chairman of Program, George E. Boosenee, 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 Department 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 Carlsen, Erich Rie, George E. Boosenee, Jr., chairman. The faculty members participating in the genetics program are:

Professors: Boosenee (Zoology), Millikan (Zoology), Mohler (Zoology),

Associate Professors: Six (Microbiology),

Assistant Professors: Carlsen (Botany), Oguine (Zoology), Hagemann (Zoology), Walker (Microbiology).

COURSE DESCRIPTIONS
Botany

2103 Genetics
Same as Zoology 21:100.

2104 Cytogenetics
Same as Zoology 27:110.

Microbiology

61:175 Topics in Microbial Genetics

61:270 Molecular Mechanisms in Heredity

Zoology

37:101 Principles of Human Genetics

37:109 Genetics

Same as Botany 27:109.

37:150 Fundamental Genetics

Same as Botany 27:209.

37:131 Population Biology

37:160 Advanced Genetics

37:165 Population Genetics

37:163 Behavioral Genetics

37:165 Quantitative Genetics

37:171 Molecular Genetics

37:172 Topics in Molecular Genetics

37:214 Drosofila Genetics Seminar

37:215 Seminar: Genetics

37:260 Developmental Genetics

37:283 Behavioral Genetics Seminar

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 offered through the cooperation of the Graduate College, the College of Engineering, the Department 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 principles 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 radioactive isotopes, and the use of irradiation devices.

The program is administered by an interdisciplinary committee. The chairman of this committee is the advisor 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 P. Bennett

Richard E. Carlson

Tina C. Swartz

Kevin H. Chong

James E. Ostrum

Chemistry

Physics

Radiation Biology

Mathematics

Mechanical Engineering

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:

CHEMISTRY

338
### NEUROBIOLOGY

**Chairman of Program, Friedrich P. J. Diecke**

**Office, 245 Medical Laboratory**

The neurobiology program is an interdepartmental and interdisciplinary 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 teaching to undergraduate and graduate students in all areas of neurobiology ranging from ultrastructure and biochemistry of excitable membrane to neural mechanisms of behavior. Faculty members from the Departments of Anatomy, Pharmacology, Physiology and Biophysics, Psychology, Psychiatry, Speech Pathology and Audiology, and Zoology participate in the program.

**Neurobiology Committee:** F. P. J. Diecke, chairman; Alfred Gonzese, H. Bernhard Hartman, William W. Kaufman, and Louis S. Van Orden.

The following faculty members participate in the interdisciplinary neurobiology program:

- **Professors:** Benton (Psychology and Neurology); Diecke (Physiology and Biophysics); Harvey (Psychology); Ingram (Anatomy); Kaufman (Anatomy); Kreid (Psychiatry); Kollros (Neurology); Mitchell (Pharmacology); Riske (Anatomy); Schroeder (Anthropology and Biophysics); Small (Speech Pathology and Audiology); and Psychology.
- **Associate Professors:** Hinde (Psychology); Fox (Psychology); Killearn (Anatomy and College of Dentistry); Lieberman (Psychiatry and Hospital); Ruedel (Psychology); Thompson (Physiology and Biophysics). Assistant Professors: Dalboli (Psychiatry); Hartman (Zoology); Rater (Zoology); Leakeoff (Neurology, Physiology, and Biophysics); and Meier (Child Behavior and Development); Millard (Psychiatry); Phillips (Physiology and Biophysics); Vass (Zoology); and Wernick (Speech Pathology and Audiology). Westecher (Physiology and Biophysics); Vernet (Anatomy).

**Electives**

- Advanced courses in anatomy, physiology, medicine, zoology, psychology, psychiatry, anthropology, and research.
- Total: with thesis 38 s.h. without thesis 28 s.h.

### INTERDISCIPLINARY PROGRAMS

**Course Descriptions**

**Interdepartmental Courses**

- **62:10 Neurobiology and Behavior**
  - **5 s.h.**
  - Course is open to graduate and postgraduate students and requires an introductory course in the central nervous system. The course covers material in anatomy, physiology, behavior, sensory and motor mechanisms, and the medical student in an integrated fashion. Offered upon student demand.

- **62:181 Neurobiology and Behavior**
  - **5 s.h.**
  - Interdisciplinary study of the elements, organization, and functions of the central nervous system. Lectures, conferences, laboratories, and demonstrations.

- **62:201 The Visceral Nervous System**
  - **3 credits**
  - Anatomy of the visceral nervous system with emphasis on functional relationships. Offered upon student demand.

- **62:206 Review of Analytical Neurology**
  - **3 credits**
  - Important elements of the central nervous system with emphasis on functional relationships. Offered only upon student demand.

**Biochemistry**

- **62:288 Neurobiochemistry**
  - **3 s.h.**

**Pharmacology**

- **71:207 Introductory Neurobiology**
  - **2 credits**
  - Course is open to graduate and postgraduate students and requires the completion of an introductory course in the central nervous system. The course covers material in anatomy, physiology, pharmacology, and biochemistry, and the medical student in an integrated fashion. Offered upon student demand.

- **72:211 Advanced Neurophysiological**
  - **3 s.h.**
  - Part of a two-year sequence. Open to graduate and postgraduate students. Examines sensory, central, neurological, and thermal phenomena at the cellular level in controlling skeletal muscle. Prerequisites, adequate background in biological and physical sciences and consent of instructor. First semester, alternate years. Offered 1971-75.

- **72:282 Advanced Neurophysiological**
  - **3 s.h.**
  - Part of a two-year sequence. Open to graduate and postgraduate students. Foundation for understanding of the generation of excitatory and inhibitory transmission of excitation, and the processing in the central nervous system. Prerequisites, adequate background in biological and physical sciences and consent of instructor. Second semester, alternate years. Offered 1971-75.
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
3.554 Psychosociacoustics 3 s.h.
Lectures and discussions on advanced topics and current research in auditory sensation and perception. Same as Psychology 31.571. Prerequisite, 2.113 or consent of instructor. Second semester.

3.253 Psychosociacoustics Laboratory 2 s.h.
Supervised laboratory experimentation. Analysis of stimulus-response interaction and response by means of classical psychophysical experiments. Two laboratories per week. Same as Psychology 31.572. Corequisites, 3.554 or consent of instructor.

3.256 Physiology of Hearing 4 s.h.
Application of physiological techniques primarily electrophysiological, to basic research in hearing. Microanatomy of auditory system (AII), both peripheral and central, dynamics of the cochlea, electrophysiological responses at various levels in the AII, extinction studies. These lectures and two laboratory hours each week. Prerequisite, 3.554 or consent of instructor. First semester.

Zoology
37.134 Comparative Physiology 4 s.h.
Comparative analysis of physiological mechanisms among invertebrates and vertebrates. Prerequisites, 37.567 and Chemistry 64 or Physics 166, or grade of "B" and consent of instructor.

37.141 Comparative Neurophysiology 5 s.h.
Properties of receptors, integrative processes, and effector mechanisms, exemplified by both vertebrate and invertebrate systems. Prerequisites, same as above, and consent of instructor.

37.326 Hormones and Behavior 2 s.h.
Discussions, readings, and reports dealing with topics related to current regulation of behavior. Prerequisite, consent of instructor.

37.329 Neuroendocrinology 2 s.h.
Lectures, discussions, readings, and reports on development of nervous systems and glands organs, development of behavior, nerve growth, and regeneration. Prerequisites, 37.108 and graduate standing or consent of instructor.

37.341 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 Iowa:
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 preprofessional requirements. This aspect of the curriculum
proposes the student to meet satisfactory levels of performance in such basic skills as reading, writing, speaking, and quantitative thinking; to develop an understanding of major concepts and ideas in the social sciences, the natural sciences, and the historically-cultural studies; and to gain understanding and competence in the use of a foreign language. The professional curriculum in dental hygiene is taken during the junior and senior years.

The master's program is designed to provide the student with a foundation for teaching courses in dental hygiene, for developing understanding and competence in the area of supervision and administration, and for participating in research of a scholarly nature. In addition to professional courses studied in the College of Dentistry, supplementary courses offered by the College of Liberal Arts and in the College of Education are included in the master's curriculum.

Undergraduate Admission Requirements

The student who matriculates directly from high school should follow the courses of study outlined in the pre-professional curriculum requirements. When the pre-professional courses of study are near completion, the student applies for enrollment in the professional curriculum of dental hygiene. (See General Studies, College of Liberal Arts.)

In order to assure selection of highly motivated and academically qualified candidates, each applicant's credentials are evaluated by the dental hygiene admissions committee.

Preference is given, under University regulations, to applicants who fulfill these qualifications and who are residents of Iowa. Students who have completed the pre-professional requirements and who have received formal notification of acceptance into dental hygiene will study courses listed under professional curriculum requirements.

Applications. All procedures for admission to the dental hygiene curriculum must be completed through the Director of Admissions on or before April 1 for the fall semester.

Interests. Personal interviews for transfer students are required prior to entering the professional program of study. Arrangements for personal interviews with members of the Dental Hygiene Admissions Committee are made after formal applications have been accepted.

Living Accommodations

Students in the undergraduate dental hygiene program live in University residence halls or approved off-campus housing facilities. Prospective students are advised to apply for University housing at the time of submitting application for admission to the program. Dental hygiene students have the same privileges as other undergraduates enrolled in the University.

Expenses

(See Admissions—Registration—Fee and Housing)

The University will furnish equipment needed for work in clinics and laboratories. However, students should acquire instruments, textbooks, uniforms, and laboratory supplies. The average cost of dental instruments is $25; laboratory supplies, $45; textbooks, $200; uniforms, $90; and residential supplies, $85 for the junior and senior years.

Graduate Study

The Master of Science degree program is designed to prepare experienced dental hygienists for careers in dental hygiene administration.

Admission Requirements. This program is carried on in conjunction with the Department of Administration of the Graduate College. Admission to the program requires:

1. A dental hygiene certificate from an accredited dental hygiene program,
INTERDISCIPLINARY PROGRAMS

Senior Year
First Semester
88:2 Clinical Dental Hygiene 3 a.h.
88:2 Survey of Practice Management 1 a.h.
88:10 Dental Therapeutics 1 a.h.
88:9 Dental Nutrition 1 a.h.
88:5 Seminar: Preventive Dentistry 2 a.h.
TV:120 Audiotutorial Methods 1 a.h.
88:5 Pathology for Dental Hygienists 3 a.h.
88:19 Periodontology 3 a.h.

Second Semester
88:4 Clinical Dental Hygiene 3 a.h.
88:2 Clinical Dental Radiography 1 a.h.
88:10 Clinical Assisting 1 a.h.
88:15 Law in a Technological Society 1 a.h.
88:19 Clinical Hygiene 3 a.h.
88:14 Hygiene and Public Health 3 a.h.
88:2 Seminar: Preventive Dentistry 1 a.h.

STAFF
Professor: Cloud High.
Professor Emeritus: Ray Smith.
Assistant Professor: Pamela Halter, Sally Bushman, Thaxter Miller, Clarym Shalk, Mary Williams.
Instructor: Denise Dennis, Jean Ferguson, Kay Mesher, Sharon Schafstal, Francis Hupp, Marjorie Taylor.

COURSE DESCRIPTIONS
Undergraduate Courses
88:1 Fundamentals of Dental Hygiene 2 a.h.
Basic concepts and procedures pertaining to oral prophylaxis with coordinated clinic experience. 32 clock hours.

88:3 Prophylaxis Technical 2 a.h.
Lectures, laboratory, and clinical experiences in principles and procedures of the oral prophylaxis. 32 clock hours.

88:3 Clinical Dental Hygiene 3 a.h.
Clinical application of principles and techniques of the oral prophylaxis and of auxiliary procedures. Weekly lecture and 10 hours of clinical teaching. 32 clock hours.

88:4 Clinical Dental Hygiene 3 a.h.
Continuation of 88:3 with emphasis on dental health education and auxiliary procedures. 32 clock hours.

88:5 Seminar: Preventive Dentistry 2 a.h.
Theory and application of procedures for prevention and control of oral disease. Emphasis on evaluation of research in the study of fluoride. 32 clock hours.

88:6 Seminar: Preventive Dentistry 2 a.h.
Continuation of 88:5. Concepts of preventive dentistry applied to the practice of dental hygiene and utilized oral health counseling. 32 clock hours.

88:7 Dental Health Education 2 a.h.
Principles and concepts of effective dental health education practices. Experiences in classroom teaching and table clinic presentations. Students select, develop, and evaluate educational procedures for patients with special dental health needs. 32 clock hours.

88:8 Dental Health Education 2 a.h.
Continuation of 88:7. 32 clock hours.

88:9 Survey of Practice Management 1 a.h.
Dental office procedures with emphasis on clinical practice management. 16 clock hours.

88:10 Clinical Assisting 2 a.h.
Orientation to the various specialties in dentistry through clinical observation and assisted in departmental clinics.

88:201 Directed Teaching Experience 0 cr.arr.
Readings and discussions relate theories of learning with the teaching of clinical skills. Content includes current research in utilization of instructional media, development of motor coordination and manual skills, and observation and record-keeping of student performance and progress. 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.

88:202 Practicum I 0 cr.arr.
Historical development and changing concepts in dental and dental hygiene education. Readings on administration, professional, and human relations in dental education relate administrative theories to functional operations.

88:204 Practicum II 0 cr.arr.
Curricular design applied to the organization, development, and evaluation of curricula in dental hygiene education.

88:205 Research: Dental Hygiene 0 cr.arr.
Application of research methodology through the development of an original research project.

88:206 Directed Teaching of Prophylaxis Technic 0 cr.arr.
Preparation, application, and evaluation in teaching clinical dental hygiene science and technique.

MEDICAL TECHNOLOGY
Director, University Hospitals. Earl S. Rose Guggenheim, 135 Medical Laboratories 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. Full matriculation requirements are forth by these accrediting bodies involves three years of study, followed by a year of clinical experience, which is required for licensure as a medical technologist. Upon completion of this four year program, students will be eligible to receive the Bachelor of Science degree with a major in general sciences and medical technology and also by eligibility for national certification as a medical technologist.

Pre-professional Curriculum Requirements
Completion of the following requirements are necessary for admission to the professional program.

1. Section of the College of Liberal Arts requirements in rhetoric, literature, social science, historical-cultural core, foreign language, and physical education.
2. At least 49 semester hours in science, which must include:
   16 semester hours in chemistry including courses in general chemistry, quantitative analysis, and organic chemistry.
   16 semester hours in biological sciences including courses in general zoology, microbiology, and parasitology.
   5 to 7 semester hours in mathematics including a course in statistics.

342
**INTERDISCIPLINARY PROGRAMS**

**Recommended Science Electives:**
- 0204 Introduction to Medical Technology
- 1212 Introduction to Human Physiology
- 2112 Microbiological Anatomy
- 2113 Principles of Human Genetics
- 591 and 592 College Physics
- 601 Elementary Human Anatomy

**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: study of blood and pathology of blood forming tissues, including examination, identification, and evaluation of blood cells, coagulation factors, and routine urinalysis.
- Immunohematology: Principles and techniques of blood grouping, compatibility testing, antibody identification, and complement therapy.
- Clinical microbiology: Identification of pathogenic microorganisms by applying the principles of bacteriology, mycology, serology, virology, and parasitology.
- Clinical biochemistry: Theory and practice of routine methods of chemical analysis, preparation of reagents, instrumentation, documentation, and special procedures in determining chemical constituents.

**STAFF**

- **University Hospitals**
  - Associate Professor: Karl P. Rose
  - Assistant Professor: Donald P. Nicholson
- **Veterans Administration Hospital**
  - Associate Professor: Kenneth B. Gross
  - Assistant Professor: D. M. A. Alsh
  - Instructor: Karl M. Berglund, Gladys J. Downey

**NUCLEAR MEDICAL TECHNOLOGY**

*Program Coordinator, R. E. Peterson, Office, C139 General Hospital*

**Student Advisor, Glenn A. Lemberg, Office, C139 General Hospital**

Nuclear medicine is the scientific and clinical discipline concerned with the diagnostic application of radionuclides in tracer amounts and the photographic use of radionuclides. As a highly specialized diagnostic tool to the medical profession, nuclear medicine has advanced from infancy to a high level of development in the last two decades. The role and significance of the nuclear medical technology is greatly increased as allied medical specialties come to rely upon nuclear medicine and its trained personnel.

**Program Objectives**

The preclinical 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, the student may apply to the College of Liberal Arts or the College of Human Ecology at the University of Iowa toward the Bachelor of Science or the Bachelor of Arts degree in general science (see General Sciences).
**INTERDISCIPLINARY PROGRAMS**

**Educational Program**

All students in the College of Liberal Arts who designate nuclear medical technology as a major are assigned to nuclear medical technology advisories for guidance in the completion of the preclinical courses of study.

Preclinical courses. The required courses are designed to emphasize the physical and biological sciences, which provide a basic background and which are prerequisites for the subjects and activities of the clinical year. In addition to the science 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 summation of the prerequisites for acceptance into the nuclear medical technology program:

1. **Pre-requisite for admission:**
   - Physical Chemistry
   - Biochemistry
   - General Biology

2. **Satisfaction of core requirements in the literature:**
   - Social Science
   - Historical-Cultural Areas

3. **Completion of the minimum 28 semester hours:**
   - A combination of 15-16 semester hours in physics, chemistry, or zoology, respectively.
   - A combination of 20-26 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 twelve-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, sensing instrumentation, radiochemistry, radiopharmaceuticals, basic petrophysics, techniques, electro-physics, stereoradiography, liquid scintillation, health physics, principles of nursing care techniques, photographic chemistry, and darkroom techniques, principles of clinical administration, clinical theory and clinical administration, chemistry, clinical chemistry, and medical ethics. Relevant areas of study are included in the following areas within the departments of nuclear medicine at both medical facilities: physics, nuclear medicine, clinical, radiopharmacy, radiopharmaceutical laboratory, tracer techniques and research, advanced cardiovascular, reticulo and cerebro scanning, and the cardiac magnetic resonance.

Other clinical experiences related to hospital functions and facilities are provided by brief rotations in: radionuclide therapy, nuclear medicine, radiation protection, and several clinical laboratory facilities.

<table>
<thead>
<tr>
<th>Recommended Courses of Preclinical Study</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman Year</td>
<td></td>
</tr>
<tr>
<td>Health Man 101</td>
<td>5</td>
</tr>
<tr>
<td>Physical Education 101</td>
<td>5</td>
</tr>
<tr>
<td>General Biology</td>
<td>5</td>
</tr>
<tr>
<td>Historical-Cultural</td>
<td>4</td>
</tr>
<tr>
<td>General Chemistry and Qualitative</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
</tr>
</tbody>
</table>

| Sophomore Year                          |                |
| Literature                              | 5              |
| Principles of Animal Biology (3-3)      | 6              |
| Chemistry 201                            | 5              |
| College Physics (29-1 and 29-2)         | 7              |
| Organic Chemistry (4-8)                 | 9              |
| Total                                   | 31 to 35       |
sitions as they may be applied to the treatment of dis-
abilities through physical therapy procedures.
Orientation to all health professions and the re-
spobility of the health professional to the patient
are stressed throughout the program. The clinical education
experience provides the student with the opportunity
to develop skills in the evaluation of disabilities and in
the prescription and execution of treatment programs,
which will enable him to function as a physical therapist.
He is taught to recognize the need to educate others and
the imperoration of his own professional growth in the
art and science of physical therapy.
The Graduate Record Examination must be taken
during the senior year in order to register in the Grad-
uate College for the second year of the professional
program. In addition, the Graduate College requires a
2.5 grade-point average to maintain registration.
After completion of the second year in the professional
curriculum, a certificate is awarded by the University of
Iowa.
Professional Program Admission Requirements
1. Completion of the junior year of college work (equiva-
ent to 30 semester hours).
2. Minimum scores on all of 2 semester hours of
physics, chemistry, biology (or zoology), and 6 semes-
ter hours of psychology. Chemistry, physics, biology, or zoology courses must include
one-quarter of laboratory work. As the quality of work in
all general science is basic to success in physical
therapy, special attention will be given to grades in
these courses.
3. A minimum grade-point average of 2.3 on a 4-point
system.
4. Application must be made to the Director of the
Certificate in Physical Therapy Program of the College
of Medicine.
Preprofessional training at The University of Iowa will
be assigned to an advisor from the physical therapy
faculty. It is essential that each student satisfy the re-
sponsibilities of the junior year in addition to the require-
ments of the College of Liberal Arts for a baccalaureate
degree.
Students pursuing a pre-physics therapy program at
The University of Iowa may follow this suggested course
schedule:
First Year
191 Rhetoric 4 sem.
192 English 4 sem.
Physical Education Work for Men or
Women 3 sem.
Two semester hours of historical and cultural
courses or 6 sem.
4:3 Principles of Chemistry I
4:4 Principles of Chemistry II
4:6 Elementary Chemistry Laboratory 2 sem.
Sophomore Year
Two semester hours of literature core course 4 sem.
Two semester hours of foreign language courses
(excepted by exam or 4 years in high school) 3 sem.
Two semester hours of social science course 3 sem.
Junior Year
234:4 Trigonometry 3 sem.
231:2 College Physics 4:4 sem.
Two semester hours of philosophy 3 sem.
231:3 Principles of Human Genetics 3 sem.
Electives 3 sem.
Pre-physics therapy students should refer to these
sections of the Catalog for their respective department's
requirements for graduation.
Master of Arts Degree Program
The program leading to the Master of Arts degree in
physical therapy is designed to provide the student with
the background and skills that will enable him to
solve problem-solving ability, especially in the areas of physical
therapy evaluation and treatment techniques. Therefore,
INTERDISCIPLINARY PROGRAMS
particular emphasis is on research. However, to accom-
munate the diversity of student interests and national
health needs, the program is structured in a flexible
fashion.
Students who have already completed
a bachelor's degree in physical therapy
and have earned a grade-point average
of 3.00 on a 4-point scale) or higher, may
transfer up to 8 semester hours from another institute,
the grades for these courses are not applicable
to grade-point average for The University of Iowa. Students
may also transfer elective graduate credits from a pro-
gessional program in physical therapy. Transfer credits
are available for all M.A. candidates.
Required Courses
A total of 30 semester hours of graduate work beyond the professional training is
required. At least 24 semester hours must be completed in residence. To qualify for thesis defense the student
must have a 3.7 grade-point average of graduate courses taken at The University of Iowa that are being offered
toward the degree.
Exclusion of required courses the student should select courses which are commensurate with his interest and
goals.
Required Courses
Semester Hours
101:281 Seminar: Physical Therapy 4
101:275 Evaluation of Neurological Disorders 2
101:284 Research Methods and Design 2
101:285 Statistics in Physical Therapy 2
101:289 Intensive Study - Introduction to FORTAN IV 4
101:286 Advanced Electrotherapy and Electromedicine 2
101:287 Physical Therapy Exercise 2
101:288 Laboratory Exercise in Teaching Methods and Design 4
101:289 Independent Study 2
131:256 Fundamentals of Laboratory Instrumentation 2
131:257 Advanced Laboratory Instrumentation 3
150:364 Data Processing 3
Elective Courses
101:285 Principles of Human Anatomy 3
Electives 3 sem.
101:286 Principles of Human Genetics 3
101:287 College Physics 4 sem.
Pre-physics therapy students should refer to those
sections of the Catalog for their respective department's
requirements for graduation.
INTERDISCIPLINARY PROGRAMS

78:331 Problems in College Teaching 3
60:333 Principles of Organization and Personnel Management 3
6A:116 Accounting 3
6A:135 Budgeting 3
61:123 Psychology of Learning 3

COMBINED PROGRAMS

Professor Staton: W. D. Paul.
Assistant Professor: Everett H. A. Furr.
Assistant Professor: Perry B. James, Leo J. Morrissey, Eugene C. Neube, Gary L. O'Leary.
Clinical Assistant Professor: David Paul.
Instructor: Roger C. Skovil.
Lecturer: George Sego.
Medical Adviser for Professional Program: Minor F. Stroobant.
Medical Adviser for Master's Degree Program: Richard C. Rucker.

Clinical Supervisors: J. Armstrong (Rehabilitation Center, Mason City, Iowa), B. Bedard (Watertown Medical Surgical Group, Watertown, Iowa), J. Blumenthal (Glenwood State School, Glenwood, Iowa), P. Christopher (Watertown Physical Therapy Clinic, Watertown, Iowa), R. Cusmano (Burlington Memorial Hospital, Burlington, Iowa), L. Davis (Mercy Medical Center, Dubuque, Iowa), B. Dunwall (University of Nebraska-Douglas County Rehabilitation Center, Omaha, Nebraska), W. Jahnke (VA Hospital, Iowa City, Iowa), D. Knowling (University Hospital, Iowa City, Iowa), R. Lathui (Western Illinois University Health Services, Macomb, Illinois), R. Meadows (Rockford Memorial Hospital, Rockford, Illinois), L. Mendenhall (Freeport Memorial Hospital, Freeport, Illinois), L. Miller (Institute of Physical Medicine and Rehabilitation, Oswego, Illinois), W. Osterholtz (Mercy Hospital, Iowa City, Iowa), V. Pestana (VA Hospital, Iowa City, Iowa), H. Ristau (Clinic: Potosi, Iowa), W. Schulte (Community General Hospital, Iowa City, Iowa), G. Sisler (Freeport Memorial Hospital, Freeport, Illinois), Y. Wheatley (Steffl 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 Biostatistics 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 72:125.
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 pathologic conditions of various diseases treated by health specialties.
101:141 Professional Orientation and Ethics cr.arr.
Lecture, panel discussion, and demonstrations. Field trips, physical therapy, allied health professions, professional ethics, and the 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 exercise related to the prevention, correction, and alleviation of disease and injury. This semester includes posture, posture evaluation, and exercises.
101:115 Kinesiology 3 a.h.
Lectures and laboratory demonstrations relating to the study and application of biomechanical principles to normal functional anatomy of the human body.
101:131 Therapeutic Physical Agents cr.arr.
Massage: First 7 1/2 weeks. The theory, physiological ef- fects, and techniques of scientific massage as it is used in all aspects of physical therapy are discussed and applied.
Hydrotherapy: Second 7 1/2 weeks. Physics of water is reviewed. The techniques, or whirlpools, hot and cold ap- plications, 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.
75:130 Principles of Surgery cr.arr.
101:102 Medicine II 2 a.h.
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 Exercises 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 qualified physical therapists.

Second Semester
101:103 Medicine III 2 a.h.
Continuation of 101:102, with an emphasis on dermatol- ogy, urology, and gynecology.
101:112 Therapeutic Exercises III 2 a.h.
Lectures, demonstrations, and case presentation 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 for the rehabilitation of individuals requiring rehabilitation.
101:119 Clinical Education II 2 a.h.
Continuation of 101:118, which is prerequisite.
101:121 Administration 2 a.h.
Administration of the physical therapy department; need for and utilization of space, equipment, communications, and records. Ethics, conduct, and duties in relationship with professional colleagues, patients, and lay personnel.
101:120 Electrotherapy 2 a.h.
Principles, methods, and techniques of the useful forms of physical energy used in therapeutic use in physical therapy. Current electromedical developments, and methods thought to be valuable are discussed. On-campus sessions are scheduled to aid the student in development of his technique of application.
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.

101:375 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.

101:380 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-Diagnostic 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 commensurate with the student's interest and ability.

101:326 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 23,000 volumes; Botany-Chemistry, 44,500; Business Administration, 4,500; Dentistry, 9,500; Education-Psychology, 91,200; Engineering, 23,500; Geology, 20,000; Mathematics, 22,500; Medical, 85,000; Music, 55,700; Pharmacy, 10,000; Physics, 20,500; Speech Pathology, 2,500; 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 Area Files consist of full data on a sample of societies throughout the world, and are designed to facilitate comparative studies of social and cultural behavior.

The University's Leigh Hunt Collection, brought together by Luther A. Brewer of Cedar Rapids, Iowa, is considered one of the most complete in existence. It contains 2,871 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 bequested 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 carsons in which for more than forty years Ding recorded and commented on the economic, political, and diplomatic affairs of the United States. His carsons 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 Ballinger-Lincoln Collection, gathered by Judge James W. Ballinger of Davenport, Iowa, consists of about 4,586 books and pamphlets devoted to Abraham Lincoln. The collection is one of the best libraries of Lincolniana in the United States. A number of items in it concern John Wilkes Booth and the trial of his fellow conspirators, 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 Modest Collection comprises approximately 281 volumes of poetry, biography, and criticism, and 569 manuscripts or letters, relating to the contemporary English poet Edward Higden.

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 Joan Authors Collection includes approximately 4,718 books written by Iowans, and more than 330 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, Roxburgh...
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 sites, 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. Corrigan, is today supplemented by 430 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 Jepson Collection of books dealing with the American Indians; the Levi O. Leonard Collection of manuscripts and documents dealing with railroad in the midwest, particularly the Union Pacific; the History of Hydraulics Collection; the Edgar Floyd Viger Collection of ballads and folklore; 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: Lesle W. Dunlap
Associate Director: Dale M. Bentz
Assistant Director: William C. Roselle
Bibliographer: Frank S. Hamlin

Assistant Director Emeritus: Graeme Van Wermers

Acquisitions: Richard M. Kolb, Head; E. Ann Flood, Kathleen B. Washal
Catalog: David A. Amard, Head; Ruth S. Chott, Kathy Ann Livengood, Ancilla M. Funk, Barbara C. Goodhart, Richard S. Cream, Judith K. Cronin, Vivian K. Hickman, Karl K. Kohler, Tatsuo Lambrina, Mary E. Noble, Earon L. Pike, Rosemary S. Wemple

Circulation: Wayne Ralston, Head; Breeding Room Librarian, Patricia F. Frish, Reserved Books Librarian, Nancy E. Klingner, Curta Hinson, Head Emeritus.


Reference: Jack R. Taggart, Head; Karen A. Staff, Ann S. Schaefer, Ada M. Sefried

Serials: Ronald L. Wiggerman, Head; Helen S. Clark, Mary G. Clark, Mary M. Horton, John J. Newman, Anne R. Roberts, Clarice R. Neo

Special Collections: Francie J. Poliva, Head; Alice E. Leffew, Robert A. McCown, Earl Hogge, Irene Stahl, Emeritus.

Departmental Libraries: Art, Marian L. Bifford; Business Administration, Glen L. Plaisant, Peter J. Hartford; Chemistry-Biochemistry, Paula L. Munt, Dennis, Margaret R. Combs; Education, Anne G. Kowal, Katherine Mier, Margaret McGonigle, Sandra H. Foy; Fisheries and Wildlife, Sandra B. Harnage, Robert C. Bouchard, Katharine A. M. Kiser, Carol J. Vogel; Music, Ilse L. Richter, James Martin; Physics and Geology, J. Wayne Dunlap.
Scholarships and Loans

All financial assistance available to University of Iowa students from general University sources is administered by the Office of Student Financial Aid.

Assistance is provided through scholarships, grants, loans, and part-time job placements.

A student seeking assistance must first complete University admission procedures, including the American College Test, and submit a parents' financial statement through ACT Financial Aid Services, Box 1000, Iowa City 52240, or College Scholarship Service, Box 881, Evanston, Illinois 60204. When it receives a copy of the parents' statement, the Office of Student Financial Aid will supply forms and instructions for applying for aid at Iowa.

Only one application is necessary each year for all forms of assistance administered by the Office of Student Financial Aid.

Application deadlines are February 1 for entering freshmen, April 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 27 composite ACT score or above; an upperclassman must have a 2.5 cumulative grade-point average; and a transfer student must have at least 2.0 transfer grade-point average.

Freshman Honor 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 Honor Scholarship covering tuition.

A student meeting other scholarship requirements and achieving a composite ACT score of 29 or above will be considered for a $400 Freshman Honor 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 $200 to $1,000 a year, but cannot exceed one-half of the recipient's total assistance. There are no specific academic requirements for an 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 $15,000 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 $500 are available for school-year expenses. To qualify, the applicant must have at least a 2.0 high school and transfer grade-point average, and a 1.0 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
hours a week. As far as possible, Work-Study jobs are arranged to give employees work experience related to their educational goals.

SCHOLARSHIPS, FELLOWSHIPS, ASSISTANTSHIPS

(Unless special conditions are noted, the sources listed below and in the Loans Funds section are available to all students in the area for which they are listed.)

ALL-UNIVERSITY
ALCOA Foundation Scholarships. Freshmen in mathematics, physical sciences, or engineering; $625.
Activity Scholarships. Students with above-average academic records who have been outstanding participants in extra-curricular activities requiring special aptitude, such as forensics or music.
Barnes Drill Company Scholarships. Preference to Pi Beta Phi members.
Bennetti Scholarships. Protestant students, preferably from Bennett, Iowa.
Eva M. Byerly Scholarship.
Carr Scholarships. Students in Colleges of Liberal Arts, Business Administration, Engineering, Nursing, Pharmacy; use primarily for seniors and nonresidents.
Drake Scholarships. Male students from West Liberty, Iowa, and vicinity.
Drew Memorial Scholarships. Resident tuition.
General Motors Foundation Scholarships. Entering freshmen who are Iowa residents and top-ranking candidates for University Merit Scholarships.
Scott German (Masquoketa) Scholarship. Students from Masquoketa, Iowa; full tuition.
Granger Scholarships. Graduates of Fort Dodge or any other Webster County, Iowa, public schools with courses of study qualifying graduates for admission to The University of Iowa; administered by the Board of Education, Independent School District, Fort Dodge.
Virgil M. Hascher Scholarship. $500.
International Scholarships. Foreign students; tuition and fees.
Iowa City First Presbyterian Church Opportunity Scholarship. Freshman Educational Opportunity Program participants; $1,000 each; renewable for four years.
Martin Luther King, Jr., Scholarships. Educational Opportunity Program participants in undergraduate, graduate, or professional programs.
Lloyd A. Knauer Scholarship. Science, engineering, business administration students; resident tuition.

SCHOLARSHIPS AND LOANS

Maytag Foundation Scholarships. Graduating high school seniors whose parents are full-time employees of The Maytag Company; fees plus cash grants; apply to The Maytag Company Foundation, Inc., Newton, Iowa.
Nile Kinnick Memorial Scholarship. Recipients nominated by the U of I athletic department.
Mary Sus Miller Memorial Scholarship. Art major, preferably from Fremont County, Iowa; $250 minimum.
Noyes Scholarships. Basic fees to Colleges of Business Administration, Engineering, Liberal Arts, Nursing, Pharmacy; for United States citizens who are World War I Army or Navy veterans or their direct blood descendants; renewable.
O'Connor Memorial Scholarship. Varsity basketball or golf squad member; $500.
Old Gold Scholarships. Postmasters of Iowa Scholarships. Sophomore or junior child or grandson of an Iowa postmaster. Project "Aid".
Public Speaking Scholarships. Highest rating finalists, six debaters, two speakers in Iowa High School Forensic League competition; $20 reduction in semester fees; three years; recipients nominated by head of speech department.
Jeannette W. Rutledge Scholarship.
Scottish Highlander Scholarships. Awarded each semester to two Highlanders with sophomore, junior, or senior standing; fees.
Student Aid Scholarships. Resident students in Colleges of Liberal Arts, Engineering, Business Administration, Nursing, Pharmacy; fees; must be self-supporting, unable to obtain sufficient aid elsewhere; minimum 2.75 average.
Iowa City Chapter of the United Nations Association Scholarship. Educational Opportunity Program participant; resident tuition.

BUSINESS ADMINISTRATION
ALCOA Foundation Scholarships. Junior or senior in accounting.
Axtler Anderson & Company Accounting Award. Accounting.
Carr Scholarships. See All-University.
Pat Crowe Award. Male senior, preferably business administration major with interest in retail clothing business; $200.
Ernst & Ernst. Accounting.
FS Services, Inc. Scholarships. Junior and senior accounting major in top 25 per cent of class, with farm or farm community background; $400.
Haskins & Sells Awards. Senior among top five accounting students; $500.

Home Federal Savings and Loan Association of Des Moines. Scholarships, research grants in 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 administration; $250.

Maytag Foundation Scholarships in Business Administration. $500 each to one senior in accounting, one in marketing.

Murray Scholarships. Murray Plaque. $250 stipend.

I. B. McGladrey Accounting Award.

Chester A. Phillips Scholarship. Business administration senior in upper 10 per cent of class; not less than $250.

Price Waterhouse Foundation Award. Accounting.

Bruce M. Robertson Scholarship. Iowa high school graduate; $1,000 for senior year.

Touche-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

Beck Dental Scholarship. Oral B Toothbrush Scholarship. Junior or senior; $500.

W. B. Prouty Company Dental Scholarship. Junior or senior; $500.

Schleicher Scholarship Award. Junior, preferably 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.

Carver Scholarships. See All-University.

Mollee Fish Clements Scholarship.

Collins Radio Company Great. Electrical engineering; $2,000.

F. M. Deacon Engineering Scholarship.

Engineering Honors Scholarships. Entering freshmen, and transfer students; resident tuition.

Foundry Educational Foundation Trustees Scholarships. Students in courses related to cast metals.

Lloyd A. Knoeller Scholarship.

Lambert Scholarships. Civil Engineering.

C. P. McCreagh Scholarship.

Minnenas Mining and Manufacturing Company Scholarships.

Monsanto Scholarship. Chemical and mechanical engineering student.

Herman W. Nelson Memorial Scholarship.

Fred Stebler Scholarships. $100 to $300.

Student Aid Scholarship. See All-University.

Western Electric Funds Scholarship in Engineering. Tuition, fees, books.

GRADUATE

(The following are special scholarships and fellowships; for information about general assistantships, fellowships, and scholarships, see Graduate College.)

American Foundation for Pharmaceutical Education 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.

Leon Demple Memorial Scholarship and Award. $200.

Ernst and Ernst Accounting Scholarship. $1,000.

Haskins & Sells Foundation Award. Prospective accounting teacher; $2,500.

Morris Luther King, Jr., Scholarships. See All University.

I. B. McGladrey Accounting Award.

Price Waterhouse Foundation Award. Accounting.

Barnes Sims Riddle Fund.

Sutherland Dowes Graduate Scholarship in Composition. Music; $3,000.

Touche, Ross, Bailey & Smart Award. Accounting.

Arthur Young & Company Foundation Award. Accounting.

Van Allen/Lincoln Foundation Fellowship. Outstanding graduate student in aerospace physics; $1,500.

Other Opportunities. A number of industrial corporations and philanthropic organizations annually provide graduate fellowships in certain departments of the University. Information may
be obtained from the departments. The University also participates in 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 Education Act Fellowship Program and the Education Professions Development Act. Information may be obtained from the Graduate College or departmental office.

LAW
Dankwama Scholarship.
Dillon Scholarships.
Harold J. Gallagher Scholarship and Loan Fund.
Graham Scholarships.
Clare E. Hamilton Scholarship. Outstanding second-year, outstanding third-year student; $1,000 each.
Hammond Scholarships.
Iowa Law School Foundation Scholarships.
Iowa Trial Lawyers Academy Scholarship.
Laffey Scholarships.
Murray Scholarships.
Harry M. Neas Memorial Scholarship Fund.
Pritchett Scholarships. Apply to the Dean of law.
William H. Redman Scholarship Fund. Joseph F. Rosenfeld Scholarship Fund. In excess of tuition; preference to Iowa residents graduated from Grinnell or another Iowa college.
Lucille and Walter L. Stewart Fund.
Joe B. Yoe Fund. Available for Martin Luther King Scholarships.

LIBERAL ARTS
ALCOA Foundation Scholarships. See All-University.
Carr Scholarships. See All-University.
Margaret Foster Hoff Memorial Scholarship.
Home economics senior, resident tuition.
General Motors Foundation Scholarship. See All-University.
Old Gold Honors Scholarships. Honors Program participants; apply to Honors Program director.
George Lauman and Jane Richardson Pollock Scholarship. Freshmen and sophomores planning to major in Chinese language and civilization; $100.

SCHOLARSHIPS AND LOANS
Pritchett Scholarships. Apply to Dean of liberal arts.
Proudfoot Scholarships. Act majors, preferably from Warren County, Iowa; $1,000.
Robertson G. Hunter Scholarship. Male students from Midwest, particularly Iowa, interested in studying across the nation.
Student Aid Scholarships. See All-University.
Wyland Scholarships. $200.

JOURNALISM
James W. Blackburn Scholarship. High school senior planning to enroll in the School of Journalism; $1,000, paid $150 sophomore year, $200 junior year, $650 senior year; administered by School of Journalism.
Harry S. Busker Scholarship. Fifth-semester journalism major; $1,000, paid $350 second semester of junior year, $350 each semester of senior year.
Davenport Times-Democrat Scholarship. $300, paid $100 junior year, $200 senior year.
Ruth Baty and Maurice Barnett Jones Scholarship. $400 or more.
Minneapolis Star Scholarship. Junior; $400.
George D. Perkins Scholarship. High school senior planning to major in journalism; $550, paid $150 junior year, $200 senior year.
Quill and Scroll Foundation Scholarships. High school seniors planning to major in journalism; $500, paid $250 freshman year, $250 sophomore year.
Remmey Advertising Internship. To give outstanding student in advertising an opportunity for agency experience between junior and senior years; $800.
School of Journalism-Heurst Foundation Scholarships. Amounts vary.
School of Journalism Merit Scholarships. Freshmen, sophomores, juniors; amounts vary.
Richard and Jo Spencer Scholarship. $1,000.
United Press International Externship. To give promising photography student experience providing photographs for a newspaper, radio, or television station; recipient selected by UPI; $500.
WMU News Scholarship. Radio-television journalism student; recipient spends summer observing and participating in WMU stations' operations; $1,500.

356
MEDICINE
(Awarded upon recommendation of the College faculty committee and dean)

Nathaniel G. Alcock Memorial Scholarship. Full resident tuition.
Anne Bartch-Dunske 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 Optometry 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.
Pfizer 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 49 & 8 Club Scholarships. $75 to two juniors for senior year.
Ann Gerich 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.

Pshyiatric Mental Health Trainee 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 Nurses 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 Nurses Corps after graduation.

Professional Nurse Trainee Program. Tuition, stipend; registered nurses students preparing for positions in hospitals or schools of nursing within twelve months of graduation.

Public Health Nursing Trainee 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.

United States Public Health Service Nursing Scholarship Program. Up to $1,500 per academic year, depending on financial need.

Commissioned Corps of United Public Health Service. Monthly salary (base pay, rent, subsistence allowance); senior in baccalaureate program.

Recipient agree to serve two years as Commissioned Nurse Officer.

PHARMACY

American Foundation for Pharmaceutical Education Scholarships. Students in last three years of study; minimum 3.0 average; $500.

Ciba Scholarships. See All-University.

John W. Dargen Foundation Scholarship. P2 standing; minimum 2.5 average; $200.

Drew Memorial Scholarships. See All-University.

Elgerly Scholarship. First-year student; $370.

Zilco Charitable Trust and Foundation Scholarship. Minimum 2.5 average; $500.

General Motors Foundation Scholarships. See All-University.

Iowa Pharmaceutical Association Scholarship. Student who has completed P2; minimum 2.5 average; $500.

Iowa Pharmaceutical Association Women's Auxiliary Scholarship. Woman; $200.

Iowa Pharmacy Foundation Scholarships. $300.

May's Drug Stores Scholarship. $200.

Myers Scholarship. P2 standing; $150.

Oseo Drug, Inc. Scholarships. P2 standing; minimum 2.3 average; $500.

Schlegel Sophomore Scholarship. Student who has completed P2; $370.

Schlegel Junior Scholarship. Student who has completed P2; $370.

354
RESERVE OFFICERS TRAINING CORPS

ROTC Scholarships. Awarded competitively; freshman through senior years in four-year Army and Air Force ROTC programs; full tuition, laboratory expenses, incidental fees, book allowance, $20 monthly nonstapal pay. Freshmen make application early in fall of last year in high school.

Armed Forces Communications and Electronics Association Scholarship. Sophomore ROTC cadet in course related to Association’s sphere of interest; $500 annually junior and senior years.

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 Joan Gosney Student Senate Aid. Underclassmen or graduates; short-term.

Weaver and Von Hayes Loan Fund. Alumnae 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 Kivonite Club Student Loan Fund.

Iowa City Panhellicic Loan Fund. $100, one semester; interest-free.

Iowa Delta Association Loan Fund. Interest-free 30-day emergency loan; $50 maximum.

C. L., Sr., and Thelma Klincek Loan Fund.

Old Gold Development Loan Fund.

Strong Educational Foundation Loan Fund. Underclassmen 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.

SCHOLARSHIPS AND LOANS

BUSINESS ADMINISTRATION

Beta Gamma Sigma Loan. 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.

Wycliff Feick Memorial Loan Fund. Preference to graduate students.

Charles H. Hewshaw Memorial Loan Fund.

DENTISTRY

American Dental Association Fund for Dental Education.

Breme 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.

Storer 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 predental loans to future engineering teachers; apply to Dean, College of Engineering.

Rose Hubbard Jones Memorial Loan Fund. $25 30-day emergency loans.

Phillip F. Morgan Student Loan Fund. See Graduate.

GRADUATE

Beta Gamma Sigma Loan. Business administration.

Carr Graduate Fund.

Wycliff Feick Memorial Loan Fund. See Dental Hygiene.

Ford Foundation Grant. See Engineering.

Mable Memorial Loan Fund. Speech and dramatic art.

355
Scholarships and Loans

Phillip 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.

Sueisen 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.

Iowa Law School Foundation Loans. Short-term.

Law Consolidated Loan Fund. Second- and third-year students; short-term.

Liberal Arts

Thomas Cole Loan Fund. Geology students.

Detlefsen 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. Middleton Loan Fund.

Frank Roberts Memorial Loan Fund.

Shannon Trust Fund. Iowa residents.

Siefed 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 at the rate of 10 per cent per year of full-time employment as professional nurse in public or nonprofit private institution, up to 10 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; $900 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 administering 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 freshman.

**Brown Award.** Outstanding potential in radio broadcasting at University-operated stations.

**Fouler Award.** $100; active Mortar Board member.

**Hancher Award.** $50 government bond; junior woman most nearly exemplifying qualities and contributions of Mrs. Virgil M. 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. Front hockey, football, and soccer awards.

**Forest Rozekowski Football Scholastic Achievement Award.** Senior varsity football award winner outstanding in scholarship.

**Fraternal Certificate.** Graduating student who has 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 Key.** Graduating dental hygiene student with highest scholastic average (G minimum).

**Alpha Omega Award.** Graduating senior 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 Receptology Award.** Senior; special interest in oral receptology.

**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 orofacial 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 Epilon Award. Highest ranking sophomore, junior in civil engineering.
Elk 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.
Psi 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 Burken 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 demonstratated 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 MEDICAL ARTS

American Institute of Chemists Medal. Outstanding senior in chemistry.
Bryan Prize. $250; best essay relating to the science of government.
Chi Omega Award. Graduating woman with highest average in anthropology, economics, political science, psychology, or sociology (rotated among departments).

Clapp Memorial Award in Composition. Music major.

The Devos 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 extracurricular achievement in social sciences, humanities.

Johnson Memorial Prize. Graduating senior; all coursework in College; highest academic rank in College class.

Lower Prizes.

Botany. Freshman; highest standing in 2:1 and 2:2 Botany.

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.

(See also Forensics)

Da·Il 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.

Seneca Prize. $500; senior, highest promise for graduate study.

Sigma Lee Sprengler Memorial Award. Outstanding senior in home economics; $100; second semester.

Genevieve Stetina 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. $100; junior; demonstrated interest and outstanding promise in community journalism.

Luther A. Breuer Key. Graduating senior; highest in scholarship, leadership, promise.

Conegy Reynolds Award. Outstanding student in public relations.

JAMES F. FOX Award is Public Relations. Outstanding graduate student.

John Ioannou Women's Award. Outstanding senior woman.

Johnson Memorial Prize in Journalism. Outstanding news, sports, and feature stories for Daily Iowan.

Ruth Boly Jones Memorial Award. Senior woman; high scholastic rank, demonstrated interest in development of human understanding and appreciation.

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. Reeseman Award. Outstanding enterprise, capability in news writing.

Howard A. Schmacher Award. Senior receiving Luther A. Breuer Key.

Sigma Delta Chi Award. Outstanding male graduate.

COLLEGE OF MEDICINE

Milford E. Barnes Award. Outstanding junior in preventive medicine and environmental health.

Walter L. Biering Award in Bacteriology. Outstanding sophomore.

Borden Award. $100; graduating class member in meritorious undergraduate research.

Irvine H. Borts Award. $100; best paper presented at Student Research Conference.

Iowan Obstetrical and Gynecological Society Prize. $300; senior; best research paper or statistical review in obstetrics and/or gynecology.

Louis Leifeld Award. Outstanding third-year student in internal medicine.

Lange Awards. Two outstanding members of each class.

John T. McCloud Award in Physiology. Outstanding freshman.

McKinnon Memorial Prize. Outstanding senior.

Premis Memorial Prize. Outstanding freshman.

Roche Award. Sophomore best exemplifying ideals of modern American physician.

Upjohn Achievement Award in Pediatrics. Outstanding senior.

COLLEGE OF NURSING

Carmelita Calderwood Heart Award. $250; senior; excellence in clinical practice.

359
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

Cheskak Prize. Most deserving student in biochemistry.

Geigy 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.

Nove Memorial Award. Junior; outstanding achievement in pharmacy technology series.

Pharmacy Faculty Award. $150; outstanding senior.

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 main 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 debate.

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, solidarity bearing, knowledge of ideals of founders of United States.

Society of American Military Engineers Award.

Armed 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.

Bride Commander Award.

Outstanding Campus 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 Commandant Award. Senior; 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. Senior; successful completion of FIP Ground School, including FAA private pilot's license examination.

American Military Studies Athletic Award. U of I Color Guard Award. Outstanding AFROTC Cadet Awards. Pilot or Navigator Badge. AFROTC FIP training.

U of I Outstanding Performance Award. Third- 

Outstanding Service Award. Advanced cadet. U of I Scholastic Award. Graduating AS800 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 Omicron Pi. Medicine.

Alpha Phi Omega. Men's service organization; Boy Scouts of America affiliation.

Angel Flight. Women's auxiliary, Arnold Air Society.


Black Beets. Army ROTC cadets; military aptitude, desire to further leadership.

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 Psi. Journalism; 3.2 minimum average after freshman year.

Norton Board. Women; all-University; elected end of junior year; scholarship, leadership.

Omicron Delta Kappa. Economics. Omicron Delta Kappa. Male upperclassmen; all-University; scholarship, leadership.


Order of the Coif. Law; scholarship, character.

Parading Rifles. ROTC cadets; military ability.

Phi Beta Kappa. Liberal Arts. Phi Eta Sigma. Freshman men; all-University; minimum 3.5 average.

Awards—Prizes—Honors

Phi Lambda Upsilon. Chemistry.

Phi Sigma Iota. Romance languages.

Phi Sigma Iota. Romance languages.

Phi Sigma Iota. Romance languages.

Pi Delta Phi. French.

Pi Lambda Upsilon. Music.

Pi Omega Pi. Business administration, education.

Pi Tau Sigma. Mechanical engineering; scholarship, activities.

Purple Mask (National Collegiate Players). Outstanding work in University Theatre, schola- 

Rho Chi. Pharmacy; scholarship, character, personality, leadership.

Sigma Delta Pi. Spanish.

Sigma Iota Epsilon. Management.

Sigma Pi 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 Psi. Law; women.

Kappa Epsilon. Pharmacy; men.

Nu Sigma Nu. Medicine; men.

Kappa Delta. Law; men.

Phi Alpha Delta. History.

Phi Beta Pi. Medicine; men.

Phi Delta Kappa. Education; men.

Phi Delta Phi. Law; men.

Phi Delta 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.

Pi Sigma Alpha. 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 of a common character 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 effort.
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.
- Appointment 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
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. Conversonal 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 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 preparing to enable them to do the work of the course. Approval by an official advisor 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 $27 per semester hour for all enrollees. Fees 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 veterans. The Veterans Readjustment Benefit Act of 1952 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 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.
Adult Education Advisory Service. This service provides consultative and guidance service on the problems of adult education programs with respect to organization, techniques, subject matter, and other aspects of continuing education in the community. These services are available upon request; write to the Director, Instructional Services, The University of Iowa, Iowa City 52240.

Audiovisual Center. The mission of the Audiovisual Center is to assist in the improvement of the teaching-learning process through the effective use of educational media. In pursuit of this goal, certain services and facilities are made available to the University's faculty, students, and staff; consultation in the planning and design of instructional materials and systems; provision of motion pictures, projectionists, and all types of audiovisual equipment; and the production of instructional materials such as photographs, 2 x 2 slides, audio tapes, videotapes, motion pictures, filmstrips, overhead transparencies, and display graphics.

Educational Development Unit. Objective: to assist in the planning and design of learning systems, facilities, and media. A staff of Media Consultants is available to assist faculty and students in the solution of their instructional problems. Short-term assignment of faculty and/ or graduate assistants by departments to the Audiovisual Center is encouraged. All Audiovisual Center staff are available for advice on specific media needs and problems.

Media Library Unit. Objective: to make access to the library of nonprint instructional materials. Maintained in the Media Library are major collections of 16mm motion pictures and magnetic tape recordings, as well as limited collections of 2 x 2 slides, filmstrips, disc recordings, and overhead transparencies.

Catalogs of materials are published periodically. Systematic additions to these collections are made in response to requests and funds available.

No charge is made for films used in classroom and other curriculum-related activities; a rental fee is charged for off-campus use of these films.

Tapes are obtained at a nominal charge for materials and duplicating.

Campus Service Unit. Objective: to facilitate the utilization of instructional materials and audiovisual equipment.

Audiovisual equipment available for use includes: projectors (film, slide, filmstrip, opaque, overhead); audio tape recorders; record players; portable videotape recorders; portable P.A. systems; and display devices (exhibits, easels, boards).

Classroom and other curriculum-related activities are provided equipment and projectionists at 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 of producing materials which include: graphs, charts, maps, titles, layouts, posters, illustrations, models, exhibits, and overhead transparencies; black and white and color photographs, negatives, microfilm, 2 x 2 slides, 7% x 4 slides, portraits, microphotographs, and all types of specialized photography; motion pictures (silent or sound, black and white or color, C 16mm, 8mm, 16mm), 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 plastic, audiovisual equipment utilization, and instructional materials acquisition.

The Dental Audiovisual Center is supported in terms of staff and backup 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 and discussions with members of the University faculty and outstanding campus guests. In addition, listeners may hear outstanding music.
literature, documentaries, dramas, and public affairs programs. As a charter member of the National Public Radio Network, WSUI and KSUJ-FM provide listeners with several hours of "news" programming that originate daily from network headquarters in Washington, D.C. Membership in the National Educational Radio Division of the National Association of Educational Broadcasters provides additional recorded programs from other colleges and universities, the Educational Broadcasting Foundation of America, the British and Canadian Broadcasting Corporations, and other worldwide sources. The broadcast schedule consists of educational, cultural, and informative programming not available elsewhere; and the resources of the University are drawn upon to formulate, interpret, and produce programs of a high order.

Center for Conferences and Institutes. The Center for Conferences and Institutes is the principal agency of the University responsible for coordinating, conducting, and supporting continuing adult education programs on campus for nonresident adult groups. University conferences complement the off-campus extension classes, independent study courses, and correspondence study courses. The Conference and Institute program has become a major University function because of the ever-increasing demand for continuing education by all segments of our society and because of the keen desire of the University to support this program consistent with its ability to carry out its on-campus teaching and research mission.

High school debating and public speaking. In cooperation with the Department of Speech and Dramatic Art, the Division sponsors cross-examination debate, extemporaneous speaking, original oratory, oral interpretation, news commentary on radio, expository speaking on television and student senate activities among high schools of the state, assists schools in collection and distribution of materials from national agencies, and conducts debates and contests. The finals are held in Iowa City and winners are awarded with University scholarships. Workshops in speech and dramatic art for high school students and in teaching of speech and dramatic art for teachers and potential teachers are held in Iowa City annually during June-July.

Drama conferences. In cooperation with the Department of Speech and Dramatic Art, the Division conducts an annual drama conference in the fall for high school students and teachers. A Community Drama Conference is held in the spring for community theatres in Iowa.

High school music. In cooperation with the School of Music, conferences and artist recitals are presented for teachers of music and students. 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 a 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 33246.

Service to adult education groups. The Division seeks to aid state and local 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 3, final issue. This series is continued as a subdivision of Iowa Studies in Child Welfare.


Studies in Engineering. Forty-three numbers have appeared.

366
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 15th number in the Monograph Series. The Research Series has been discontinued; 26 numbers have appeared. 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 Botany and Zoology.)

Iowa Lakeside Laboratory Course Offerings

I.L.101 Field Biology 5 a.
I.L.103 Aquatic Ecology 5 a.
I.L.104 Aquatic Ecology (second term) 5 a.
I.L.105 Plant Taxonomy 5 a.
I.L.106 Helminthology 5 a.
I.L.108 Protozoology 5 a.
I.L.111 Research cr.arr.
I.L.113 Independent Study cr.arr.
I.L.114 Independent Study cr.arr.
I.L.122 Quantitative Limnology 5 a.

Macbride Field Campus. The University holds a lease from the U.S. Army Corps of Engineers on two tracts of land in the Coralville Reservoir north of Iowa City. The two tracts total approximately 630 acres. One tract is reserved for biological research; the other for University-wide activities.

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 boat house 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 inservice 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 1937, 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 disease, and the correction of dental defects. As a means of accomplishing the educational objective, authoritative material is developed and provided to the classroom teacher. The preventive aspect of the program is emphasized through home participation in a roots-to-crown program of oral hygiene and correct dietary habits. The corrective phase is accessed 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 65 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 (F.L. 72-685), 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 34 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
the Boards of Directors and 172 personnel on the staffs. 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 Audio-visual 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 handicap 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. Age 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 office 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, diagnostic treatment, and case and local care of crippled children. The Iowa SSDC 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 Department 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 Department of Pediatrics and Internal Medicine. The 22 Oakland clinics are combined clinics for cardiac 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 of achalasia, cystic fibrosis, nephrotic syndrome, muscular dystrophy; a number of research and care programs for mentally retarded and multiply-handicapped children and premature and other high-risk infants are maintained.

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, physical therapy, and mental health social work provide follow-up care for crippled children who have been examined at diagnostic field clinics or in departments at the University Hospitals.

This agency subsidizes a graduate training program in audiology and speech pathology within the University, and other special training programs for 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 respect 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 has 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 students retain their current identity with the University after they leave the campus is The University of Iowa Alumni Association. Organized in 1867, the Association's current membership includes the alumni of 91 years and former students of all generations, throughout the world. Alumni retain their Association membership through the payment of nominal annual dues, or through the purchase of lifetime memberships.

The Association publishes the University of Iowa Alumni Review, a bimonthly magazine for its members. In addition to current institutional news, the magazine contains a wide variety of intellectual content 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 University 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 teaching, research, and public service.

The Association is particularly active in its support of The University of Iowa Foundation, which receives and administers private gifts and bequests for the permanent benefit of the University, 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 organized in 1956 to provide private support for the educational objectives of the University. The primary purpose of the Foundation is to strengthen all of the University's scientific, literary, and educational pursuits by encouraging voluntary giving for its support.

A private nonprofit corporation, the Foundation is empowered to solicit and receive gifts and bequests; to accept trusts subject to the conditions imposed thereon; and to hold, administer, manage, use, or distribute gifts, bequests, and trusts; all for the benefit of The University of Iowa. As a private corporation, its investment policies are less restrictive than the public policies which govern the University itself.

The Foundation is constantly at work to provide more funds for scholarships, fellowships, student loans, library acquisitions, and faculty
research grants. 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.

Cultural 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 mule, the lion, the American moose, and 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 Layman Island Cyclorama. 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 Crestes 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.

Exhibit materials 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 a diagnostic and corrective service for school children having reading difficulties.

OFFICE OF PUBLIC INFORMATION AND UNIVERSITY RELATIONS

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 issues an advisory each day announcing 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 and 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 organization.
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 continuous nonteaching employees of the University. It also participates in certain aspects of the academic personnel program and in payroll record keeping and collecting personnel record data for both faculty and staff people.
CENTRAL ADMINISTRATION

President, Wilford L. Boyd, Jr., B.S.L., LL.B., LL.M., S.J.D.
Vice-Provost: Dean, Academic Affairs, Philip G. Hubbard, B.S., M.S., Ph.D.
Associate Provost, George A. Chambers, B.A., M.A., Ph.D.
Vice-Provost and Dean for Health Affairs, Robert C. Hardin, B.S., M.D.
Vice-President, Educational Development and Research; Dean, Graduate College, Duane C. Spiessersbach, B.Ed., M.A., Ph.D.
Vice-President, Business and Finance, Elwin T. Jolliffe, B.Sc.

ASSOCIATE PROVOST, PLANNING AND DEVELOPMENT, GEORGE A. CHAMBERS, B.A., M.A., PH.D.

Administrative Dean, Allia D. Dakin, B.A., M.A., M.B.A., LL.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.
ADMINISTRATIVE OFFICERS

PHYSICAL PLANT
Superintendent, Duane A. Nollach, B.S.E.E.

GENERAL UNIVERSITY

ALUMNI RECORDS
Executive Director, Joseph W. Mayer, B.A., M.A.

FACILITIES PLANNING AND UTILIZATION
Director, Richard E. Gibson, B.S.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.
ADMINISTRATION AND INSTRUCTION

Kulp, Clyde F., B.S., Northern Illinois College, 1935; M.S., M.A., Illinois, 1938; Ph.D., 1940
Professor and Chairman, Geography, 1935 (1938)

Kuban, Frank J., B.S., John Carroll University, 1953; M.S., Case-Western Reserve University, 1955
Instructor, Sociology and Anthropology, 1959

Head, Aquaculture, University Libraries, 1955 (1960)

Kulder, Ragnhild K., M.D., Vienna, 1950
Associate Professor, Ophthalmology, 1958

Kulkin, Zvi, M.S., University of Munich (Germany), 1939
Instructor, Anthropology, 1970

Kulka, Jerry J., B.S., Chicago, 1930; Ph.D., 1942
Professor and Chairman, Zoology (Entomology and Neurobiology), 1942 (1937)

Kuna, Franklin F., B.S., Maxwell, 1958; M.S., 1960; Ph.D., 1965
Associate Professor, Preventive Medicine and Environmental Health; Assistant Director and Principal Researcher, State Bacteriological Laboratory, 1964 (1970)

Kuns, Michael B., B.A., Iowa, 1950; M.D., 1959
Associate Professor, Pathology, 1962 (1970)

Kuster, Frank J., B.S., Michigan State University, 1956; M.S., 1957; Ph.D., 1965
Professor, Mathematics, 1965 (1970)

Kettick, Edward L., A.S., New York, 1923; M.S., Tulane, 1926; Ph.D. North Carolina, 1928
Associate Professor, Music, 1935

Kettman, Elmer John, B.A., Iowa, 1949; M.A., 1956; Ph.D., 1959
Associate Professor, Business Administration, 1956 (1967)

Kowalsky, Irving, L.L.B., Kane County Court of Law, 1947; M.A. (Illinois), 1952; Ph.D., Illinois; LL.B., Yale, 1960
Professor, Business Administration, 1984

Kraft, Arthur Nicholas, D.D.S., Northwestern, 1933; M.S., Iowa, 1936
Assistant Professor, Crown and Bridge, 1944

Krup, Gerhard W., M.S., Redlands, 1951
Professor, Music, 1951 (1958)

Krause, Charles J., B.A., Iowa, 1950; M.D., 1952
Assistant Professor, Ophthalmology, 1958

Kruzel, Walter B., B.A., Oregon, 1942; M.A., 1945; M.D., Harlem, 1950
Murray Professor, Economics, 1965 (1969)

Krell, A.E., B.S., University of Georgia, 1969; M.S. 1969
Professor, Geography, 1969 (1971)

Kronenacher, Charles R., Jr., D.D.S., Iowa, 1956; M.S. 1961
Assistant Professor, Orthodontics and Orofacial and Mandibular Surgery, 1956 (1965)

Krausman, Robert L., M.A., Michigan, 1952; M.D., 1957
Associate Professor, Obstetrics and Gynecology, 1957 (1959)

Kripke, Sidney, A.M., Michigan, 1952; M.D., 1956; M.F.P. California (Barbados), 1969
Assistant Professor, Pediatrics; Assistant Director, State Services for Cripped Children, 1966

Kroetz, Frank W., B.S., Heidelberg (Ohio), 1943; M.S., Ohio State University, 1951; M.D., 1957
Assistant Professor, Medical Nutrition, 1959

Krause, Katherine A., B.A., Iowa, 1945; M.S.W., Washington University, 1950
Associate Professor, Social Work, 1957 (1959)

Kuhl, Rudy N., B.A., State College of Iowa, 1959
Research Assistant, Psychophysiologist, 1959

Kuhn, Jerry Noel, B.S.Ed., Central Missouri College, 1948; M.Ed. 1951; Ph.D., Iowa, 1964
Professor and Chairman, Elementary Education, 1958 (1969)
Administrative and Instruction

Coppedge, William B., B.S., Miami University, 1934; M.S., Indiana, 1960; Ph.D., 1967
Associate Professor and Director, Auditory Center, 1969

Cooper, Richard F., B.A., Washington (Missouri), 1923; M.A., 1927; Ph.D., Pennsylvania, 1927
Professor and Chairman, French and Italian, 1967

Oliver, Alice P. F., B.A., Baldwin-Wallace, 1955; M.S., Eastern
Professor, Music, 1954 (1949)

Okawa, Shige-hiko, M.D., Nanyang University, 1954; Ph.D. Nagoya, 1958
Assistant Professor, Surgery, 1969

Ole, William Harold, D.D.S., Marquette, 1947; M.S. Iowa, 1946
Professor, Oral Surgery and Maxillofacial Surgery, 1966 (1962)

Ole, Robert, M.A., U.S. Navy, 1937; M.S.Ed. Rutgers, 1944; R.E.D., 1945
Assistant Professor, Education, 1967

O’Dea, John Joseph, B.S., Rose Polytechnic Institute, 1932; M.S. Purdue, 1948
Associate Professor, Civil Engineering, 1948 (1966)

Osborn, Margaret Oliver, B.S. Nebraska, 1939; M.S., 1943; Ph.D. Iowa, 1951
Associate Professor, Home Economics, 1951 (1955)

Osborne, James W., B.S. Illinois, 1949; M.S., 1951; Ph.D. 1950
Professor, Radiation Research: Laboratory and Radiology, 1960 (1969)

Osborne, James O., B.S. Michigan, 1939; M.S., 1946; Ph.D. 1954
Professor, Chemical Engineering, 1946 (1957)

Ott, Elizabeth M., B.S. Illinois, 1937; M.S., Ph.D. Bryn Mawr, 1942
Professor, Home Economics, 1963

Oscar, Harry, A.B., Harvard, 1946; M.S.A. Columbia, 1948; M.A. Cornell, 1950; Ph.D., 1950
Professor, English, 1964 (1968)

Ottman, Robert J., B.S., St. Mary’s, 1922; M.S., California (San Francisco), 1946
Assistant Professor, Nursing, 1954 (1967)

Instructor, Intramural and Recreation, 1965 (1970)

Overland, Alice R., B.S., Illinois, 1934; M.A., Columbia, 1949
Associate Professor, Nursing, 1953 (1965)

Pachow, Bill, B.A. Shanghai, 1918; Ph.D. Brown, 1948
Associate Professor, Religion, 1958

Patton, John A., B.A. Wisconsin, 1928; M.A. Harvard, 1931; Ph.D., 1933
Professor, English and Linguistics, 1949 (1969)

Pfeffer, Michael J., B.S., Ohio State, 1944; M.A., Yale, 1967; Ph.D. 1958
Assistant Professor, Psychology, 1969

Pfeiffer, George W., B.A., Victoria University, 1965; J.D. University of Chicago, 1967
Assistant Professor, Law, 1967

Head, Special Collections Department, University Library, 1962 (1969)

Parker, Ford B., B.A., Kent State University, 1964; M.A. 1966
Instructor, German, 1969

Parks, Frederick M., M.D.S. University of Pennsylvania, 1960; M.S.D. University of North Carolina, 1967; Ph.D. 1969
Professor and Head, Periodontics, 1969

Professor, Mathematics, 1954 (1957)
Sokoll, Martin D., R.S., St. Stevensville, 1964; M.D. Pittsburgh, 1969
Associate Professor, Anesthesiology, 1992 (1993)
Sollic, Robert Melvin, R.B.C., St. Louis, 1942; M.A. Washington (Missouri), 1946; Ph.D. 1949
Professor, Business Administration, 1956 (1955)
Solo, Charles E., B.A. Hastings, 1969; M.S. University of Wisconsin, 1969
Serials Librarian, University Libraries, 1969
Solomon, Gerald, Licentiate Royal College of Physicians and Surgeons (Edinburgh), 1941; D.C.H. Royal College of Physicians and Surgeons (England), 1948
Professor, Pediatrics; Director, Child Development Clinic, 1965
Solomon, Hope C., B.A. Clark University, 1952; A.M. Wellesley, 1954; B.D. Boston University, 1967
Associate Professor, Nursing, 1967
Solorsh, Michael A., B.A. University of California (Los Angeles), 1949; Ph.D. University of Washington, 1953
Assistant Professor, Zoology, 1957
Associate Professor, Oral Biology, 1967
Soody, Donna L., R.N. McPherson, 1950; M.A. Washington (Missouri), 1955; M.S. Colorado State, 1965; Ph.D. 1966
Assistant Professor, Radiology and Radiation Research Laboratory, 1965 (1970)
Soper, Robert T., B.A. Cornell College, 1940; M.D. Iowa, 1945
Professor, Surgery, 1957 (1960)
Professor, Religion, 1956 (1965)
Spaniani, Eugene B., B.S. California (Los Angeles), 1950; M.A. 1954; Ph.D. 1958
Professor, Zoology (Entomology), 1952 (1955)
Spater, Arthur A., B.A. Pennsylvania, 1936; M.D. 1940
Assistant Professor, Internal Medicine, 1949
Spencer, Donald Lee, B.S.M.E. Iowa, 1942; M.S. 1948; Ph.D. 1950
Assistant Professor, Mechanical Engineering, 1957 (1960)
Spitzer, Charles S., B.A. San Francisco State, 1948; M.A. 1949; Ph.D. 1951
Professor, Psychology, Child Behavior and Development, 1951 (1953)
Spitzer, Alan B., B.A. Swarthmore, 1948; M.A. Columbia, 1952 (1953)
Professor, History, 1957
Sprava, Thorsten, Colored, B.S. Missouri, 1950
Professor and Head, Aerospace Medicine, 1957
Spinak, Geparti C., B.A. Presidency College (India), 1959; M.A. 1962; Ph.D. 1965
Assistant Professor, English, 1965 (1970)
Spray, Bruce R., B.S. 1966; M.S. 1969; M.D. Illinois, 1979
Associate Professor, Ophthalmology (Genetics), 1969 (1973)
Spratt, James L., A.B. Chicago, 1903; Ph.D. 1907; M.D. 1908
Associate Professor, Pharmacology; Associate Dean, College of Medicine, 1941 (1940)
Sprecherbach, Duane Cary, B.S., Minnesota State Teachers College, 1955; M.S. Iowa, 1959; Ph.D. 1964
Vice-President for Research; Dean, Graduate College; Professor, Psychology and Anthropology, College of Education and Applied Science, 1948 (1949)
Assistant Dean and Associate Professor, Education Administration, 1966
Steich, Donald P., B.S. Ohio State, 1959; M.S. 1961; Ph.D. 1965
Assistant Professor, Microbiology, 1965

ADMINISTRATION AND INSTRUCTION

Stahmann, Robert F., B.A. Manchester, 1961; M.S. Utah, 1965; Ph.D. 1967
Associate Professor, Education; Senior Counselor, Counseling Services, 1967 (1975)
Stanley, Frederick William, B.A. Iowa, 1939; M.D. 1943
Professor, Pathology, 1960 (1961)
Starruch, George E., B.A. Chicago, 1957
Associate Professor, English; Director, Writers Workshop, 1964 (1967)
Stark, Harold J., B.B.S. Nebraska State Teachers College, 1954; M.A. Iowa, 1956
Professor, Music, 1961 (1965)
Stay, Barbara A., B.A. Vassar, 1947; M.A. Radcliffe, 1949; Ph.D. 1952
Associate Professor, Zoology, 1957
Steele, Forest A., B.S. Iowa, 1954
Research Associate, Internal Medicine, 1964 (1963)
Steele, Roger L., B.A. Auburn, 1948; M.A. 1951; Ph.D. 1953
Associate Professor, Biochemistry and Pediatrics, 1957 (1959)
Stebbins, James A., B.S. Iowa State, 1934; Ph.D. Iowa, 1937
Professor, Pedagogical; Senior Psychologist, State Services for Crippled Children, 1937
Steffen, Karl C., B.S. Illinois, 1933; M.S. Northwestern, 1949; Ph.D. California (Berkeley), 1950
Associate Professor, Biochemistry, 1954 (1960)
Stephens, K. Robert, B.S. Montana, 1942; M.S. Drake, 1948; Ph.D. Iowa, 1953
Associate Professor, Iowa Center for Research in School Administration, 1958 (1959)
Associate Professor, Mechanical Engineering, 1965 (1968)
Stevens, Harriet Adeline, B.A. Iowa, 1932; M.A. 1934; Assistant Professor, Home Economics, 1932 (1933)
Assistant Professor, Business Administration, 1967 (1969)
Steward, Dorothy M., B.S. Wesleyan, 1951; M.A. Chicago, 1953
Assistant Professor, Nursing, 1958 (1967)
Stine, Lyren C., R.D. Utah, 1935
Assistant Football Coach and Instructor, Intercollegiate Athletics, 1965
Stills, John Kenneth, B.S. Arizona, 1952; M.S. 1953; Ph.D. Illinois, 1957
Professor, Chemistry, 1957 (1955)
Stouffer, Ada M., B.A. Coe, 1931; B.S.L. Wisconsin, 1939
Reference Librarian and Instructor, University Library, 1949 (1959)
Stouffer, Karen M., B.S.M. Kansas, 1962; M.S.H. Yale, 1965
Assistant Professor, Nursing, 1965 (1967)
Stowe, Daniel Benton, M.D., B.S. London, 1960; Ph.D. 1965
Resident Associate Dean for Academic Affairs, College of Medicine; Professor, Internal Medicine (Endocrinology), 1966 (1974)
Stone, Franklin D., B.A. Jamstown, 1928; M.A. Iowa, 1933; Ph.D. 1936
Professor, Economics, 1953 (1956)
Stone, Thomas E., B.A. Michigan, 1939; M.A. Minnesota, 1937; Ph.D. 1939
Assistant Professor, Business Administration, 1959
ADMINISTRATION AND INSTRUCTION

Instructor, Dental Prosthesis, 1982

Associate Professor, Sociology and Anthropology, 1989

Stevens, Gordon Ewen, B.A. Iowa State Teachers College, 1948; M.A. Iowa, 1953
Director, Office of Public Information and University Relations, 1956 (1987)

Suzuka, Haruaki, 1968
Research Associate, Geology, 1962

Stottrup, Martin P., B.A. Iowa State Teachers College, 1961; M.D. Iowa, 1969
Assistant Professor, Orthopaedics and Rehabilitation, 1962 (1986)

Strobel, Elizabeth T., B.A. Wisconsin, 1953; M.A. Iowa, 1955
Research Associate, Admissions and Records, 1958

Stroup, Gloria M., B.S. Michigan, 1954; M.D. Woman's Medical College of Pennsylvania, 1964
Instructor, Surgery, 1966

Stultz, Dewey Howard, B.S. Illinois, 1911; M.S. 1912; Ph.D. 1914
Dean and Professor, Liberal Arts, 1936 (1948)

Stowell, William C., B.S. California Institute of Technology, 1954
Assistant Professor, Chemistry, 1965

Sch. Syagj, B.S. Champaign University, 1952; M.A. University of Kansas, 1957; Ph.D. 1959
Research Associate, Biochemistry, 1959

Selker, William G., B.S. Drake, 1939
Coordinator in Charge of Athletic Relations, Office of Public Information and Intercollegiate Athletics, 1955 (1985)

Sutherland, Donald W., B.A. Swarthmore, 1933; Ph.D. Oxford, 1937
Professor and Assistant Chairman, History, 1958 (1987)

Swenson, Carl W., B.S. University of Minnesota, 1925; D.D.S. 1926; Ph.D. University of Pennsylvania, 1938
Professor, Prosthodontics, 1946; Dental Director, 1950

Swanson, Joseph A., B.S. Wisconsin, 1964; Ph.D. 1968
Associate Professor, Economics, 1969 (1970)

Swanson, F. E., B.A. Long Beach State College, 1958; M.A., Iowa, 1969
Research Associate, Psychiatry, 1969

Swanson, Charles A., B.S. Gustave Adolphus, 1955; Ph.D. Michigan, 1959
Associate Professor, Biochemistry, 1969 (1997)

Sweat, Kenne, B.S. Utah, 1955; M.S. Colorado, 1961; Ph.D. Edinburgh, 1965
Associate Professor, Geology, 1966 (1989)

Sybil, Edward W., B.A. Iowa, 1942; M.S. 1947; Ph.D. 1949; Clinical Assistant Professor, Neurology, 1983

Savio, Joseph, Licentiate Madrid, 1937; Ph.D. 1938
Associate Professor, Spanish and Portuguese, 1937

Tall, William H., B.A. Iowa, 1960; D.D.S. 1965; M.S. 1980; Ph.D. 1987
Associate Professor, Oral Pathology, 1981 (1994)

Associate Professor, Journalism, 1967 (1970)

Tanchot, Richard F., B.S. Michigan State, 1954
Assistant Professor and Assistant Football Coach, 1957

Tandy, Dwight C., B.A. San Diego State College, 1952; Ph.D. University of Washington, 1957
Assistant Professor, Chemistry, 1959

Assistant Professor, Surgery, 1970

Associate Professor, Pediatrics, 1962 (1970)

Taylor, Marie E., A.B., Iowa, 1966
Instructor, Dental Hygiene, 1966

Taylor, Alfred J., Jr., B.A. Illinois, 1952; M.D. St. Louis, 1955
Associate, Surgery (Thoracic and Cardiovascular), 1958 (1985)

Terry, Homer A., B.A. Iowa, 1954; M.A. 1959; Ph.D. 1957
Associate Professor, German, 1958 (1967)

Terry, Stanley A., B.S. Illinois, 1935
Assistant Professor, Zoology, 1937 (1967)

Terry, Robert M., B.A. Wisconsin, 1959; M.A., 1962; Ph.D. 1965
Associate Professor, Sociology and Anthropology, 1968 (1985)

Terry, William Wayne, B.S. Montana State, 1949; M.S. Iowa, 1952
Research Associate, Otolaryngology and Maxillofacial Surgery, 1960

Thacker, James W., B.S. Iowa Wesleyan, 1957; D.D.S. Iowa, 1959; M.S. 1960
Assistant Professor, Oral Surgery, 1968

Thayer, Charles Bennett, B.S. Righa, 1944; B.V.M. Kansas State College, 1947
Director of Animal Care, Medicine, 1957

Thayer, David Lewis, B.S. Lewis and Clark, 1925; M.A. Iowa, 1926; Ph.D. 1930
Professor, Dramatic Art, 1935 (1986)

Thayer, Keith Evans, B.A. Cornell College, 1951; D.D.S. Iowa, 1956; M.S. 1956
Professor and Head, Crown and Bridge; Acting Head, Denture Prosthesis, 1970 (1970)

Thayer, Leo, B.A. Wayne, 1953; M.A. 1956; Ph.D. Oklahoma, 1959
George Gallup Professor, Journalism, 1976

Instructor, Physical Education for Women, 1962

Thorpe, George S., B.M. Marquette, 1948
Assistant Professor, Internal Medicine, 1964 (1987)

Thomson, Brent O., B.A. Nebraska, 1943; M.D. 1947
Professor, Internal Medicine, 1965 (1967)

Thompson, W. Orlando, B.A. South Dakota, 1930
Assistant Professor and Chairman, Museum Training; Museum Curator, 1931 (1981)

Thompson, Danza, B.S. Iowa State, 1935; M.S. 1936; Ph.D. Iowa, 1939
Assistant Professor, Center for Labor and Management, 1935 (1983)

Thompson, H. Stanley, B.A. Minnesota, 1935; M.D. 1938
Assistant Professor, Ophthalmology and Neurology, 1987

Thompson, John S., B.A. University of California, 1949; M.D. University of Chicago, 1953
Professor, Pediatrics, 1961 (1989)

Thomason, John David, B.A. Morningside, 1928; M.S. Chicago, 1930; Ph.D. Iowa, 1940
Associate Professor, Physiology and Biophysics (Neurology), 1941 (1947)

Thorburn, Bruce R., B.S. Iowa State, 1952
Clinical Assistant Professor, Orthodontics, 1969

Thomson, Marvin Schmer, B.A. Leech, 1954; M.A. Iowa, 1954; Ph.D. 1958
Assistant Professor, Music, 1954 (1983)

Tidel, Victor H., B.S. Illinois College, 1909; M.A. Indiana, 1912; C.P.A. 1917
Associate Professor, Accounting, 1927

Till, Joan F., B.S. Brier Cliff College, 1961; M.D. Iowa, 1964
Assistant Professor, Dermatology, 1969
### STUDENT ENROLLMENT
For Year Ended June 30, 1969

<table>
<thead>
<tr>
<th>I. University Level</th>
<th>Summer Session 1963</th>
<th>Academic Year 1968-69 (September to June)</th>
<th>Total Excluding Duplicates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students in Residence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College of Business Administration</td>
<td>202 28 230</td>
<td>754 94 848</td>
<td>832 95 927</td>
</tr>
<tr>
<td>College of Dentistry</td>
<td>0 1 1</td>
<td>229 1 230</td>
<td>229 2 231</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>83 0 83</td>
<td>486 2 488</td>
<td>501 2 503</td>
</tr>
<tr>
<td>Graduate College</td>
<td>2,906 1,515 4,421</td>
<td>3,963 1,765 5,728</td>
<td>5,210 2,783 7,993</td>
</tr>
<tr>
<td>College of Law</td>
<td>126 5 131</td>
<td>393 15 408</td>
<td>415 16 431</td>
</tr>
<tr>
<td>College of Liberal Arts</td>
<td>1,331 1,540 2,871</td>
<td>4,077 2,881 6,958</td>
<td>6,352 6,439 12,791</td>
</tr>
<tr>
<td>College of Medicine</td>
<td>489 26 515</td>
<td>780 35 815</td>
<td>780 37 817</td>
</tr>
<tr>
<td>College of Nursing</td>
<td>0 74 74</td>
<td>4 433 437</td>
<td>4 433 437</td>
</tr>
<tr>
<td>College of Pharmacy</td>
<td>23 2 25</td>
<td>217 62 279</td>
<td>217 62 279</td>
</tr>
<tr>
<td>Total Excluding Duplicates</td>
<td>5,920 2,181 8,101</td>
<td>12,933 8,298 21,221</td>
<td>14,700 9,981 24,681</td>
</tr>
<tr>
<td>Students Enrolled for Correspondence Study</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Graduate Correspondence Study</td>
<td>808 1,022 1,830</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Undergraduate Correspondence Study</td>
<td>1,879 2,045 3,924</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Excluding Duplicates</td>
<td>2,687 3,067 5,754</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Different Students Enrolled for</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study in Residence or for</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correspondence Study</td>
<td>17,257 12,818 30,075</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

II. Experimental Schools and Noncollegiate

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>390 388</td>
<td>778 765</td>
<td>430 389</td>
<td>799 794</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 works cooperatively with the Iowa City community in furthering this policy. The University's Committee on Human Rights has adopted the following general policy:

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. Racial, religious, and ethnic discriminatory practices betray the vision of the founding fathers and threaten the orderly procedures of democratic government.

The General Assembly of the State of Iowa enacted the Iowa Civil Rights Act of 1962. The clear intent of this law is the assurance that the rights to equal treatment of the people of Iowa shall not be abridged.

In recognition of Iowa's declared public policy and the obligations imposed on all units of state government by the Fifteenth 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 nor any official who is responsible to the Board of Regents shall appoint, assign, and advance employees solely on the basis of race, religion, national origin, sex, or ancestry.

Suspension and/or reinstatement of violation. 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. The provisions of this policy shall not be construed to prohibit the Board of Regents from determining that violation of this policy may cause disciplinary action, suspension, and/or reinstatement of violation. All employees affected by this policy shall hereinafter be protected from discrimination.

Paragraph 2.11 shall also provide for the protection of students from discriminatory practices and procedures with a view to correcting any which may cause or result in discrimination in placement, assignment, or advancement.

For purposes of resident and nonresident classifications, the word "residents" in this policy shall include legal guardians or others studying in two parents in all cases where lawful custody of any applicant for admission has been awarded to parents other than actual parents.

Residence. The Board of Regents will consider the following:..
A student who willingly gives incorrect or misleading information to avoid payment of the nonresident fee and tuition shall be subject to serious disciplinary action and must also pay the nonresident fee for each semester.

An alien who has entered the United States on an non-immigrant visa who has established a bona fide residence in Iowa by living in the state for at least twelve consecutive months immediately preceding the beginning of the semester, quarter or session may be eligible for resident classification provided he be not required to register for military training and service. Change of classification from nonresident to resident will not be made retroactive before the semester, quarter or session in which application for resident classification is made.

6. Review committee. The decision of the registrar on the residency of, or tuition 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

I. REGULATIONS COMMON TO THE THREE INSTITUTIONS

A. ADMISSION OF FRESHMAN STUDENTS

A student desiring admission must meet the requirements for admission set by any special requirements for admission to the curriculum, school, or college of his choice. The applicant must submit a formal application for admission and must have the secondary school provide a certificate of high school equivalency, which includes a course of study that meets the requirements for the applicant's high school record, rank in class, scores on standardized tests, and completion of his entire high school graduation. The applicant must also submit any other evidence of his ability and qualifications for admission provided by the individual institution of higher learning.

A graduate of an approved Iowa high school who has the proper subject-major background, who is in the upper one-half of his graduating class and who meets the specific requirements of individual institutions will generally be admitted upon certification of graduation, if he applies for admission.

A candidate who is not in the upper one-half of his graduating class may be required to take special examination and other review of his entire record and at the discretion of the admissions officers, (1) Be admitted conditionally, (2) be admitted on probation, (3) be required to enroll for a tryout period during a preceding summer session, or (4) be denied admission.

2. A graduate of an accredited high school in another state may be admitted upon presentation of the same minimum requirements as a student of an Iowa high school. The options for admission by probation or trial enrollment may not be open to those students. Each college reserves the right to demand higher standards from graduates of out-of-state high schools.

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

4. An applicant who is in high school graduate shall submit all data requested above and shall also take examinations which will demonstrate his general competence to do college work. Evidence of specific competence to do college work is determined by the natural text.
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, 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 bodies. Transcripts of record from schools not regionally accredited may be accepted only if 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 are followed. The student 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.

2. 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 be on suspension from the last college attended. Students who are not residents of Iowa may be expected to have maintained a 2.5 grade index.

3. 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.

4. 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.

5. 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.

6. Applicants for admission by transfer who do not meet the standards may be denied.

7. 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.

2. Students from nonaccredited colleges must demonstrate that their credits are equivalent to those of 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 his merits. Admission or rejection is at the discretion of the admissions officer.

C. APPLICATION DEADLINES

Applications for admission must submit the required application 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. Examinations 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: IIA, IIA.

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.

II. SUPPLEMENTAL SPECIFIC REGULATIONS FOR EACH INSTITUTION

The following requirements are in addition to those given in section I above.

A. THE UNIVERSITY OF IOWA

All applicants for admission to any college of The University of Iowa must submit a formal application for admission 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 recommendations 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 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 place on file in the office of the director of admissions the 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 should attain 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 marking systems will be evaluated by the office of admissions and the committee on admissions 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 Grade Record Examination as well as the Dental Aptitude Test. In these instances, a candidate's performance on the Grade Record Examination will be included in the evaluation by the admissions committee of the candidate'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 the 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 non-Iowans.

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 interview with the committee on admissions.

All applicants must complete the dental aptitude tests 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 selection, applications for admission to 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 make 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 also 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 with the approval of the board of regents shall establish and periodically review specific minimum requirements for admission to the college of engineering. Among the items to be 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 tryout 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 the following:

a. Maintained satisfactory progress in mathematics.
b. Attained satisfactory scores on the university's required admission examinations.
c. Maintained a satisfactory cumulative grade-point average on all college work undertaken.

d. 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 in the fall semester. Except for good cause shown, applications for admission must be received by the Admissions Committee preceding the fall semester in which the applicant wishes to enter.

To be considered for admission, an applicant should have attained a cumulative grade-point average of at least 2.3 on 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 approved 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 making application. Except upon a showing of good cause, admission is denied to those who have submitted 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 enrolled a school approved by the Association of American Law Schools; (2) is in good standing at the time of his withdrawal; (3) traveled by a letter from his dean or the president of the school proving that he meets the admission requirements for beginning students; and (4) either passes a satisfactory course of study in the law school he attended. Where an applicant has completed more than the year of law school, advanced standing will be permitted only in exceptional cases. Applicants for admission with advanced standing should consult with the procedures required for admission to the law school of the year.

5. College of Medicine

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 admission committee more time to devote to each application. Closing dates for receiving applications will be announced and in advance of the opening date of any session.

Applicants from those who are more than thirty years of age will be considered for acceptance only in exceptional cases.

Furthermore, the specific requirements for admission listed below does not bar admission to the College of Medicine. From the applicants meets the specific requirements, the admission committee of the College of Medicine will select those physicians who, in their judgment, appear to be best qualified for the study and practice of medicine.

Prior to entrance an applicant must:

1. Have completed three years of a combined bachelor's and medical curriculum in which sufficient academic credit is obtained to provide the baccalaureate degree in completion of the first year of medical school.

2. Have completed three years of a baccalaureate program which includes the general education requirements of the College of Liberal Arts of the University of Iowa for the bachelor's degree.

Each applicant must pass in the office of the chairman of the Graduate School and be an official transcript from each college attended.

The college of medicine at East Lansing will take into account the number of the students admitted and the number of satisfactory applicants for admission to the college.

Applicants who have completed the baccalaurate degree and required courses five or more years prior to seeking admission to this college of medicine will be permitted to, the admissions committee only under exceptional conditions.

The college curriculum must include at least three years (equivalent to ninety-six semester hours) including specific science courses as prescribed by the faculty of the college.

Students planning to study medicine should be in mind that other college work is required in addition to prerequisites so that it offers an opportunity to complete the requirements for a bachelor's degree in a liberal education.

Applicants are required to submit a statement of the work attempted and the work completed, with the recommendation of the college of medicine and the dean of the college of medicine which is special to those courses which are intended to provide evidence of having obtained such a broad education.

To be considered admissible, an applicant must have completed the requirements of at least 2.5 years of medical education or the equivalent.

As the quality of work in premedical is very basic to success in medical school, special attention will be given by the admissions committee to the preparation of medical education.

The quality of work students who have completed the requirements of the College of Medicine at The University of Iowa is based on the courses in medicine, mathematics, and the sciences which are considered to be essential for a future in medicine.

Applicants who have completed the requirements of the College of Medicine at The University of Iowa must have satisfactorily attended a four-year college course in organic and biochemistry.
APPENDIX

transfer from other accredited colleges may, if necessary, complete the chemistry and biochemistry requirement other than the 6 credits of nursing courses.

All applicants are required to complete the American College Test. Applicants who are graduates of associate degree or diploma programs of nursing must have successfully passed the examination by registered nurse license before admission to nursing courses. To be considered for admission, an applicant should have attained a cumulative grade-point average of at least 2.0 in all college work undertaken. The grade-point average is based upon the ranking system of the University of Iowa, in which a grade of "A" is equivalent to four points. Other marking systems will be evaluated by the office of admissions.

Preliminary students must meet the minimum requirements of the admissions committee of the College of nursing. The admission committee will select those applicants who, in their judgment, appear to be best qualified. The nursing admission 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 with no 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.

8 College of Pharmacy

General Basis for Admission

Preliminary requirements for admission do not assure 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 secondary 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 88-91 semester hours of college-level work, including credit in College of Liberal Arts at the University of Iowa. Applicants from other institutions may want this requirement by presenting six semester hours of credit in Biology, Chemistry, and three semester hours of credit in Physics or an eight-semester-hour course in Chemistry, Biology, and one semester of credit in Physics. Applicants from other institutions may also satisfy the equivalent enrollment in Rhetoric Program according to the requirements of the College of Liberal Arts at the University of Iowa. Applicants from other institutions may satisfy this requirement by presenting six semester hours of credit in English Composition and Rhetoric and two semester hours of credit in Speech or an eight-semester-hour course in Rhetoric, Comparative Chemistry and Qualitative Analysis.--eight semester hours.

College Mathematics--eight semester hours.

Physics or Biology--eight semester hours. Students from other institutions may fulfill a comparable eight-semester-hour course in Biology in lieu of Biology. Students with one of four semester hours of credit in Biology, six semester hours of credit in Chemistry, and one semester hour of credit in Physics. 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

Preliminary requirements for admission do not assure 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 88-91 semester hours of college-level work, including credit in College of Liberal Arts at the University of Iowa. Applicants from other institutions may want this requirement by presenting six semester hours of credit in Biology, Chemistry, and three semester hours of credit in Physics or an eight-semester-hour course in Chemistry, Biology, and one semester of credit in Physics. Applicants from other institutions may also satisfy the equivalent enrollment in Rhetoric Program according to the requirements of the College of Liberal Arts at the University of Iowa. Applicants from other institutions may satisfy this requirement by presenting six semester hours of credit in English Composition and Rhetoric and two semester hours of credit in Speech or an eight-semester-hour course in Rhetoric, Comparative Chemistry and Qualitative Analysis.--eight semester hours.

College Mathematics--eight semester hours.

Physics or Biology--eight semester hours. Students from other institutions may fulfill a comparable eight-semester-hour course in Biology in lieu of Biology. Students with one of four semester hours of credit in Biology, six semester hours of credit in Chemistry, and one semester hour of credit in Physics. The closing date for receiving applications shall be April 15 for first semester and November 15 for second semester.

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, and Education may have completed the academic average of courses acceptable to be admitted and granted advanced standing toward the degree of Bachelor of Science in Pharmacy.
Index

A
Accounting, 204-5
Accreditation, 8
Actuarial Science, 119
Administration, Central, 374-76
Administration and Instruction, 377-409
Administrative Officers, 374-76
Business and Finance, 375-76
Central Administration, 374
Colleges, 374-75
Health Affairs Units, 375
General University, 376
State Board of Regents, 374
Student Services, 375
Admission, General, 9
Appendix, Regents' Rules and Regulations, 413-18
Business Administration, College of, 9, 11, 201-2, 203, 415
Correspondence Courses, 364
Dental Hygiene, 222, 341-42
Dentistry, College of, 9, 10, 11, 213-19, 415-16
Education, College of, 10, 233-34
Engineering, College of, 9, 11, 259, 416
Foreign Students, 9-10, 281
Graduate College, 9, 11, 261-82, 416
Law, College of, 9, 10, 11, 292-93, 416-17
Liberal Arts, College of, 9, 11, 21-23, 414-15
Medicine, College of, 9, 10, 11, 231-32, 418
Adult Education, Division of, 241
Adult Education Advisory Service, 365, 366, 371
Advance Payment, 10-11
Advanced Placement Program, 21
Advanced Standing Program in English, 21
Advisory Service, 15, 21
Aerospace Military Studies, 116-18
Asian-American Studies, 337-38
Agricultural Law Center, 261
Air Force ROTC, 122-124
Alumni Association, 371
American Civilization, 29-30
American College Tests, 10
Anatomy, 303-4
Anesthesia, 304
Anthropology, 30-33
Apprenticeship, 30
Appendix, 413-18
Application Deadlines, 9-10
Application Fee, 10
Applications for Admission, 9, 10
Areas of Concentration, 26, 275
Armed Forces Institute Courses, 364
Army ROTC, 122, 123
Art, School of, 19, 20, 33-41
Art Education, 34, 40
Assistantships, 252, 351
Associations, 8
Astronomy, 142-45, 146-47
Athletics, 18
Audiovisual Center, 365
Awards, Prizes, Honors, 357-63

B
Bacteriological Laboratories, State, 369
Barracks Apartments, 15
Basic Business Education, 215
Basic Skills, 24, 25, 27
Biochemistry, 41, 45, 304-5
Biography, 41, 186, 187, 197
Biophysics, 316-17
Board and Room Rates, 14-15
Botany, 41-53
Honors, 42
Broadcasting and Film, 186-88
Bureau of Dental Health Education, 369
Bureau of Educational Research, 365
Bureau of Instructional Services, 364
Bureau of Police Science, 368
Business Administration, College of, 201-16
Business Administration, Department of, 205-10
Business Education, 214-16

C
Calendars, 4, 5
Center for Labor and Management, 201
Chemical Engineering, 261-63
Chemical Physics, 45
Chemistry, 44-46
Child Behavior and Development, 48-51
Chinese and Oriental Studies, 51-56
Honors, 52, 53
Civil Engineering, 263-66
CIC Traveling Scholar Program, 8, 52, 280, 283-84
Classics, 56-59
Honors, 55
Classification of Students, 23, 413-14
Code of Student Life, 8-9
Combined Curricula
Liberal Arts and Dental Hygiene, 341
Liberal Arts and Dentistry, 219
Liberal Arts and Engineering, 23, 258
Liberal Arts and Medicine, 301
Combined Degrees, 291, 300
Communication Research, 183-84
Comparative Education, 247-48
Comparative Literature, 59-61
Computer Center, 362
Computer Science, 109, 110-13
Conduct, Standard of, 8
Conferences and Institutes, Center for, 358
Core Courses, 25-26, 27-29
Correspondence Courses, 364
Council on Speech Pathology and Audiology, 371
Counseling and Guidance, Division of, 241-43
Counseling Service, 17, 232
Course Numbers, 12, 13
Creative Writing, 83
Credit by Examination, 21
Credit Transfer, 22-23, 284
Criminology, 171
Crippled Children's Services, 370-71
Crown and Bridge Prosthesis, 221-22
Cultural Anthropology and Linguistics, 30, 101, 102

D
Daily Iowan, The, 20
Degrees,
Bachelor of Arts, 19, 26, 258
Bachelor of Business Administration, 201, 202-3
Bachelor of Fine Arts, 19, 26, 33, 34
Bachelor of General Studies, 19, 24
Bachelor of Music, 19, 26, 125
Bachelor of Science, 19, 26
Bachelor of Science in Engineering, 257
Bachelor of Science in Nursing, 324
Bachelor of Science in Pharmacy, 330
Doctor of Dental Surgery, 217
Doctor of Pharmacy, 291
Doctor of Musical Arts, 125, 279, 288
Doctor of Philosophy, 279, 288
Juris Doctor, 291
Master of Arts, 279
Master of Business Administration, 203, 206, 279
Master of Comparative Law, 279, 291-92
Master of Fine Arts, 30, 36, 120-21, 170-71, 175, 279, 287
Master of Science, 279
Master of Social Work, 279, 288
Master of Arts in Teaching, 239, 279
Specialist in Education, 239, 240, 279, 287-88
Dental Health Education, Bureau of, 369
Dental Hygiene, 222, 341-42
Dental Service, 17
Dentistry, College of, 217-30
Dental Hygiene, 222
Graduate Study in, 220
Predentistry, 23
Denture Prosthesis, 222-24
Dermatology and Syphilology, 305-6
Division of Fine Arts, 19, 69
Division of Extension and University Services, 364-68
Division of Mathematical Sciences, 20, 104-16
Dramatic Art, 179-80, 184-86

E
Economics, 61-62, 210-14
Honors, 62

419
Education, College of, 231-56
Science Teaching, 74-75
Education in Politics, Iowa Center for, 259
Educational Administration, Division of, 243-44
Educational Goals, 8
Educational Media, Division of, 256
Educational Opportunities Program, 18
Educational Placement Office, 240
Educational Psychology, Measurement and Statistics, Division of, 248-59
Educational Research, Bureau of, 366
Educational Specialist, 240, 287-88
Electrical Engineering, 265-69
Elementary Education, Division of, 233, 234-35, 244-47
Endodontics, 224-25
Engineering, College of, 257-73
Departments and Courses, 260
Chemical Engineering, 261-63
Civil Engineering, 263-66
Electrical Engineering, 266-69
Environmental Engineering, 269
Industrial and Management Engineering, 270-72
Mechanical Engineering, 272-75
Mechanics and Hydraulics, 275-78
Degrees, 55, 257
Marking System, 260
Placement Services, 259
Student Organizations, 259
English, 62-68
Honors, 63
Enrollment, 412
Environmental Health, Preventive Medicine and, 264, 318-19
European Literature and Thought, 68-69
Honors, 68
European Studies Program, 364
Evaluation and Examination Services, 17
Extension and University Services, Division of, 364-69
Extension Classes, 364

F
Faculty, 8
Fair Housing Policy, 15
Family Development, 94
Family Practice, 306
Far Eastern Studies, Center for, 51
Fees, 10-12
Fellowships, 285-86, 351, 352-53
Film, 186-88
Financial Aid, 16, 350-56
Financial Economics, 206
Financial Management, 206
Fine Arts, Division of, 19-20, 69
Art, 19, 20, 69
Dramatic Art, 19, 20, 69
Music, 19, 20, 69
Food and Nutrition, 95
Foreign Languages (See Languages)
Foreign Students, 9, 10, 281
Foreign Studies, 51, 52, 53, 69
Fraternities, 16, 351
French, 69-72
Honors, 69

G
General Information, 7-13
General Science, 72-75
Genetics, 338
Geography, 77-80
Geology, 80-83
German, 83-87
Honors, 84
Gerontology, 125-26
Grade Points, 22
Graduate Apartments, 285-86, 355
Graduate College, 275-90
Graduate Requirements, Business Administration, 202-3
Dentistry, 220
Education, 234-38
Engineering, 257, 259-60
Graduate, 286
Law, 293-94
Liberal Arts, 24-27
Graduation Honors, 20-27
Medicine, 302-3
Nursing, 326
Pharmacy, 332-33
Greek, 56-59

H
Handicapped Children, Hospital School for, 301
Hawkeye, 20
Hawkeye Apartments, 15
Health Affairs, 309
Health Services, 369
Hearing Science, 188
Hebrew, 162
High School-College Relations, 16
Higher Education, Division of, 248
Historical and Cultural Core, 25, 28
History, 87-94
Home Economics, 94-97
Family Development, 94
Food and Nutrition, 95
Honors, 95
Religion and Education, 95
Textiles and Clothing, 95
Honorary and Recognition Groups, 361
Honor Awards, 26, 357-63
Honor Program, 21
Hospital and Health Administration, 28-99
Hospital School, University, 223, 301, 370
Hospitals, 301-3, 369
Housing, 14-15, 16
Contracts, 14, 15
Fair Housing Policy, 14
Fraternities, 15
Married Students, 15
Off-Campus, 15
Rents, 14, 15
Residence Halls, 14-15
Rights, 9
Single Students, 15
Sororities, 15
Human Rights, 9, 413
Hydraulic Research, Institute of, 259

I
Independent Study Period, 5, 8
Industrial and Management Engineering, 270-72
Industrial Relations, 206
Institute of Child Behavior and Development, 48-51
Institute of Public Affairs, 367
Institutional Research, 363-65
Insurance, 206
Intercollegiate Athletics, 18
Interdisciplinary Programs, 337-40
Internal Medicine, 306-7
Intramural and Recreational Sports, 18
Instructional Services, Bureau of, 361
Iowa Center for Education in Politics, 388
Iowa Community Services, 368
Iowa Institute of Hydraulic Research
Iowa Lakeside Laboratory, 198, 367
Iowa Law Review, The, 282
Iowa Transit, The, 259
Iowa Memorial Union, 18
Iowa Mental Health Authority, 360-70
Iowa School for the Deaf, 237
Iowa Testing Program, 17
Italian, 69-72

J
Japanese, 51-56
Journalism, School of, 20, 99-102

L
Labor and Management, Center for, 191
Lakeside Laboratory, 198, 367
Languages
Chinese, 51-56
English, 62-68
French, 69-72
German, 83-87
Greek, 56-59
Hebrew, 162
Italian, 69-72
Japanese, 51-56
Latin, 56-59
Portuguese, 176-78, 179
Russian, 164-66
Spanish, 176-79
Latin, 56-59
Law, College of, 291-99
Law Enforcement and Corrections, 171
Letters, School of, 20, 103
Liberal Arts, College of, 19-27
Administrative Staff, 27
Admission Requirements, 21-23
Degree Programs, 19
Freshman Program, 24
Graduation Honors, 26
Graduation Requirements, 24-27
Honors Program, 21
Scholarship Requirements, 23-24
Schools and Divisions, 19-21
Liberal Arts Advisory Office, 21
Libraries, 348-49
Library Science, School of, 20, 305-106
Linguistics, 106-9
Literature Core, 25, 27
Loan Funds, 350, 355

M
Macbride Field Campus, 387
Major Areas, 20, 279
Map of Campus, 410
Marketing, 206
Marketing System, 23, 284-85, 295
Mass Communication, 95
Mathematical Sciences, Division of, 20, 105-21
Mathematics, 109-10, 115-18
Mathematics Education, 109-10
Maximum Student Load, 26
Mechanical Engineering, 110-21
Mechanics and Hydraulics, 275-78
Medical History, 307
Medical Technology, 73, 343-44
Medicine, College of, 306-23
Premedicine, 73-75
Microbiology, 116, 307
Military Awards, 360
Military Studies, 122-24
Municipal Administration, 141
Museum of Natural History, 372
Museum Training, 124
Music, School of, 19, 20, 125-32
Music Education, 119-20

N
National Defense Education Act
Loan Funds, 350
Natural Science Core, 25, 28
Nuerobiology, 339-40
Neurology, 309-10
News Service, 372-73
Nondepartmental Courses, 125-28
Nonresidents of Iowa, 11, 413-14
Nuclear Medical Technology, 73, 344
Nuclear Science and Technology, 338-39
Numbering of Courses, 12, 13
Nursing, College of, 324-29
Nutrition, 310-11
Nutrition Internships, 310

O
Obstetrics and Gynecology, 311
Off-Campus Housing, 15
Office Education, 215
Office of Student Affairs, 17
Operative Dentistry and Endodontics, 224-26
Ophthalmology, 312
Oral Biology, 228
Oral Diagnosis, 226-27
Oral Pathology, 227-28
Oral Surgery, 228, 312
Oriental Studies, 51-56
Orthodontics, 229
Orthopaedic Surgery, 313
Otolaryngology and Maxillofacial Surgery, 313-14

P
Parklawn Apartments, 15
Pass-Fail Courses, 21
Pathology, 89-93, 314-15
Payment of Student Accounts, 12
Pediatrics, 315
Pedodontics, 229-30
Periodontology, 230
Personnel Service, 373
Pharmaceutical Association, Student, 331
Pharmacology, 315-16
Pharmacy, College of, 330-36
Philosophy, 132-34
Physical Education, 134-43
Men, 134-38
Women, 139-43
Physical Education Skills, 25, 27
Physical Therapy, 73, 345-47
Master of Arts Program, 345-46
Science Education, 347
Professional Program, 345, 346-47
Physics and Astronomy, 143-147
Honors, 143
Physiology and Biophysics, 316-18
Pine School, 232
Placement Services, 18
Educational, 18, 240
Engineering, 18, 259
Pharmacy, 320
Police Science, Bureau of, 368
Political Science, 147-58
Honors, 148
Portuguese, 176-78, 179
Pre-Comprehensive Registration, 289
Preclinical Sciences, Dentistry, 220-21
Preschool Education, 47, 48
Preventive and Community Dentistry, 230
Preventive Medicine and Environmental Health, 264, 318-19
Preventive Medicine and Environmental Health, 264, 318-19
Preveterinary Medicine, 74
Prize, 257-63
Professional Counseling, 18-19
Professional Groups, 361
Psychiatry, 319-20
Psychology, 133-56
Child, 48, 49-51
Honors, 153
Psychopathic Hospital, 300-1, 369
Public Affairs, Institute of, 367
Public Information and University Relations, Office of, 372-73
Publications, 366, 367

R
Radiation Protection Office, 363
Radiation Research Laboratory, 321
Radio Stations WSSU, KSUI, 20, 365-68
Radiology, 321
Reading Clinic, 232, 372
Records, 11, 16
Recreation Education, 158-60
Refunds, 11
Regents, State Board of, 374
Registration, 11, 282-83
Related Art and Housing, 95
Related Services, 369-72
Religion, School of, 20, 150-64
Research Assistantships, 263, 351
Research Council, 362
Research Support Units, 363
Residence Halls, 14-15, 16
Residents of Iowa, 11, 413-14
Rhetoric Program, 24, 25, 27
Rhetoric and Public Address, 182-83
Romance Languages (see Languages)
Russian, 164-66
Honors, 165

S
Scholarships and Loans, 350-56
Scholarship Requirements
Business Administration, 202-3
Dentistry, 219-20
Education, 234-38
Engineering, 260
Graduate
Doctors' Degree, 288-90
Masters' Degrees, 286-88
Law, 294
Liberal Arts, 23-24
Medicine, 302
Nursing, 327
Pharmacy, 331-33
Scholastic Honors, 26-27, 357-63
School of Art, 19, 20, 53-41
School of Journalism, 20, 99-103
School of Letters, 20, 103
School of Library Science, 20, 103-6
School of Music, 19, 20, 125-32
School of Religion, 20, 190-94
School of Social Work, 20, 167-69
Science Education, Graduate Program, 75-78
Science Teaching, 74-75
Secondary Education, Division of, 227-39, 290-93
Secretarial Education, 215
Sessions, 5, 8
Social Science Core, 25, 28
Social Studies, 155-67
Social Foundations and Comparative Education, Division of, 247-48
Social Work, School of, 20, 167-69
Honors, 157
Sociology, 165-76
Criminology, 171
Honors, 170
Law Enforcement and Corrections, 171
Social Psychology, 172
Sororities, 15
Space Assignment and Utilization, Office of, 373
Spanish, 176-79
Honors, 177
Spectator, 387
Special Education, Division of, 295-97, 293-98
Speech and Dramatic Art, 19, 20, 69, 179-88
Broadcasting and Film, 186-88
Communication Research, 183-84
Dramatic Art, 184-86
Rhetoric and Public Address, 182-83
Speech Education, 180-82
Speech and Hearing Clinic, 17, 186-81
Speech Education, 180-82
Speech Laboratory, 27
Speech Pathology and Audiology, 188-93
Honors, 188
State Bacteriological Laboratories, 369
State Board of Regents, 374
State Services for Crippled Children, 370-71
State Teachers' Certificates, 240
Statistics, 109, 110, 118-21
Student Affairs, 17
Student Body, 7, 8
Student Employment, 350
Student Enrollment, 412
Student Financial Aids, 16, 350-56
Student Health Services, 17
Student Housing, 14-15, 16
Student Personnel Services, 16-17
Student Placement, 18
Student Publications, 20
Student Religious Opportunities, 18
Summer Session, 5, 8
Surgery, 322-23

T
Teacher Education Programs, 234, 235, 237
Teachers' Certificates, 240
Television, 186-88
Tests, 10, 17, 281
Textiles and Clothing, 95
Transfer Applications, 22-26, 202, 260, 284, 295, 302, 332, 415, 416, 417
Tuition, 11

U
University Counseling Service, 17, 18
University Hospitals, 300-1, 359
University Hospital School, 292, 301, 370
University of Iowa Foundation, 371-72
University of Iowa Press, 367
University News Service, 372
University Personnel Service, 373
University Research Council, 362
University Schools, 261-62
Urban and Regional Planning, 193-96
Urban Planning and Law, 195
Urology, 325

V
Veterans Administration Courses, 364

W
Writers Workshop, 64
Writing Laboratory, 27

Z
Zoology, 196-200
Honors, 187