The arts and sciences encompass the entire range of human knowledge, from the earliest records to the latest laboratory results. All that human beings have observed about themselves, about their societies, and about the natural world around them is of concern to one or another of the arts and sciences.

The curriculum of the College of Liberal Arts reflects this wide-ranging concern with the life of the mind. It emphasizes the breadth of human knowledge, perceived not only in terms of the traditional categories of the humanities and the natural and social sciences, but also in broader perspectives which extend across academic fields and reach beyond the boundaries of a college of liberal arts. It also stresses depth of learning, thereby seeking to acquaint the student with the rigors of the intellectual process. Through a study of the liberal arts one thus learns to participate in a rich intellectual heritage, in the adventures of the mind, and in the life of the educated imagination. A liberally educated person is identified not so much by specific knowledge as by quality of mind and by creative response to the challenges of the times.

At the heart of a liberal education is an appreciation of and a familiarity with a great triad: language, literature, and the arts; history and society; science and mathematics. These three great well-springs of human thought are sources of the programs of study offered students in the College of Liberal Arts.

The arts and sciences encompass the entire range of human knowledge, from the earliest records to the latest laboratory results. All that human beings have observed about themselves, about their societies, and about the natural world around them is of concern to one or another of the arts and sciences.

The Bachelor of Arts is the basic liberal arts degree, representing the attainment of a broad knowledge of the arts and sciences as well as a comprehensive understanding of one or more areas of special interest. Four programs leading to this degree are open to the student:

(a) Basic Program—The program appropriate for most B.A. students. It is developed around the broad area requirements in the Triad plus intensive study in one or more of the specified departmental or interdepartmental major fields described below.

(b) Individualized Program—Designed for students whose educational goals are best met by a program tailored to their particular needs, it is similar to the Basic Program in broad area requirements but permits the student to develop an individual concentration incorporating work in two or more departments.

(c) College Scholars Program—Intended for a limited number of students who are especially highly qualified and motivated and who have been selected to undertake this honors-level program, the College Scholars Program permits the student maximum freedom to design a curriculum to meet particular interests and goals.

(d) Pre-Professional Program—The Pre-Professional Program is offered for those who wish to participate in one of the cooperative 3-1 curricula in the health sciences (medicine, dentistry, pharmacy, or medical technology). The student proceeds directly to specialized training in the chosen area after the third year of liberal arts study and offers the first year of professional study in lieu of a major concentration in the college in satisfying the requirements for the B.A. degree.

(2) BACHELOR OF FINE ARTS

The Bachelor of Fine Arts degree represents intensive study preparing students for graduate study and professional positions in art. The degree is offered with a major in studio art. Recommended course combinations for those who desire to concentrate in ceramics, communication design, drawing, painting, fiber-fabrics, interior-area, woodwork-woodcarving, or sculpture are available in the art department office.

(3) BACHELOR OF MUSIC

The program leading to the Bachelor of Music degree prepares students for graduate study and for positions in which a professional degree is required. The degree is offered with a major in music which has an emphasis in instrumental performance, music history and literature, piano literature, and applied music voice—organ—strings—woodwind, brass, and percussion
The Bachelor of Arts degree is a liberal arts degree offering a wide range of courses. The study of history is an integral part of a liberal arts education, acquainting students with the traditions and perspectives of the past. Courses in general history provide broad knowledge of the American experience, including the history of particular segments of human society, such as Afro-American, Asian, Latin American, and universal history. Courses in cultural history, including the traditions of Western civilization or other broad surveys such as social, economic, or technological change challenge traditional patterns of individual and collective behavior. Study of science and mathematics is vital to human understanding and development, and courses in natural science and mathematics help students develop the critical thinking skills necessary for effective communication.
develops in the student an inquiring attitude toward the natural environment and encourages the ability to understand scientific explanations of diverse phenomena. These ends may be realized through an understanding of the empirical nature of science and technology and solving problems. The student should attain a knowledge of the way in which the development of science and technology has affected beliefs, philosophies, and the development of civilization.

Specific Requirements in the Triad

(1) Language, Literature, and the Arts

Each student is required to demonstrate ability to use the English language effectively and coherently in one of the following four ways:

(a) By completing nine credits in English writing courses in one of the following series:

(i) English 1010, 1020, and three additional credits drawn from 1021, 1022, or 1032. Students who complete 1020 with the grade of A have the additional option to satisfy the remaining three credits in any 2000- or 3000-level writing course offered by the department.

(ii) English 1018, 1028, 1028A. Students who obtain the grade of A or B in 1028 have the additional option, with permission, to satisfy the remaining three credits in any 2000- or 3000-level writing course offered by the College Board Advanced Placement in English language and literature.

(b) By earning a score of 4 or 5 on the College Board Advanced Placement Test in English language and literature, administered by the College Board.

(c) By passing (normally after completing English 1010, 1020) the Diagnostic English Test, or by completing a literature sequence having a substantial emphasis on writing. The English language series may be obtained in the office of the Committee on Writing Standards; a list of those approved is published by the Committee on Writing Standards.

(d) By passing (normally after completing English 1010, 1020) the Diagnostic English Test, or by completing a literature sequence having a substantial emphasis on writing. The English language series may be obtained in the office of the Committee on Writing Standards; a list of those approved is published by the Committee on Writing Standards.

Note: Students should normally take English in the first quarter of their registration and continue to take English or a writing-emphasis course in following quarters until this requirement is met.

(2) Foreign Language and the Arts

The student may select any one of the following three options to satisfy this requirement:

(a) Eight hours of literature in a foreign language in the 3000-level or above.

Prerequisite to this option is intermediate-level competence in the language, demonstrated by diagnostic (non-credit) or proficiency (credit) examination or by completion of the 2000-level sequence in that language.

(b) Intermediate-level competence in a foreign language demonstrated by diagnostic (non-credit) or proficiency (credit) examination or by completing a 2000-level sequence (at an approved equivalent) in that language, and a minimum of two courses of literature in English (originally in English or in translation) drawn from the list of courses published by the Committee on Language, Literature, and the Arts, available in the Liberal Arts Advising Center. A minimum of two years of high school course work is often required. Full student for entry into a 2000-level language sequence.

(c) 24 hours in an integrated program in literature, culture, and the arts, focusing either on (1) a particular nation or area other than the United States, or (2) a comparative study of literary and artistic modes, genres, or movements. Suggested programs are published by the Committee on Language, Literature, and the Arts and are available in the Liberal Arts Advising Center; students may also propose individual programs to the committee for consideration.

Note: In options (a) and (b), students who take the diagnostic examination will not receive credit toward the requirement, but may be exempted from the portion of the requirement satisfied by the examination. Those who take the proficiency examination may earn up to 16 hours of credit toward graduation, or previous study in that language, in addition to the credit they earn for course work taken in college. Normally two years of high school language study is regarded as equivalent to one year of college study. Students who have had four years of high school study of the same language should have their proficiency examined to satisfy the requirement for intermediate-level competence in an approved option by examination and those who have had less than four years of high school language study should have their proficiency examined to satisfy the portion of the requirement in this way, thus reducing the time required to satisfy the requirement. Full credit toward graduation is given for any language study undertaken successfully in the college regardless of the amount of previous study of that language. Students who have had less than two years of study of the same language in high school are admitted with an entrance deficiency. Satisfactory completion of the final quarterly of the first year sequence of college-level foreign language study, normally in the freshman year, is necessary to remove this deficiency.

(2) History and Society

Each student must complete 24 hours of course work in this area including:

(a) One eight-hour sequence from the several survey courses offered by the Department of History or in a comprehensive interdisciplinary sequence having a substantial emphasis on history.

(b) Eight hours in courses with emphasis on man and society which are not primarily historical in nature.

(3) Science and Mathematics

Each student must complete 24 hours of course work in this area, including:

(a) One of the following two options:

(i) An eight-hour sequence in a biological science; or

(ii) An eight-hour sequence in a physical science.

(b) 16 hours drawn from additional courses in the biological and/or physical sciences or from designated courses in the history, philosophy, or social science disciplines.

(c) Mathematics and logic.

No more than 16 hours may be applied toward this requirement from any one of the above four categories.

A list of courses which satisfy this requirement is published by the Committee on Science and Mathematics and is available in the Liberal Arts Advising Center.

B. THE MAJOR

In many ways the most important part of each student's program is the major, for it is in this intensive study of one more or less limited field of knowledge that the individual begins to find a niche in the world of intellectual endeavor. The major may be drawn from the offerings of a single department or it may bring together related concerns of two or more departments. First, each student has the option of a liberal program of study which has a definite design and aims at some overall objective. Guidelines are published by each major department or interdepartmental committee to assist the student in ascertaining goals and to provide a framework within which to develop a particular program. Additional assistance in the form of supplementary offerings is available in the Liberal Arts Advising Center and from designated faculty advisers in each major department or area.

Requirements for the specified majors available to students in the Basic Program vary from a minimum of 36 to a maximum of 56 credit hours in courses numbered 2000 and above, including prerequisites and corequisites (i.e., supporting courses in other departments or areas). Insofar as is consistent with the objective of a liberal program balanced reasonably between broad area requirements in the Triad, the major and supplementary courses, the student may elect as many courses as desired in any department or area.

Note: Phi Beta Kappa requirements in mathematics, page 38.
II. Individualized Program

The Basic Program described above will meet the educational needs of most of the students enrolling in the college. Some, however, come with particular strengths in their preparation or with special interests which do not coincide with the departmental or interdepartmental majors specified in the Basic Program. For these students the Individualized Program has been established as a means of permitting a closer cooperation between student needs and academic programs.

Students in the Individualized Program satisfy the broad requirements of the Triad, just as do those in the Basic Program. The point at which the greatest degree of individualization takes place, however, is in the area of concentration. Although the quantitative aspect of the area of concentration is the same as for the major in the Basic Program (i.e., a minimum of 36 hours in courses numbered above 2000), there is no restriction on the choice of courses which it is composed.

The student may design a program, in consultation with an advisor, and submit it for consideration to the Committee on the Individualized Program. The courses of study must have some clear central purpose usually implemented through intensive work in two or three departments; an unstructured scattering of courses will not be approved. For further information contact the Liberal Arts Advising Center.

III. College Scholars Program

A limited number of freshmen, entering transfer students with less than 60 credit hours, and resident students with less than 90 credit hours are invited each year to enter this distinguished honors curriculum. Selection is based on previous academic record, test scores, recommendations, a written essay, and a personal interview. Admission is provisional for two quarters; continuation depends upon maintenance of a satisfactory record (normally 3.25 or above) and evidence of ongoing motivation and interest.

The College Scholars Program affords the highest degree of freedom to the student in developing a meaningful curriculum. Each program is worked out individually with a special adviser (butor) who under ordinary circumstances continues to advise the student throughout the college career. Together they determine what kinds of course work and/or other learning experiences will best fulfill the student’s objectives, while at the same time achieving the kind of liberal education the college believes is important for every student. In the final two years of the program the student will be helped in independent study or research.

Further information and applications may be obtained from the Liberal Arts Advising Center.

IV. Preparation for the Health Professions

Pre-Dental Program

Pre-Medical Program

Pre-Medical Record Administration

Pre-Occupational Therapy

Pre-Nursing

Pre-Physical Therapy

Pre-Pharmacy

Pre-Physical Therapy

Pre-Physical Therapy

Pre-Physical Therapy

Pre-Physical Therapy

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### Chemistry
- 1110-20-30 [Credit: 12]
- 1120-20-30 [Credit: 12]

### Biology
- 1210-20 [Credit: 12]
- Zoology 1118-28-38 [Credit: 12]
- 3211-21-31 and 1119-28-38 [Credit: 8]

### Physics
- 2120-20-30 [Credit: 12]
- 2131-21-31 or and/or zoology [Credit: 8]
- 2210-20-30 [Credit: 12]

### Triad II
- Language, Literature, & the Arts
- Speech 2311 [Credit: 12]
- Sociology 2010-20 [Credit: 3]
- Speech 2311 [Credit: 8]

### Senior
- Completion of major program and B.A. requirements [Credit: 45]

### Total 180 hours

<table>
<thead>
<tr>
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<tr>
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<td>6</td>
<td>Physical Education</td>
</tr>
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<td>12</td>
<td>Science-Medical Technology</td>
</tr>
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<td>Pre-Medical Technology</td>
</tr>
<tr>
<td>12</td>
<td>Pre-Dental Hygiene</td>
</tr>
<tr>
<td>12</td>
<td>Pre-Dental Hygiene</td>
</tr>
</tbody>
</table>

### PRE-DENTAL HYGIENE PROGRAM
A Bachelor of Science in Dental Hygiene is granted upon completion of a program which includes 96 hours of prescribed courses in the College of Liberal Arts and six quarters of study at UTC.

### PRE-MEDICAL TECHNOLOGY PROGRAM
Admission to the course of study in medical technology from The University of Tennessee is based upon completion of the last 45 hours of credit in residence at UTK before entering UTCCHS.

### OTHER REQUIREMENTS
- 24 hours in biological science in the electives to satisfy the requirement for admission to the College of Medicine.
- Baccalaureate degree before admission to the College of Medicine.

### Health Professions Office
Information about the pre-medical technology program and requirements in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

### Medical Laboratory Technician Program
Prerequisites: Completion of major program and B.A. requirements.

### Total 180 hours

<table>
<thead>
<tr>
<th>Hours Credit</th>
<th>Required Courses</th>
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<td>12</td>
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<tr>
<td>12</td>
<td>Chemistry</td>
</tr>
<tr>
<td>8</td>
<td>Microbiology</td>
</tr>
<tr>
<td>8</td>
<td>Biology</td>
</tr>
<tr>
<td>6</td>
<td>Microbiology</td>
</tr>
<tr>
<td>6</td>
<td>Mathematics</td>
</tr>
</tbody>
</table>

### Other Requirements
- Baccalaureate degree before admission to the College of Medicine.
must complete 135 credit hours of prescribed courses while enrolled in the College of Liberal Arts. The program at Memphis is 12 months in length and leads to the degree of Bachelor of Science in Medical Technology from UTCHS. Classes are offered in January and July and application must be made one year in advance.

Students interested in the medical technology program of study at UTCHS are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for the specific requirements for admission.

Bulletins describing both pre-medical technology programs in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

PRE-NURSING PROGRAM

The minimum requirements for admission to the College of Nursing at UTCHS are 48 hours of prescribed courses in the Liberal Arts. The program at Memphis, which leads to the Bachelor of Science in Nursing from UTCHS, is three years in length. Registered nurses who wish to work for a degree of Bachelor of Science in Nursing must complete 54 hours of prescribed courses to qualify for admission with advanced standing.

Students interested in the pre-nursing program are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for more information. Bulletins describing the pre-nursing program may be obtained from the Health Professions Office, 218 Ayres Hall.

Note: A degree in nursing is also available at The University of Tennessee, Knoxville. Information may be obtained from the dean of the College of Nursing. Pre-Medical Technology Program prepares students to be admitted to the College of Pharmacy at UTCHS. The Bachelor of Science in Pharmacy degree is conferred by UTCHS upon completion of three years of professional study and requirements of any of the three programs. The Pharmacy program prepares students to be admitted to the College of Pharmacy at UTCHS upon completion of 48 hours of prescribed courses of study in the College of Liberal Arts. Further information may be obtained from the Health Professions Office, 218 Ayres Hall.

PRE-PHARMACY PROGRAM

The college offers three programs preparing students to be admitted to the College of Pharmacy at UTCHS. The Bachelor of Science in Pharmacy degree is conferred by UTCHS upon completion of three years of professional study and requirements of any of the three programs. The Pharmacy program prepares students to be admitted to the College of Pharmacy at UTCHS upon completion of 48 hours of prescribed courses of study in the College of Liberal Arts. Further information may be obtained from the Health Professions Office, 218 Ayres Hall.

PRE-PHYSICAL THERAPY PROGRAM

Admission to the physical therapy program at UTCHS, leading to the degree of Bachelor of Science in Physical Therapy from UTCHS, requires completion of 135 hours of prescribed courses while enrolled in the College of Liberal Arts. The program at Memphis is 15 months in length.

Students interested in the pre-physical therapy program are encouraged to consult with health professions advisers in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for more information. Bulletins describing the physical therapy program in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

OTHER HEALTH PROFESSIONS

Cyto/technology

Histotechnology

Optometry

Radiology/technology

Veterinary Medicine

A library of materials about career opportunities in the health professions, including most allied health areas, has been developed and is located in the Health Professions Office, 218 Ayres Hall.

Academic...
A. Recommended courses of study in ceramics, juniors in course numbers which most closely parallel qualified for honors courses will enroll in periodic review by the faculty. Students courses of the areas of studio instruction, and student. Honors courses may be taken in any one or more general or departmental honors continuing motivation and interest must be overall grade-point average of at least 90 hours. Admittance to the College Artists Program will be noted on the student's foreign study in addition to formal classwork. Participation and graduation in the College Artists Program will be noted on the student's transcript. Students may apply for the program upon completion of 45 credit hours, but will not necessarily be considered for admission of 90 hours. Admittance to the College Artists Program is based on four criteria. (1) an overall grade-point average of at least 3.0, (2) a portfolio of work, (3) a proposed course of study, and (4) a personal interview. A minimum grade-point average of 3.25, at least 12 hours per quarter, and evidence of continuing motivation and interest must be maintained to remain in the program. Each College Artist will normally enroll in one or more general or departmental honors course each quarter, and must participate in an honors exhibit prior to graduation.

STUDIO HONORS COURSES Courses are designed for the exceptional student. Honors courses may be taken in any of the areas of studio instruction, and admittance is based on the following criteria: A. Grade-point average of 3.2 in studio art courses B. Portfolio of class and outside work C. Recommendation of the studio faculty, and approval of the instructor. Continued participation is subject to periodic review by the faculty. Students qualified for honors courses will enroll in course numbers which most closely parallel their present level, i.e., sophomores in 2008, junors in 2008, seniors in 4008. Each course number may be repeated for a maximum of 24 hours credit.

Bachelor of Music The Department of Music offers the degree of Bachelor of Music with concentrations in music theory, composition, music history and literature, piano literature, and applied music (voice—piano—organ—organ and church music—strings—woodwind, brass, and percussion instruments—multiple woodwind instruments—studio music and jazz—Suzuki string pedagogy). The study is designed to prepare students for graduate study or for positions in music for which a professional degree is required. Students who plan to work for this degree are assigned an advisor in the Department of Music at the time they enter the program. Continuation in the program at the 3000 level requires the achievement of an average of 2.5 or better in all music courses taken. The minimum requirement for the degree is 180 credit hours, including the specified courses listed below.

Note: In addition to the concentrations offered in the Bachelor of Music curriculum, a major in music is in concentration in either music history and literature or applied music is available in the Bachelor of Arts curriculum.

MUSIC THEORY Hours Credit

| English 1010-20-31 or 32 or 33 | 9 |
| Music 1111-21-31 | 3 |
| Music 1121-23 | 3 |
| Music 1540 | 3 |
| Applied music | 6 |
| Total | 18 |

MUSIC HISTORY AND LITERATURE Free Electives

| English 1010-20-31 or 32 or 33 | 9 |
| Music 1111-21-31 | 9 |
| Music 1340 | 3 |
| Applied music | 3 |
| Total | 18 |

Foreign language (French or German)

| Music 2000 | 9 |

Music 2340

| Music 3199 | 3 |
| Music 2111-21-31 | 9 |
| Music 2121-22-23 | 3 |
| Music 2131-23-24 | 3 |
| Music 2141 or 4131 | 3 |
| Ensemble | 3 |
| Liberal arts electives (not in music) | 12 |
| Total | 58 |

Music 2361

| Music 3199 | 3 |
| Music 2111-21-31 | 9 |
| Music 2121-22-23 | 3 |
| Music 2131-23-24 | 3 |
| Music 2141 or 4131 | 3 |
| Ensemble | 3 |
| Total | 58 |

Music 3121

| Music 3199 | 3 |
| Music 2111-21-31 | 9 |
| Music 2121-22-23 | 3 |
| Music 2131-23-24 | 3 |
| Music 2141 or 4131 | 3 |
| Ensemble | 3 |
| Total | 58 |

Music 3113-21-31

| Music 3199 | 3 |
| Music 2111-21-31 | 9 |
| Music 2121-22-23 | 3 |
| Music 2131-23-24 | 3 |
| Music 2141 or 4131 | 3 |
| Ensemble | 3 |
| Total | 58 |

Music 3111-21-31

| Music 3199 | 3 |
| Music 2111-21-31 | 9 |
| Music 2121-22-23 | 3 |
| Music 2131-23-24 | 3 |
| Music 2141 or 4131 | 3 |
| Ensemble | 3 |
| Total | 58 |

Music 3101-21-31

| Music 3199 | 3 |
| Music 2111-21-31 | 9 |
| Music 2121-22-23 | 3 |
| Music 2131-23-24 | 3 |
| Music 2141 or 4131 | 3 |
| Ensemble | 3 |
| Total | 58 |

Music 3081

| Music 3199 | 3 |
| Music 2111-21-31 | 9 |
| Music 2121-22-23 | 3 |
| Music 2131-23-24 | 3 |
| Music 2141 or 4131 | 3 |
| Ensemble | 3 |
| Total | 58 |

Music 3041

| Music 3199 | 3 |
| Music 2111-21-31 | 9 |
| Music 2121-22-23 | 3 |
| Music 2131-23-24 | 3 |
| Music 2141 or 4131 | 3 |
| Ensemble | 3 |
| Total | 58 |

Music 3001

| Music 3199 | 3 |
| Music 2111-21-31 | 9 |
| Music 2121-22-23 | 3 |
| Music 2131-23-24 | 3 |
| Music 2141 or 4131 | 3 |
| Ensemble | 3 |
| Total | 58 |

Music 2981

| Applied music | 3 |
| Total | 12 |

Music 2961

| Applied music | 3 |
| Total | 12 |

Music 2941

| Applied music | 3 |
| Total | 12 |

Junior

| Music 2901 | 3 |
| Total | 6 |

Senior

| Music 2901 | 3 |
| Total | 6 |

Piano Literature

| English 1010-20-31 or 32 or 33 | 9 |
| Music 1111-21-31 | 9 |
| Music 1340 | 3 |
| Total | 18 |

Junior

| Music 2340 | 3 |
| Total | 6 |

Senior

| Music 2340 | 3 |
| Total | 6 |

Note: In addition to the concentrations offered in the Bachelor of Music curriculum, a major in music is in concentration in either music history and literature or applied music is available in the Bachelor of Arts curriculum.
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<td>Ensemble</td>
</tr>
<tr>
<td>Music 2000</td>
</tr>
<tr>
<td>TOTAL: 185 hours</td>
</tr>
</tbody>
</table>

**NOTE:** The curricula in strings, woodwinds, brass, and percussion; multiple woodwinds; and voice allow 12 hours of ensemble credit to apply toward electives. This is in addition to the hours in ensemble listed in the tabular resumes.

### Bachelor of Science in Chemistry

Students who desire to major in chemistry may select either the curriculum leading to the degree of Bachelor of Arts or that leading to the degree of Bachelor of Science in Chemistry. This latter program is approved by the American Chemical Society and is designed to train students to go directly into positions in the chemical industry or to enter graduate study leading to positions in research or college teaching.

A minimum average of C must be made on all courses toward graduation, and at least a 2.5 average must be made on all chemistry courses applied toward the degree of Bachelor of Science in Chemistry.

**COOPERATIVE PROGRAM IN CHEMISTRY**

A cooperative program is available to students in the B.S. in Chemistry curriculum. After the freshman year the student alternates a quarter in school with a quarter in a job in the chemical industry. The program normally requires five years and involves a total of seven work quarters and twelve school quarters. Students are required to have at least a 2.5 average to enter and remain in the program. Some opportunity exists for students to enter the program later than the end of the freshman year. Students interested should make application to the head of the department at least one quarter in advance of the beginning of the first work period. Further information will be supplied on request.

### CURRICULUM REQUIREMENTS

**Freshman**

<table>
<thead>
<tr>
<th>Course Category</th>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1110-20-30</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Math 1840-50-60</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Language, Literature, Art Triad</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>History and Society Triad</td>
<td>8</td>
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</tr>
<tr>
<td>Science</td>
<td>8</td>
<td></td>
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<tr>
<td>Chemistry 3211-21-31</td>
<td>8</td>
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<tr>
<td>Chemistry 3219-29-39</td>
<td>8</td>
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<tr>
<td>Math 2840-50-60</td>
<td>18</td>
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<tr>
<td>Physics 3210-20-30</td>
<td>12</td>
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<tr>
<td>Psychology 2800</td>
<td>8</td>
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<tr>
<td>English</td>
<td>8</td>
<td></td>
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<tr>
<td>Foreign language (Option 1 or 2)</td>
<td>16</td>
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</tr>
<tr>
<td>History and Society</td>
<td>8</td>
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**Sophomore**

<table>
<thead>
<tr>
<th>Course Category</th>
<th>Course Code</th>
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<tbody>
<tr>
<td>English 1111-23-33</td>
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<tr>
<td>Music 2113-23-33</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Music 2210-20-30</td>
<td>9</td>
<td></td>
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<tr>
<td>Music 3002-33</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Music 2830</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Music 1000</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Principal applied study</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Music 2000</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TOTAL: 30 hours</td>
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<td></td>
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</table>

**Junior**

<table>
<thead>
<tr>
<th>Course Category</th>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 2111-23-33</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Music 2113-23-33</td>
<td>9</td>
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</tr>
<tr>
<td>Music 2210-20-30</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Music 3002-33</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Music 2830</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Music 1000</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Principal applied study</td>
<td>3</td>
<td></td>
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<tr>
<td>Ensemble</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Music 2000</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TOTAL: 30 hours</td>
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<td></td>
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</table>

**Senior**

<table>
<thead>
<tr>
<th>Course Category</th>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 2111-23-33</td>
<td>9</td>
<td></td>
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<tr>
<td>Music 2113-23-33</td>
<td>9</td>
<td></td>
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<tr>
<td>Music 2210-20-30</td>
<td>9</td>
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<tr>
<td>Music 3002-33</td>
<td>9</td>
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<tr>
<td>Music 2830</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Music 1000</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Principal applied study</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Music 2000</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TOTAL: 30 hours</td>
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</table>

**Graduate**

<table>
<thead>
<tr>
<th>Course Category</th>
<th>Course Code</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>English 2111-23-33</td>
<td>9</td>
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</tr>
<tr>
<td>Music 2113-23-33</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Music 2210-20-30</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Music 3002-33</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Music 2830</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Music 1000</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Principal applied study</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Music 2000</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TOTAL: 30 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**College of Liberal Arts**

179
Freshman work in related disciplines. Students are accepted into planning from a College of Liberal Arts. Further information about courses and curricula, as well as requirements for admission, will be found in the catalog of the School of Social Work.

### Library Science

Students majoring in political science who plan to study law should consult the statement regarding admission to Law.

### Social Work

Students who wish to prepare for graduate professional training in social work will find a brief description of the program of the School of Social Work on page 52. Detailed information about courses and curricula, as well as requirements for admission, will be found in the catalog of the School of Social Work.

### Teaching

Students in the College of Liberal Arts who wish to be certified for secondary school teaching must satisfy state certification requirements as well as all degree requirements of the College of Liberal Arts, and must be recommended for certification by the College of Education. The College of Education is approved by the National Council for Accreditation of Teacher Education (NCATE); recommendation for certification by the college, therefore, in effect certifies the student in 30 states. Application for admission to the Teacher Education Program should be made during the second or third quarter of the sophomore year in the office of the dean of the College of Education, 213 Claxton Education Building.

### General Information

Admission to the College

For information regarding admission to the College of Liberal Arts, see page 18.

Course Load

The average course load in the college for any quarter is 14-16 credit hours. The University defines full-time undergraduate students as those who register for a minimum of 12 hours. The maximum number of hours which may be taken by liberal arts students is 17, exclusive of elective work in ensemble music and physical education. Exceptions to this rule will require approval by the Associate Dean for Student Academic Affairs (218 Ayres Hall).

Lower Division—Upper Division

Courses numbered at the 1000 and 2000 levels are considered lower division and are normally taken by students in the freshman and sophomore years. Courses numbered 3000 and above are upper division and are designed for students at the junior and senior levels.

Satisfactory/No Credit Courses

A few courses in the college are offered only on a Satisfactory/No Credit basis and students may elect to take others on this basis, except in areas where the option is specifically prohibited. Such courses, if successfully completed, will count as hours for graduation although neither S nor NC grades will be calculated in the student’s grade point average. Satisfactory is defined as C or better work on the traditional grading scale and No Credit is defined as less than C.

<table>
<thead>
<tr>
<th>Preparation for Other Professions</th>
<th>Law</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students who plan to study law should consult the statement regarding admission to the College of Law (page 167) and discuss their programs with advisers in the Liberal Arts Advising Center.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Library Science</th>
<th>Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students in the College of Liberal Arts interested in beginning positions in a library or in preparation for future graduate study in professional librarianship. For further information, see page 50 or consult the Director of the Graduate School of Library and Information Science.</td>
<td>Students who wish to consider a career in city and regional planning or a related field will find a brief description of the program of the Graduate School of Planning on page 51. Students are accepted into planning from a broad variety of undergraduate backgrounds. Detailed information on the planning profession, admission requirements, and the program of study may be obtained from the Graduate School of Planning.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public Administration</th>
<th>Freshman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students majoring in political science who wish to prepare for an administrative career in the public service may select courses to fit that objective. The concentration appearing below is suggested for students with public service career interests. The degree to be awarded is a Bachelor of Arts with a major in political science, augmented by supportive work in related disciplines.</td>
<td>These courses are recommended for students who plan to work in related disciplines.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics 2110-20-30</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Political Science 2500-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Economics 2460</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>Junior</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 2140-20</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Chemistry 2410-20</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Chemistry 2120-20</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Psychology 2510-20</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Language, Literature, Art Triad</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>History and Society Triad</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 4110</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Chemistry 4110-20 or 4610 and 4710</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Chemistry 4140</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Chemistry electives</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL: 166 (169) hours

Two or three years of a single foreign language in order of preference, Spanish, French, or German, may be substituted by courses from the following: Chemistry 4430, 4550, 4710; Sociology 1110-20; 1120. We limit eight hours of these electives must be in a science other than chemistry; the rest may be in any area. Of the eight hours required for a science other than chemistry, 3 credits can be in courses in Bahasa Indonesia, Afrikaans, or Native American Languages.

Courses numbered at the 1000 and 2000 levels are considered lower division and are normally taken by students in the freshman and sophomore years. Courses numbered 3000 and above are upper division and are designed for students at the junior and senior levels.

2.2 cumulative grade point average. Satisfactory is defined as C or better work on the traditional grading scale and No Credit is defined as less than C.
The following regulations apply:

1. S/NC courses, except those offered only on a credit/no credit grading basis, may be counted toward graduation in the manner specified in the catalog. This applies also to major or minor requirements unless specifically prohibited by petition. This restriction applies also to major or minor, prerequisites or corequisites.

2. The maximum number of S/NC elective hours which may be counted toward graduation is 30, exclusive of courses offered only on a credit/no credit basis. It may include certain graduation for approved off-campus study.

3. A student who desires to take a course which is offered only S/NC, except those offered only S/NC, physical education courses, and/or satisfactory hours earned by examination, military service, etc. may limit the number of hours which may be applied toward a specific major.

4. A transfer student who has more than 30 S/NC or equivalent hours earned prior to admission to The University of Tennessee, Knoxville, may count all of these hours toward graduation but may not elect additional S/NC hours.

5. A transfer student with S/NC or equivalent credit earned prior to admission to The University of Tennessee, Knoxville, in a course which satisfies a Triad requirement may count it for that purpose. In the case of a course which satisfies a major or minor requirement, the student must discuss with their adviser possible limitations on exercise of the S/NC option.

The option of taking courses on a S/NC basis is provided to enable a student to take courses in which the student is not well and, motivated by intellectual curiosity, to explore subject matter in which performance may be somewhat less outstanding than work in preferred subject fields.

Six opportunities are provided for students to seek admission to graduate or professional schools (especially in the health sciences) should they wish to continue in this relationship to the advising member at which time they may be transferred for credit which can be applied toward a given major.

Liberal Arts Advising Center

Academic advising for students of the college is offered through the Liberal Arts Advising Center, 202 Ayres Hall, as well as through the several major departments. The Advising Center is staffed on a regular schedule by members of the college faculty, each of whom has been trained for this specialized work. Students in their first or second year of study are assigned to the Advising Center where they may relate themselves to a member of the faculty advisor of their choice or consult the person on duty at the time they may be transferred for advising to a faculty member in the major department.

Student Academic Affairs Office

Academic advising for students is also provided through the Student Academic Affairs Office, 219 Ayres Hall. The office serves primarily those students not assigned to the Liberal Arts Advising Center, helping them with minor academic needs relating to the development of their academic programs, satisfying graduation requirements, etc. For those who are planning careers in the health sciences it provides a liaison with the Center for the Health Sciences.

Office of African and Afro-American Studies

The Office of African and Afro-American Studies, 802 Volunteer Blvd., Suite 416, cooperates with the various departments and colleges of the University with respect to the development of curricular changes and innovations which incorporate the Black experience into academic and extracurricular programs of the institution. Supplies information on financial assistance for Black students, and serves as the focal point for the coordination and development of an improved and expanded African and Afro-American Studies Program at the University.

Bureau of Public Administration

The University has established in the college a Bureau of Public Administration for the purpose of promoting sound governmental administration through research, publication, and consultation. Offices and staff are maintained in both Knoxville and Nashville. The head of the Department of Political Science serves as director of the Bureau of Public Administration.

Psychological Clinic

The Psychological Clinic is an out-patient psychodiagnostic and treatment center established by the University within the Department of Psychology. It provides advanced graduate training for students in clinical psychology and also serves as a training center for the professional training of students in the School of Social Work. Referrals for treatment come from many sources, including self-referrals and referrals by relatives and friends and by various social and medical agencies. The clinic services are available to anyone regardless of sex, race, and type of insurance.

University Theatres

The Department of Speech and Theatre offers a full schedule of dramatic presentations in three different theatres. The Clarence Brown Theatre has outstanding facilities for proscenium and open staging and for film productions, and, in a separate Studio Theatre, for laboratory productions. Carousel Theatre is designed for arena staging and can be converted for open-air performances in the summer.

Instructional Facilities

The college carries out its varied teaching and research activities in more than two dozen principal buildings in two areas of the campus, as well as in a number of converted residences which provide office, studio, or clinical space. The older of the two clusters of buildings is on "The Hill," and includes Ayres Hall (psychology and mathematics), Austin Peay (psychology and speech, meteorology), Hesler (biological sciences, physics), Peay (psychology and mathematics), Mount (political science), McClung (clerical and computer science), and the Humanities-Social Sciences building.

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philosophy, political science, religious studies, sociology, and speech and theatre), the Music Building (music), and the Hearing and Speech Center (audiology and speech pathology). In this area also are the McClung Museum and the Clarence Brown and Carolee Theatre, as well as the Undergraduate Library. Anthropology is housed in South Stadium, and art utilizes several small buildings for its instruction.

College Offices
The College Administrative Office is in 226 Ayres Hall. The Student Academic Affairs Office is in 214 Ayres Hall. The Liberal Arts Advising Center is in 220 Ayres Hall.

Departments of Instruction
American Studies

Ancient Mediterranean Civilizations

See Cultural Studies.

Anthropology (122)

See Cultural Studies.

3590 African Religions (4) (Same as Religious Culture 3150 .) Engaging traditions and methodologies used in comparative cultural studies.2530 recommended.

3670 Principles of Archaeology (3) Research strategies in archaeological excavation, interpretation, and explanation. Prepar: 2520 or consent of instructor.

3710 Ethnographic Research (3) Introduction to anthropological field methods. Prepar: Consent of Instructor.

3800 Language and Culture (3) Survey of non-Western peoples and their cultures, focusing on sociopolitical aspects of their present. Emphasis on 18th and 19th centuries.

3811 Survey of Non-Western Peoples (3) Survey of non-Western peoples. Prepar: Consent of Instructor.

3820 European Prehistory I (3) Cultural developments during Paleolithic, Mesolithic, and Neolithic periods. Prepar: Consent of Instructor. 3 hrs and 1 lab.

3830 European Prehistory II (3) Cultural developments during Metal Ages. From close of Neolithic through Iron Age. Prepar: Consent of Instructor. 3 hrs and 1 lab.

3840 Ancient Civilization of Mesoamerica (3) Introduction to anthropological methods and cultural diversity in Mexico and Central America beginning with earliest cultures and proceeding to contact with Europeans. 2520 recommended.

3850 Early Anthropology of Spanish America (3) Ethnographic survey indigenous cultures of the Americas and methodology. Prepar: Consent of Instructor. 3 hrs and 1 lab.

3900 Human Osteology (4) Intensive examination of the human skeleton. Prereq: 2510 or consent of instructor. 3 hrs and 1 lab.

3910 Human Identification (3) Introduction to anthropological field methods. Prepar: Consent of Instructor.

3920 Medical Anthropology: Lecture 1 (3) Survey of medical anthropology. Emphasis on Western and non-Western peoples and their health, disease, treatment, death, and related concepts. Prepar: 2520 or consent of Instructor.

3930 Medical Anthropology: Lecture 2 (3) Survey of medical anthropology. Emphasis on Western and non-Western peoples and their health, disease, treatment, death, and related concepts. Prepar: 2520 or consent of Instructor.

3940 Medical Anthropology: Laboratory 1 (3) Laboratory work related to medical anthropology. Emphasis on Western and non-Western peoples and their health, disease, treatment, death, and related concepts. Prepar: 2520 or consent of Instructor.

3950 Principles of Archaeology (3) Research strategies in archaeological excavation, interpretation, and explanation. Prepar: 2520 or consent of instructor.

3970 Ethnographic Research (3) Introduction to anthropological field methods. Prepar: Consent of Instructor.

3990 Human Osteology (4) Intensive examination of the human skeleton. Prereq: Consent of Instructor. 3 hrs and 1 lab.

4101 Foreign Study (1-4) See page 181.

4102 Off-Campus Study (1-16) See page 181.

4103 Independent Study (1-8) See page 181.

4104 Education in Cultural Perspectives (3) See Edusc. C & 14110 .

4105 Western Education: Anthropological Approaches (3) Analysis of traditional educational practices among non-Western peoples and problems encountered from application of Western models of education among those peoples. Particular attention is given to American indians, African tribal groups, and Asian cultures.

4200 Contemporary North American Indians (3) Survey of Indian cultures from initial Euro-American contact to present. emphasis on change in culture. Prepar: Consent of Instructor. 3530 or consent of instructor.

4201 Ethnographic Research Techniques I (3) Methods of collecting, organizing, and utilizing data. Prepar: Consent of Instructor.

4202 Applied Cultural Anthropology (3) Applied principles of anthropological theory, methodology, and research in programs of community and national development. Prepar: 2540 or consent of instructor. 3 hrs and 1 lab.

4203 Survey of Prehistoric Peoples of North America from initial occupation to European contact. Prepar: Consent of Instructor. 3 hrs and 1 lab.

4204 Survey of Prehistoric Peoples of North America (4) Survey of prehistoric peoples of North America from initial occupation to European contact. Prepar: Consent of Instructor. 3 hrs and 1 lab.

4205 Anthropology of United States and Canada (3) Survey of prehistoric peoples of North America from initial occupation to European contact. Prepar: Consent of Instructor. 3 hrs and 1 lab.

4210 South American Ethnohistory (3) Ethnographic survey of South American cultures and methodology. Prepar: Consent of Instructor. 3 hrs and 1 lab.

4211 Non-Western Education and Anthropology (3) Analysis of education among those peoples. Particular emphasis on problems encountered from application of Western models of education among those peoples. Particular attention is given to American indians, African tribal groups, and Asian cultures.

4220 Ethnographic Research Techniques II (3) Methods of collecting, organizing, and utilizing data. Prepar: Consent of Instructor.

4340 Field Work in Archaeology (3-9) Practicum in archaeological field work under rotating auspices. May be repeated. Maximum credit 9 hrs.

4350 Readings in Archaeology (1-9) Intensive reading of anthropological literature. Prereq: 4250.

4360 Readings in Archaeology (1-9) Intensive reading of anthropological literature. Prereq: Consent of Instructor.

4370 Readings in Anthropology (1-9) Intensive reading, problem oriented. For anthropology majors or seniors only. Others by consent of instructor. May be repeated to a maximum of 9 credit hrs.

4410 African Social Studies (3) Survey of African societies, their cultural diversity and human ecology in a real perspective. 2530 recommended.

4420 African Social Studies (3) Survey of African societies, their cultural diversity and human ecology in a real perspective. 2530 recommended.

4430 African Social Studies (3) Survey of African societies, their cultural diversity and human ecology in a real perspective. 2530 recommended.

4440 African Social Studies (3) Survey of African societies, their cultural diversity and human ecology in a real perspective. 2530 recommended.

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4460 African Social Studies (3) Survey of African societies, their cultural diversity and human ecology in a real perspective. 2530 recommended.

4470 African Social Studies (3) Survey of African societies, their cultural diversity and human ecology in a real perspective. 2530 recommended.

4480 African Social Studies (3) Survey of African societies, their cultural diversity and human ecology in a real perspective. 2530 recommended.

4490 African Social Studies (3) Survey of African societies, their cultural diversity and human ecology in a real perspective. 2530 recommended.
1115 Studio Fundamentals (4) Surface composition and color. Primarily for art, architecture, interior design, and art education majors.

1130 Studio Fundamentals (4) Real space and volume. Primarily for art, architecture, art education, and interior design and housing majors.

1150 Introduction to Crafts (4) Presence of art in immediate environment; design used in daily living by cultures different from our own; emphasis on awareness of design, 2 1/2 and 2 hrs.

2305 Experiencing Art (4) Form and meaning in visual arts. Lecture-discussion. Especially for non-major, non-art majors.

1915 World Art (4) Art from ancient, classical, and imperial civilizations. Art in services of Buddhism, Christianity, and Islam; art as observation of national cultures. Course content drawn from art of Europe, Asia, and Americas in periods from prehistory to 1600.

1925 World Art II (4) Study through slides and lectures of works of great artists from Leonardo da Vinci and Michelangelo to Matisse and Picasso.

2006 Special Topics (4) Student or instructor initiated course offered at convenience of department. Prerequisite: Determined by department. May be repeated. Maximum credit 18 hrs.

2006 Honors: Art (4) Intensified study for the exceptional student. Prerequisite: May be repeated for a maximum of 24 credit hrs.

2105 Survey of Drawing (4) Further exploration and refinement of fundamental aspects of drawing with more emphasis on composition and techniques. Prerequisite: 1115.

2115 Life Drawing (4) Further development of drawing and observational skills with special emphasis on the figure in environment. Prerequisite: May be repeated. Maximum credit 16 hrs.

2117 Intermediate Design and Color (4) Prerequisite: 1115-25-35.

2125 Production (4) Theory and practice of mezzotint and other intaglio techniques. Prerequisite: 2515.

2130 Special Topics in Painting (4) Student or instructor initiated course offered at convenience of department. Prerequisite: Determined by department. May be repeated. Maximum credit 16 hrs.

2135 Painting II (4) Techniques of composition and observational skill with special emphasis on expression in drawing and painting. Prerequisite: 2115 or 3415 taken after this course. Prerequisite: 1115, 1125, 1135 or consent of instructor.

2140 Wood Sculpture: Studio Projects (4) Application of traditional and contemporary techniques in designing wood as a sculptural medium. Prerequisite: 1115-25-35 for art majors. None for non-art majors.

2215 Painting II (4) Techniques of composition in contemporary painting methods. May be repeated. Maximum credit 8 hrs.

2220 Special Topics in Printing (4) Capacities of oil and acrylic. Prerequisite: 1115, 1125, 1135 for art majors; none for non-art majors.

2225 Production (4) Theory and practice of mezzotint and other intaglio techniques. Prerequisite: 2515.

2230 Introduction to Fiber Design (4) Exploration of printing, resist, and direct application methods of dyeing fabric and paper. Prerequisite: 2255 or 2250.

2235 Production (4) Techniques of wax and non-woven constructions in loop-foiling, batik, block-printing, stenciling, and screen-printing. Prerequisite: 2230 or 2255 or 2250.

2240 Special Topics in Fiber and Fabric (4) Student or instructor initiated course offered at convenience of department. Prerequisite: Determined by department. May be repeated. Maximum credit 18 hrs.

2255 Production (4) Techniques of wax and non-woven constructions in loop-foiling, batik, block-printing, stenciling, and screen-printing. Prerequisite: 2230 or 2250.

2260 Special Topics in Printing (4) Application of traditional and contemporary techniques in designing for paper, wood, and screen-printing. Prerequisite: 2235 or 2255 or 2250. May be repeated. Required maximum credit 6 hrs.

2265 Fiber Design II: Weaving (4) Application of traditional techniques in weaving in floor loom weaving. Prerequisite: 2235 or 2250. May be repeated. Required maximum credit 6 hrs.

2270 Fabric Design II: Screen Printing (4) Utilization of pattern, repeat, and design in contemporary techniques of exploring the design surface of fabric. Prerequisite: 2250, 2280 also required for non-art majors.

2275 Fiber Design III: Weaving (4) Application of weaving techniques to three-dimensional forms in floor loom weaving. Prerequisite: 2235 or 2250 also recommended. May be repeated. Required maximum credit 6 hrs.

2280 Introduction to Watercolor (4) Capacities of transparent watercolor and other water-based media. Prerequisite: 1115, 1125, 1135 for art majors, none for non-art majors.

2285 Watercolor II (4) Techniques that make watercolor a major medium of expression. Prerequisite: Determined by department. Maximum credit 18 hrs.

2304 Introduction to Sculpture (4) Problems in clay modeling, construction, and basic casting techniques. Prerequisite: 1115, 1125, 1135 for art majors, none for non-art majors.

2306 Special Topics in Sculpture (4) Student or instructor initiated course offered at convenience of department. Prerequisite: Determined by department. May be repeated. Maximum credit 18 hrs.

2315 Watercolor (4) Primarily for students in clay, wood, and iron working. Focus will be on watercolor techniques and experience in particular area of sculpture as agreed by student and instructor. May be repeated. Maximum credit 8 hrs. Prerequisite: 2245.

2340 Sculpture: Life Modeling (4) Modeling techniques in clay and wax, working from figures. Prerequisite: 2304 or equivalent. Emphasis on modeling process as both observational and manual-handling technique. Students desiring to cast their work are advised to do so in 2415 or 3415 taken after this course. Prerequisite: 2245. Prerequisite: 1115, 1125, 1135; consent of instructor.

2345 Introduction to Wood Sculpture (4) Exploration of wood as design media. Introduction of power tools and use of saws, miter box, sanding, and use of joints. Prerequisite: 1115-25-35 for art majors. None for non-art majors.

2350 Wood Sculpture: Studio Projects (4) Application of traditional and contemporary techniques in designing wood as a sculptural medium. Prerequisite: 2304. May be repeated. Required maximum credit 6 hrs.

2355 Introduction to Communication Design (4) Study of methods of advertising design. Study of use of designers' tools and equipment. Prerequisite: 2304. May be repeated. Required maximum credit 8 hrs.

2360 Special Topics in Communication Design (4) Student or instructor initiated course offered at convenience of department. Prerequisite: Determined by department. May be repeated. Required maximum credit 16 hrs.


2370 Graphic Design for Non-Majors: (4) Application of interlocking, coting, and layering in contemporary techniques of advertising design. Prerequisite: 2304. May be repeated. Maximum credit 8 hrs.

2375 Fabric Design II: Non-Woven (4) Application of interlocking, coting, and layering in contemporary techniques of advertising design. Prerequisite: 2304. May be repeated. Maximum credit 8 hrs.

2380 Fabric Design III: Printing (4) Utilization of pattern, layout, and design in contemporary techniques of exploring the design surface of fabric. Prerequisite: 2250, 2280 also required for non-art majors.

2385 Fiber Design III: Weaving (4) Application of weaving techniques to three-dimensional forms in floor loom weaving. Prerequisite: 2235 or 2250. May be repeated. Required maximum credit 6 hrs.
4270 Fabric Design IV: Advanced Projects (4) Pre-
req: 3270. May be repeated. Maximum credit 12 hrs.
4275 Fiber Design IV: Advanced Projects (4) Pre-
req: 3275. May be repeated. Maximum credit 12 hrs.
4315 Watercolor IV (4) Individual concepts in per-
sonal expression with varied water-based media on
speakers and field trips are employed. Pre-req: 4015.
4305 Special Topics in Printmaking (4) Student or in-
structor initiated course offered at convenience of
department. Pre-req: Determined by department.
May be repeated. Maximum credit 12 hrs.
4301 Corporate Design (4) Concepts of corporate
graphics. Problems include all areas of graphic de-
sign and illustration. Pre-req: 3320. May be repeated.
Maximum credit 12 hrs.
4305 Portfolio and Exhibition Techniques (4) Appli-
cation of design principles as they relate to promot-
ion, advertising, printing, packaging, jewelry, and
three-dimensional artists. Pre-req: Senior or graduate
standing or consent of instructor.
4335 Senior Thesis (4) Oral-aural communication with
special problems and techniques. May be re-
peated. Maximum credit 12 hrs.
4406 Special Topics in Sculpture (4) Student or in-
structor initiated course offered at convenience of
department. Pre-req: Determined by department.
May be repeated. Maximum credit 16 hrs.
4415 Sculpture IV (4) Individual development of
sculptural problems and techniques. May be re-
peated. Maximum credit 12 hrs.
4420 Wood Design: Advanced Practical Construc-
tion (4) Application of laminations, carving, and
joining techniques in designing and construction of
contemporary furniture. Pre-req: 2460 or consent of
instructor. May be repeated. Maximum credit 12
hrs.
4504 Communication Design (4) Intermedi-
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Attention to variations considered normal or different. Many of the courses offered in the department cover information that should be valuable to students planning to enter any social service discipline. Suggested electives for non-departmental majors include 3010, 3040, 3050, 3100, 3110, 4040, 4330, 4500, 4720, plus not less than 9 nor more than 15 credit hours from the following: 3070, 3130, 4340, 4400, 4610, 4930, 4940.

Additional recommended courses for audiology majors are Audiology and Speech Pathology 3010, 3040, 3050, 3060, 3100, 3110, 4040, 4330, 4500, 4720, plus not less than 9 nor more than 15 credit hours from the following: 3065, 4320, 4400, 4470, and 4720.

Additional recommended courses for speech pathology majors are: Audiology and Speech Pathology 3020, 3030, 3100, 3110, 4040, 4400, 4470, 4720, Anthropology 2500 or 2510, Psychology 2520, 2520, 2530, 2540, 3150, Special Education 4040, 4311, 4341, 4342, 4110, 4130, 4160, and Child and Family Studies 4810.

1261 English Pronunciation for Foreign Students (3) Focuses on spoken English pronunciation and stress patterns. Prereq: one year of high school English.

3010 Basic Acoustics in Speech and Hearing (3) Introduction to the physical bases of speech. Prereq: 1 year of high school physics or equivalent.

3040 Introduction to Speech Pathology and Audiology (3) Nature, etiology, and incidence of speech, hearing, and language disorders. Prereq: 1 year of high school biology or equivalent.

3060 Speech Science II: Phonetics (3) Basic phonetics including acoustic, articulatory, and vocal tract studies. Oral and written English sounds with analysis of their formation; characteristic aspects of language and speech perception.


3090 Speech and Language Development (4) Basic introduction to normal and abnormal language and speech development in children. Inspirational and integrative concepts of development and the relationship between language and speech and their implications for this process of diagnosis of speech and language development. Prereq: Psychological 2500 or Educational Psychology 2430 recommended.

3100 Articulation Disorders (3) Etiology, diagnosis, and treatment of idiopathic and traumatic articulation disorders. Prereq: 3010, 3060, or consent of instructor. (Same as Special Education 3310)

3170 Audiology I (2) Fundamental aspects of auditory anatomy and physiology. Introduction to disorders of hearing and their remediation. (Same as Special Education 3710)

4070 Appraisal of Speech and Language Disorders (4) Diagnostic procedures for children and adults with speech and language disorders. Practice in assessment and diagnosis, with an emphasis on the use of diagnostic tests. Prereq: 3040, 3065, or consent of instructor. (Same as Special Education 4040)

4071 Free Association (4) Oral and written free association as process for beginning and treating speech and language disorders. Includes diagnostic self-analysis.

4101 Foreign Study (1-6) See page 181.

4103 Independent Study (1-6) See page 181.

4180 Speech Development of the Hearing Impaired (3) (Same as Special Education 4160)

4200 Practicum in Speech Development of the Hearing Impaired (3) (Same as Special Education 4200)

4210 Language Development of the Hearing Impaired (3) (Same as Special Education 4140)

4230 Introduction to Psychology and Education of the Deaf (3) (Same as Special Education 4280)

4310 Stuttering (3) Nature and treatment. Review and integration of various theories. Prereq: 3040 or consent of instructor. (Same as Special Education 4310)

4320 Introduction to Clinical Practice in Speech Pathology (3) Prereq: 3040, 3050, 3100, 4040, and consent of instructor. (Same as Special Education 4320)

4330 Clinical Practice in Speech Pathology I (4) Prereq: 3030 or consent of instructor. (Same as Special Education 4330)

4340 Clinical Practice in Speech Pathology II (4) Prereq: 4330 or consent of instructor. (Same as Special Education 4340)

4400 Voice Disorders (4) Etiology, diagnosis, and treatment of functional and organic voice disorders. Prereq: 4040, 4070, or consent of instructor.

4450 Clinical Practice in Audiology I (4-15) Practicum course in audiology and audiological assessment. Prereq: 3710 or consent of instructor. (Same as Special Education 4450)

4460 Clinical Practice in Audiology II (4-15) Practicum course in audiology and audiological assessment. Prereq: 4450 and 4470. (Same as Special Education 4460)

4470 Audiology II (4) Basic principles of clinical audiometry, pure tone, speech, masking, and overview of special audiological tests. Prereq: 3710. (Same as Special Education 4470)


4750 Aural Rehabilitation: Speechreading and Auditory Discrimination. Survey of current methods of rehabilitation of acoustically impaired by maximizing use of residual auditory function. Emphasis on rehabilitation through a communicative process. Prereq: 4720. (Same as Special Education 4750)

4940 Introduction to the Verbo-Toral System (4) Understanding and the use of a theoretical foundation for interpersonal communication. Prereq: 4810. Recommended. (Same as Special Education 4940)

GRADUATE

5001 Non-Thesis Graduation (3-15)

5020 Advanced Clinical Practice in Audiology (1-6)

5040 Topics in Hearing and Orientation and Communication Counseling (1-4)

5050 Practicum in Verbo-Toral Habilitation (1-6)

5060 Preventative-Secondary Audiology (1)

5070 Anatomy and Physiology of Speech (2)

5091 Physiological Acoustics and Electrophysiological and Neuromotor Aspects of Speech (2)

5100 Comparative Anatomy of Peripheral Auditory Structures (2)

5110 Introduction to Speech and Hearing Science Education (2)

5117 Instrumentation in Audiology and Speech Pathology (2)

5200 Seminar in Auditory Perception and Hearing (1)

5201 Aphasia (3)

4550 Problems in Speech Pathology (3) Prereq: Consent of instructor.

4610 Introduction to Language Pathology in Childen (6) Nature, etiology, and treatment of language retardation. Prereq: 3710 or consent of instructor. (Same as Special Education 4610)

5102 Diffrnt Syndromes and Language Retardation (3) Examination of research literature relevant to birth defects and language retardation, including clinical, educational, and sociocultural implications of such disorders. Prereq: 4610 or consent of instructor.

5120 Practical Applications of Language Habilitation Techniques (3) Discussion and demonstration of various methods and procedures used in treating language retarded children. Prereq: 4610 or consent of instructor.

4400 Parent Participation in Language Habilitation Program (2) Nature of counseling and educational relationships with parents of exceptional children including emotional support for families, behavior management strategies, home training methods. Prereq: 4610 or consent of instructor.

4550 Speech and Language of the Culturally Different Child (3) Discussion of speech and language differences of children of various minority groups, of different ethnic and class memberships, and from different geographic regions; their causes and their effects upon their educational programs.

4610 Topics in Language Retardation and Its Habilitation (3) Lecture on selected topics by representatives of such fields as special education, early childhood education, educational psychology, genetics, and psychology. Prereq: 4610 or consent of instructor.

5070 Diploma in Audiology and Speech Pathology (2) Designed to provide the student with a concentration in the area of audiology and speech pathology. Prereq: 4720. (Same as Special Education 4940)
Bacteriology
See Microbiology.

Ph.D. Ohio State; R. H. Petersen, Ph.D. Vanderbilt; L. W. Jones, Academic Affairs), Ph.D. Vanderbilt; L. W. Jones, (Vice Chancellor for

Note: Students majoring in biology are advised to exercise care in fulfilling the science and mathematics breadth requirements. Math 1841-51 (or in some cases 1580-60) and Chemistry 1110-20-30 or equivalent (20 hours altogether) must be completed by biology majors. Students majoring in biology are advised to consider completion of a physical science minor (page 218.).

Minor: Consists of Biology 3110-20-30 and 12 hours of upper-division courses chosen from the list below. Biochemistry 4110-20-30, 4119, 5010; Botany, any 3000- or 4000-level courses; Microbiology, any 3000- or 4000-level courses; Zoology, any 3000- or 4000-level courses; Botany, any 3000- or 4000-level courses; Biology, any 3000- or 4000-level courses; Chemistry, any 3000- or 4000-level courses; Ecology Program), Ph.D. Emory; F. H. Norris, Ph.D. Indiana; E. E. Schilling, Ph.D. North Carolina State; E. E. Clebsch, Ph.D. Duke.

Prerequisites to the minor are introductory biology courses (Biology 1210-20-30 or 1110-20-30-28 or 1110-20-38). Prerequisites to this minor are Botany 1110-20, 1118-28 or Zoology 1118-28 and Chemistry 1110-20-30.

Note: Certain upper-division courses require organic chemistry or other prerequisites; consult the catalog description in each case.

1210-20-30 General Biology (4, 4, 4) — Biology of the chemical basis of life, cell structure and function, energy metabolism, cell division, DNA, RNA and protein synthesis, hormones, and animal and plant responses to environmental changes. Study of plant kingdom, structure and function of plant growth and reproduction, survey of the animal kingdom, reproduction and development in invertebrate and fish organisms. 1210—Genetics, evolution, populations and ecology. May be taken in any sequence. Students who receive credit for 1210-20-30 may not also receive credit for Biology 1110-20-30-38 or 1118-28 or Zoology 1118-28-38.

1215 General Genetics (4) Classical and modern principles of heredity. Prerequisite: 1210-20-30.

1310 Cell Biology (4) Organization and function of cell and organelle systems. 3 hrs and 1 additional class meeting may be taken in any sequence or combination with 3120.

1320 Molecular Biology (4) Organization and function of nucleic acids and proteins. 3 hrs and 1 additional class meeting. May be taken in any sequence or combination with 3120.

1310 General Ecology (4) Relations between organisms and their environment, including human environmental problems. 3 hrs and 1 additional class meeting. Prereq: Same as 3110. May be taken in any sequence or combination with 3120 and 3130.

Black Studies

See Cultural Studies.

Botany (198)

Professor: R. H. Holton (Head), Ph.D. Michigan; E. E. Clebsch, Ph.D. Duke; R. H. Dellafemina, Ph.D. Ohio State; W. R. Hamilton (Visiting Professor for Academic Affairs), Ph.D. Vanderbilt; L. W. Jones, Ph.D. Indiana; J. F. McGuire (Graduate Coordinator), Ph.D. Wisconsin; K. A. Schmitt, Ph.D. Ohio State; R. H. Petersen, Ph.D. Duke; R. H. Holton (Chair), Ph.D. Ohio State; P. L. Whane, Ph.D. Texas; U. J. Schwartz, Ph.D. North Carolina State.


1050 Plants and Soils (5) Fundamentals of plant science. Prerequisites; 1210-20-30 or Botany 1118-28-38. 3 hrs and 1 additional class meeting may be taken in any sequence.

1110-20 Fundamentals of Botany (4, 4) Nature and development of plants, including life cycles, structure, life histories, herbaceous, and woody trees. 3 hrs and 1 additional class meeting may be taken in any sequence. Students who receive credit for 1110-20-30 may not also receive credit for Biology 1110-20-30-38 or 1118-28 or Zoology 1118-28-38.

1115 General Botany (4) General problems of plant biology. Prerequisite: 1110-20 or 1118-28 or Zoology 1118-28.

1120 Introductory Botany (4) Principles of heredity. Prerequisite: same as 3110. May be taken in any sequence. Students may not receive credit for both Botany 1110-20-30 and Biology 1210-20-30.

1129-29-39, or Geology 1510-20 plus 4 additional hours in geology.

Minor: Consists of Biology 3110-20-30 and 15 upper-hour divisions in botany. Not more than 3 hours from 3070, 3080, 3090 are allowed for minor credit. Prerequisites to this minor are Botany 1110-20, 1118-20-20-30 or Biology 1210-20-30. Corequisites are 4 hours of upper-division courses in a related biological science (zoology, microbiology, biochemistry, agriculture, animal biology, forestry, or plant and soil science).

1130-39 Fundamentals of Botany (4, 4) Nature and development of plants, including life cycles, structure, life histories, herbaceous, and woody trees. 3 hrs and 1 additional class meeting may be taken in any sequence. Students who receive credit for 1110-20-30 may not also receive credit for Biology 1110-20-30-38 or 1118-28 or Zoology 1118-28-38.

1140 Areas of Biology (4) Areas of Biology. Prerequisite; 1110-20 or 1118-28 or Zoology 1118-28.

1141 Selected Topics in General Botany (4) Areas of special interest in general botany. Prerequisite: 1110-20 or 1118-28 or Zoology 1118-28. 1 Corequisites are 4 hours of upper-division courses in a related biological science (zoology, microbiology, biochemistry, agriculture, animal biology, forestry, or plant and soil science).

1130 Introduction to Plant Pathology (4) (Same as Agricultural Biology 2130).

1210 Introductory Plant Physiology (4) Organismal physiology of plants, water relations, mineral nutrition, morphogenesis, elements of metabolic processes, effects of age, light, nutritional rhythms, temperature, and other environmental factors. Lecture and lab. Not for biology graduate credit. Prerequisite: One year general chemistry and one year biological science.

3020 Biological Oceanography (3) Distribution of animal species in the sea and their effect on plankton growth; composition of zooplankton and processes affecting fish; food web in the sea; role of hyper-productive regions (estuaries, upwellings). Prerequisite: Chemistry 1110-20-30 and either Biology 1210-20-30 or Botany 1110-20-30-38. 4009 Tutorial in Botany (4) Individual, independent study under guidance of selected staff. By application only. May be repeated with departmental approval. Minimum credit 6 hrs.
appropriate for students intending to become professional chemists.

The prerequisites consist of Chemistry 1110-20-30, Mathematics 1540-50-60 or 1845-50-60, and any one of the following natural science options: (a) Physics 2210-22-30 or 2910-29-30, 1510-20; (b) Biology 1210-20-30; (d) Biology 3110-30 and Microbiology 3000, 3009; (e) Botany 1110-30. The concentration consists of Chemistry 2140, 2149, 3211-21-31, 3219-29-39, 4910-20-30 (4 hours) plus additional hours of upper-division work in chemistry. (Up to six hours of biochemistry 4000 level and above or Geology 4610 may be applied to the 10-hour requirement but at least one three-hour chemistry course must be included.)

A minor in chemistry shall consist of the successful completion of 24 hours in chemistry courses numbered 2000 and above, including Chemistry 2140-49 (4 hours) and at least one of the following sequences: Chemistry 3211-21-31, 3219-29-39 (12 hours) or Chemistry 3410-30-30 (9 hours) in Chemistry 4910-30-30 (8 hours).

Placement in Freshman Sequences: The sequence which meets all requirements of a year of general chemistry and is a prerequisite for upper-division courses is 1110-20-30. The 1500 and 1600 series have more limited applications. The 1500 series emphasizes organic and biochemistry and may be used as a prerequisite only for 2530 and 3810. The 1600 series is for non-science majors and does not provide an adequate background for any additional courses in chemistry. Freshman students may be placed from one sequence to another if permission for substitution is obtained from the department head. A student who finds a need to complete the 1110 series and is not ready for Chemistry 1100 may substitute 1510 for 1110 with approval of the department and may then take 1120 followed by 1130. However, no single quarter of the 1500 or 1600 sequences may be substituted for the 1110 series. 1510 and 1520 is required for only one of the courses 1100, 1110, or 1610.

A student not having credit for the freshman level which has Chemistry 1118-28-38 Honors: General Chemistry (4,4,4) (See explanation above.) 3 hrs and 1 lab.

1110-20-30 General Chemistry (4,4,4) General courses of theoretical and descriptive chemistry. 1110—Modern organic theory, chemical bonding, and chemical problems. 1120—Quantitative aspects of solution chemistry. Kinetics, chemical equilibria and photochemistry. 1150—Descriptive chemistry of non-metallic and metallic elements, electrochemistry, and introduction to organic and biochemistry. Must be taken in sequence. 3 hrs and 1 lab.

1118-38 Honors: General Chemistry (4,4,4) (See explanation above.) 3 hrs and 1 lab.

1410 Chemistry for Nurses (4) Inorganic, organic, and biochemistry. 3 hrs and 1 lab.

1420 Chemistry for Nurses (4) Inorganic compounds and biological chemistry. Prereq: 1410. 3 hrs and 1 lab.

1510-30-30 General Chemistry (4,4,4) Introductory chemistry with emphasis on the relation of chemistry to life. 1510—Bonding and molecular structure, gases, liquids, and solid states, solutions, ions, acids, bases, and equilibria. 1520—Avides and oxidation-reduction, kinetics and equilibria. Introduction to organic chemistry, alkanes, unsaturated and aromatic hydrocarbons, 1530—Structures and reactions of various organic functional groups. Introduction to biochemistry—amino acids and proteins, carbohydrate chemistry, and nucleic acids. Must be taken in sequence. 3 hrs and 1 lab.

1610-20 Chemistry and Society (4) Chemistry for non-science majors emphasizing role of chemistry in dealing with current social concerns. 1610—Basic principles including particle nature of substances, nuclear aspects, chemistry of energy, environment, medicine, and consumer products. Must be taken in sequence. 3 hrs and 1 lab.

2140 Analytical Chemistry (3) Principles and practice of quantitative measurements in chemical analysis. Applications to solar systems, complexometric titrimetry, elementary separations and introduction to atomic absorption. Prereq: 1110-20-30.

2149 Analytical Chemistry (3) Experiments on topics discussed in 2140. Prereq: 2140. 3 hrs and 1 lab.

3230 Elements of Organic Chemistry (4) Briefer treatment of organic chemistry with emphasis on compounds of biological interest. Prereq: One year of general chemistry or chemistry 1118-28-38. Credit may not be received for both 3230 and 5220, toward graduation or otherwise.

3229 Advanced Analytical Chemistry Laboratory (3) Experiments on topics discussed in 3420. Coreq: 3420. 3 hrs and 1 lab.


3239-29-39 Organic Chemistry Laboratory (1,1,1) Experiments on topics discussed in 3231. Coreq: 3231. 1 hr.

4210 Advanced Analytical Chemistry (3) Chemical spectrophotometry, and introduction to chemical kinetics. Prereq: 4110 and above.

4219 Advanced Analytical Chemistry Laboratory (1) Experiments on topics discussed in 4220. Coreq: 4229.

4230 Advanced Analytical Chemistry (3) Electroanalytical methods of analyses (including polarography, coulometry, potentiometry, and voltammetry). Must be taken in sequence. 3 hrs and 1 lab. Prereq: 4219 or 4219 recom-

429 Advanced Analytical Chemistry Laboratory (1) Experiments on topics discussed in 4220. Coreq: 429.

430 Physical Inorganic Chemistry (3) Theoretical aspects of chemical bonding. Prereq: Physics 3210-35-35, 3410-35-40 or equivalent. Must be taken in sequence. 3 hrs and 1 lab.

4420 Physical Inorganic Chemistry Laboratory (1) Experiments on topics discussed in 4419. Coreq: 4419.

4430 Advanced Inorganic Chemistry (3) Application of theoretical concepts to inorganic elements, their chemical states, and their reactions. Prereq: 430.

450 Organic Qualitative Analysis (3) Identification of functional groups by physical methods. Prereq: 3430 and above. Must be taken in sequence. Open to students who have completed 4110.


4530 Advanced Inorganic Chemistry Laboratory (1) Experiments on topics discussed in 4520. Coreq: 4520.


4716 Research in Chemistry (2) Open to majors with consent of department head. Written report must be submitted to research director at the end of the project. May be repeated. Maximum credit 6 hrs.

4970-10-20 Biological Chemistry (3,3) Physical-chemical principles with applications to
bilingual. Must be taken in sequence. Not open to students having 3410-30-30. Geology: laws; glacial, second, and third laws of thermodynamics; equilibrium. SOLUTION chemistry: kinetics; nuclear chemistry. 4500—Elementary quantum chemistry; optical and magnetic spectroscopy; light scattering; macroscopic properties. Prerequisite: 1100-20-20. Math 1540-50 or equivalent.

4289 Biophysical Chemistry Laboratory (1) Experiments in topics discussed in 4910-30-30. Must be taken in sequence. Not open to students taking 4310-30-30-30. Prerequisite: 4280 or corequisite for 4280.

GRADUATE

Students majoring in chemistry for the M.S. or Ph.D. degree are required to present a prerequisite one year each of general, analytical, organic, and physical chemistry with a satisfactory record. Students lacking any of these prerequisites may be admitted with appropriate deficiencies which must be removed without graduate credit. For students minoring in chemistry, the prerequisite is two years of chemistry including quantitative analysis. The master's and doctoral degree requirements are found in the Graduate Catalog. The department offers specialization in nine areas for the Ph.D.: analytical, energy, environmental, inorganic, organic, physical, theoretical, chemical physics, and polymer science.

5000 Thesis
5100-30-35 Advanced Organic Chemistry (3, 3, 3)
5139 Advanced Organic Chemistry Laboratory (3)
5139 Spectroscopic Characterization of Organic Compounds (3)
5140 Introductory Polymer Chemistry (Polymer) (3)
5160 Kinetics of Polymerization (3)
5180 Organic Chemistry of Polymers (3)
5170 Physical Polymeric Systems (3)
5165 Polymers and Environmental Pollution (3)
5240 Dynamics for Chemists (4)
5230-60 Advanced Analytical Chemistry (3, 3, 3)
5249-79 Advanced Analytical Laboratory (Polymer) (1, 1, 1)
5240-50 Quantum Chemistry (3, 3, 3)
5410-30-35 Advanced Physical Chemistry (3, 3, 3, 3)
5420-50-60 Advanced Physical Chemistry (3, 3, 3, 3)
5430-50-60 Advanced Quantum Chemistry (3, 3, 3)
5431 Survey of Inorganic Chemistry (3)
5521 Survey of Analytical Chemistry (3)
5631 Survey of Organic Chemistry (3)
5610-30 Industrial Chemical Engineering (3)
5610-30-30 Chemical Basis of Energy Conversion (1, 1, 1)
5670-80 Theoretical Inorganic Chemistry, Analysis, and Chemical Physics (3, 3, 3)
5810 Nuclear Chemistry (3)
5821-31 Chemistry Seminar (1, 1, 1)
5880 Theoretical Research and Dissertation
5111 Selected Topics in Organic Chemistry (3)
5130 Natural Product Chemistry (3)
5150 Theoretical Organic Chemistry (3)
5160 Physical Organic Chemistry (3)
5165 Orbital Symmetry Control (3)
5170 Organic Photochemistry (3)
5196 Organosynthetic Chemistry (3)
5210 Advanced Analytical Spectroscopy (3)
6211 Selected Topics in Analytical Chemistry (3)
6311 Selected Topics in Polymer Chemistry (3)
6320 Natural Polymers (3)
6611 Selected Topics in Physical and Theoretical Chemistry (3)
6430 Nuclear Magnetic Resonance (3)
6430 Chemical Kinetics (3)
6431 Thermodynamics of Solutions (3)
6450 Magnetic Resonance (3)
6471 Selected Topics in Inorganic Chemistry (3)
6570 Topics in Quantum Chemistry (3)
6570 Molten Salt Chemistry (3)
6680 Vibrational Problems in Molecular Spectra (3)
6692 Molecular Vibration-Rotation Theory (3)
6811 Selected Topics in Nuclear Chemistry (3)

Chinese

See Cultural Studies (Asian Studies).

Classics (257)

Professors: H. C. Ruffleth (Head), Ph.D. Ohio State; A. Rapp (Emeritus), Ph.D. Illinois.

Associate Professors: G. G. Gezner, Ph.D. North Carolina (Chapel Hill); M. L. Henske, M.A. Arkansas; J. E. Shelton, Ph.D. Vanderbilt.

Assistant Professors: B. J. Paulson; P. J. Nissen, Ph.D. Ohio State.

Greek

A major in Greek consists of 39 hours of language courses numbered above 2000 but including Classics 4220. Nine hours from the following general courses may be substituted for language courses at the discretion of the department: Classics 2210-20-30, 3310, 3320, 4101. May be taken for a maximum of 6 hours. The Greek minor consists of 24 hours in language courses numbered above 2000 including Classics 4220. Six hours from the following general courses may be substituted: Classics 2210-20-30, 3310, 3320.

1200-20-30 Beginning Greek (3, 3, 3) Must be taken in sequence.

2511-20 Intermediate Latin (4, 4) 2511—Readings from Horace's Odes and Vergil's Aeneid. Open to those who have had at least two years of high school Latin, or equivalent.

2511-20 Intermediate Latin (4, 4) 2511—Readings from Horace's Odes and Vergil's Aeneid. Open to those who have had at least two years of high school Latin, or equivalent.

2510 Plautus and Terence (3) Prerequisite: 2 or 3 years of high school Latin or 2511.

2512 Caelius (3) Prerequisite: 3 or 4 years of high school Latin or 2511.

3440 Livy (3)

3450 Pliny and Martial (3)

3460 Elegiac Poets (3)

4310 Horace, Sallust and Epistles (3)

4140 Cicero and Techniques of Latin prose composition (4) Recommended for Latin majors and minors, especially those intending to teach or pursue scientific or technical careers. May be taken for language courses at the discretion of the department as a model for prose composition.

4310 Selected Readings from Latin Literature (3)

4320-30 Selected Readings from Latin Literature (3, 3) May be repeated for credit.

4340 Horace, Odes (3)

4350 Suetonius (3)

4360 Lucretius (3)

4370 Readings in Medieval Latin (3)


1100-20-30 Beginning Latin (3, 3, 3) Must be taken in sequence.

2511-21 Intermediate Latin (4, 4) 2511—Readings from Horace's Odes and Vergil's Aeneid. Open to those who have had at least two years of high school Latin, or equivalent.

2510 Plautus and Terence (3) Prerequisite: 2 or 3 years of high school Latin or 2511.

2512 Caelius (3) Prerequisite: 3 or 4 years of high school Latin or 2511.

3440 Livy (3)

3450 Pliny and Martial (3)

3460 Elegiac Poets (3)

4310 Horace, Sallust and Epistles (3)

4140 Cicero and Techniques of Latin prose composition (4) Recommended for Latin majors and minors, especially those intending to teach or pursue scientific or technical careers. May be taken for language courses at the discretion of the department as a model for prose composition.

4310 Selected Readings from Latin Literature (3)

4320-30 Selected Readings from Latin Literature (3, 3) May be repeated for credit.

4340 Horace, Odes (3)

4350 Suetonius (3)

4360 Lucretius (3)

4370 Readings in Medieval Latin (3)


1100-20-30 Beginning Latin (3, 3, 3) Must be taken in sequence.

2511-21 Intermediate Latin (4, 4) 2511—Readings from Horace's Odes and Vergil's Aeneid. Open to those who have had at least two years of high school Latin, or equivalent.

2510 Plautus and Terence (3) Prerequisite: 2 or 3 years of high school Latin or 2511.

2512 Caelius (3) Prerequisite: 3 or 4 years of high school Latin or 2511.

3440 Livy (3)

3450 Pliny and Martial (3)

3460 Elegiac Poets (3)

4310 Horace, Sallust and Epistles (3)

4140 Cicero and Techniques of Latin prose composition (4) Recommended for Latin majors and minors, especially those intending to teach or pursue scientific or technical careers. May be taken for language courses at the discretion of the department as a model for prose composition.

4310 Selected Readings from Latin Literature (3)

4320-30 Selected Readings from Latin Literature (3, 3) May be repeated for credit.

4340 Horace, Odes (3)

4350 Suetonius (3)

4360 Lucretius (3)

4370 Readings in Medieval Latin (3)

GENERAL COURSES

2710 Scientific and General Vocabulary from Greek (2) Study of word roots and words in Greek language derived from Greek. Designed to build general vocabulary with special emphasis on scientific and technical terminology.

2720 Scientific and General Vocabulary from Latin (2) Study of word roots and words in English language derived from Latin. Designed to build general vocabulary with special emphasis on scientific and technical terminology.

2810 Greek Life (4) Manners and customs, social and economic aspects of classical civilization; family, politics, laws, finance, commerce.

2820 Roman Life (4) Description same as Life for Greek 2810.

3210 Early Greek Mythology (3) Comprehensive study of Greek myths through readings, lectures, and discussion with emphasis on ancient Greek thought and language. Sibyls and Sappho (Latin literature of ancient Greeks) and later cultures. (Same as Religious Studies 3200.)

3220 Greek Mythology in the Classical Period (3) Use of myths in literature, history, religion, philosophy, and art of Classical Age of Greece. Use of myth in living life. Emphasis on significance for modern times. May be repeated for credit with consent of department.

3230 Roman Mythology (3) Myths created by Romans, as well as those the Romans borrowed from earlier periods. Use of myth in literature, history, religion, and society. Readings, lectures, classes, and discussion. (Same as Religious Studies 3200.)

3260 Greek (3) Study of word roots and words in English language derived from Greek. Designed to build general vocabulary with special emphasis on scientific and technical terminology.

3270 Roman (3) Myths created by Romans, as well as those the Romans borrowed from earlier periods. Use of myth in literature, history, religion, and society. Readings, lectures, classes, and discussion. (Same as Religious Studies 3200.)

32710 Introduction to Scientific, General and General Vocabulary from Greek and Roman (3) Study of word roots and words in English language derived from Greek and Rome. For graduate students and advanced under-graduates. May be repeated for credit with consent of department.

3310 Art and Archaeology of the Aegean Bronze Age (3) The Outlines of Prehistoric Europe. Troy, the Cyclades Islands, the Mycenaean civilization, and the Greek mainland and Crete. Emphasis on city planning and quality of life. Such cities as Mycenae, Athens, Priene, Alexandria, Rome, and Lepcis Magna will be studied.

3320 Art and Archaeology of Archaic and Classical Greece (3) Survey of development of Greek art in Archaic and Classical periods, with emphasis on major cities. (Same as Religious Studies 3300.)

3340 Cities of the Greek and Roman World (3) Survey of development of city life in the Greek and Roman world. City planning and quality of life. Such cities as Athens, Mycenae, Alexandria, Rome, and Lepcis Magna will be studied.

3350 Shrines and Sanctuaries of the Greek and Roman World (3) Shrines and sanctuaries of the Greek and Roman world with emphasis on archaeological remains. Such sites as Olympia, Ephesus, Pompeii, Rome, and Priene. Reading will be constructed. Readings will include selected articles from scholarly journals and books, and pieces of great shrines and sanctuaries in Greek and Roman life.

3360 Early Greek Literature in English Translation (3) Epic and lyric poetry, including Homer and Sappho, and Herodotus of Persians Wars.

3520 Classical Greek Literature in English Translation (3) Study of major figures of classical literature, including Homer from Age of its brilliant rise to its tragic decline in Trojan War.

3530 Roman Literature in English Translation (3) Poetry and prose of major Latin authors, with attention to Greek background. Selections made from early Latin authors such as Horace, Vergil, and Ovid, and of later Empire.

4101 Creative Writing: Greek and Latin (3) Survey of classic literature, complete course. (Same as Edu. C&M 456.)
quarter hours: Asian Studies 2510-20 plus 16 additional credits from Asian studies or approved departmental courses. The latter should include a minimum of one course (3 or 4 hours) from each of the following areas: (a) art, Asian culture, literature, and music; (b) economics, geography, history, and political science; (c) anthropology, religious studies, and sociology. Students who prefer to use Asian Studies 2510-20 for Tried or elective credit may, with permission of program chairperson, substitute 8 additional upper-division hours in acceptable courses for that required sequence in the minor.

It is strongly recommended that students planning to attend graduate school take an appropriate Asian language through the intermediate level.

Further information may be obtained from the chairperson of the Asian Studies Committee, Dr. Eric Gangloff.

3010 Asian Civilization (4, 4) Introduction to Asian civilization by comparative study of development of religion, social institutions, and high culture in India, China, Japan, and the Islamic world. 2515—Flow of classical civilizations, 2520—Tradition and cultures of their modern developments.

3210 Indian Culture (4) 3320 Chinese Culture (4) 3330 Japanese Culture (4) 3340 Islamic Culture (4) 4010-20-30 Readings in Asian Language (4, 4, 4) Prereq: Mastery of intermediate-level of Japanese, Chinese, or Arabic or mastery of instruction paid to finer points of grammar. Class will include conversation, drill, and composition practice with native speaker. Must be taken in sequence.

Approved Course Areas
(a) Art, Asian Culture, Literature and Music
Art 3775 Art of Indian Asia (4)
Art 3776 Art of China (4)
Art 3777 Japanese Art (4)

(b) Economics, Geography, History, and Political Science
Economics 4230 The Political Economy of Asian Development
Geography 3870 Geography of Asia (4)
History 3780-81 History of the Middle East (3, 3)
History 3790 Contemporary Middle East (4)

(c) Geography, History, and Political Science
Geography 3870 Geography of Asia (4)
History 3780-81 History of the Middle East (3, 3)
History 3790 Contemporary Middle East (4)

3410 Introduction to Ethnomusicology (3)
4010-20-30 Readings in Asian Literature (4, 4, 4)
4030 Prejudice and Racism in the United States (4)
4101, 4102, 4103, and 4104 Prejudice and Racism in the United States (1, 1, 1, 1) Designed for students who are interested in the historical development of the nature of which should be negotiable with the program director. A minimum of 8 hours in 4102 and 4103 combined can be applied to a major and a maximum of 4 hours in 4102 and 4103 combined can be applied to a minor. In addition, courses from at least two other departments must be selected.

For further information consult the coordinator of the African and Afro-American Studies Committee, Mr. Marvin Peak.

Black Studies (195)
1910-20 Elementary Swahili (4) Taped language program. Must be taken in sequence.
2010-20 Introduction to Black Studies (4, 4)
3410-40-50 Directed Readings in Black Studies (1, 1, 1) Designed for students who are interested in special areas of Black Studies which is defined by the student and the instructor. Prereq: 3010 (or 3210) and consent of instructor.
3520 Prejudice and Racism in the United States (4) (Same as Sociology 3520)
3540 Sociology of Poverty and Inequality (Same as Sociology 3540)
3940 African Religions (4) (Same as Religious Studies 3940)
3950 Religion and Raslen in America (4) (Same as Religious Studies 3950)
4101 Foreign Study (1-16) See page 181.
4102 Off-Campus Study (1-16) See page 181.
4103 Independent Study (1-16) See page 181.

Religious Studies 3560 Black Religion in America
Religious Studies 3550 Religion and Racism in Political Science 3555 Minority Group Politics
Political Science 3615-16 Black Africa: The Politics of Change and Stability (4,4)
Political Science 3630-40 The Education of Black People (4,4)

Art 2725 Black Art

Anthropology 3530 Peoples and Cultures of Africa
Anthropology 4880 .

History 4950-60 The Negro in American History (3,3)

Music 4270 Evolution of Jazz (3)
Music 3350 Introduction to Afro-American Music

Theatre 2010 Introduction to Comparative Literature (4)

History 1950-60 recommended. Prereq: Consent of instructor.

History 4900-60 The Negro in American History (3,3)

Music 3210 Introduction to Afro-American Music (4)

Music 4720 Evolution of Jazz (3)

Political Science 3515-16 Black Africa: The Politics of Change and Stability (4,4)

Politic 1335 Ethnopolitics in Comparative Literature (4)

Psychology 4880 Afro-American Psychology (4)

Religious Studies 3550 Religion and Racism in America (4)

Religious Studies 3560 Black Religion in America

Sociology 3330 Race, Class, and Power (4)
Sociology 3340 Sociology of Poverty and Inequality (4)
Sociology 4820 American Minority Ethic Groups (4)

SPEECH 4582 Black Rhetoric (4)

Recommendations for the concentration in Black Studies:
(a) Those with a concentration in Black Studies are encouraged to take a second major, with which an individually designed program in Black Studies can be correlated.
(b) Students should seek academic advising from the Chairman of Black Studies for courses for the concentration or the minor which relate to career plans, preparation for graduate study, and relationship to the second major.
(c) Those with a concentration and a minor are strongly encouraged to combine classroom and experiential learning through a careful selection of courses, e.g. Human Services 4400 and/or Black Studies 4102.

Comparative Literature (260)
A concentration in comparative literature consists of 36 hours including Comparative Literature 4010, 4102-3, 4-6, 9 hours of literature in a foreign language in courses numbered 3000 and above, and one classics course selected from Classics 4010, 4230, 4510. The remaining 12 hours should include literature courses, either in English or in a foreign language, numbered 3000 and above, from at least two of the following departments: English, Germanic and Slavic Languages, Religious Studies, Romance Languages (certain courses in Philosophy and Speech and Theatre may be substituted with the approval of the chairperson of the Comparative Literature Program). Students concentrating in comparative literature are strongly encouraged to acquire a working knowledge of a second foreign language, especially if they hope to pursue comparative program in the graduate level.
A minor in comparative literature consists of 24 hours including Comparative Literature 4010, two courses from Comparative Literature 4102-3, 3000 and above in foreign language in courses numbered 3000 and above, and 9 hours of literature courses numbered 3000 and above, either in English or in a foreign language, from at least two of the following departments: English, Germanic and Slavic Languages, Religious Studies, Romance Languages (certain courses in Philosophy or Speech and Theatre may be substituted with the approval of the Comparative Literature Program). Students concentrating in comparative literature are strongly encouraged to continue their study of a foreign language beyond the minimum requirement.

For further information, consult the chairperson of the Comparative Literature Program, Committee. Dr. Harry G. Rutledge.

4010 Methodology of Comparative Literature (3) Research and writing of comparative literary studies. Major project will be preparation of seminar paper in comparative literature. Prereq: 4010 and one course from 4012-23-23 or consent of instructor.

4012-23 Special Topics in Comparative Literature (4,4) Content varies; may be repeated for credit.
Concentration

The concentration shall consist of 38 hours distributed as follows:

(a) 32 hours composed of: Audiology and Speech Pathology 3060; French, German, Russian, or Spanish 4260-40-70; English 3330, 4430; French 4811; Linguistics 4020-30.

(b) 6 hours of the following, selected in consultation with the Linguistics Committee:
   - Anthropology 3800: Anthropology and Speech Pathology 2000, 4650, 5661, 5790;
   - Educational Curriculum and Instruction 3562-63: Special Education and Rehabilitation 5210, 5210-20, English 4100, 4100-20, 5150, 5170-80; Linguistics 4040; Russian 4130-20-30, 7101;
   - Philosophy 4630: Psychology 4650, 4660, 5670-75, French 4120-20-20-30, 5120-30;

(c) Other hours may be substituted in (b) by approval of the Linguistics Committee.

Minor

Minor in linguistics shall consist of 27 hours composed of 9 hours of the major selected in consultation with the Linguistics Committee, and 18 hours as follows: Audiology and Speech Pathology 3050; Linguistics 4020-30; English 4430; French, German, Russian, or Spanish 4260-40-70.

NOTE: In addition to the above listed courses for the concentration and the minor, there are occasionally offerings in the Honors Series or in graduate seminars which may be substituted for certain requirements subject to written approval of the Linguistics Committee and the Office of the Dean.

For further information consult the chairman of the program, Dr. Jeff Mellor.

Linguistics (623)

This concentration offers a broad exposure to the various fields of linguistics (including historical, descriptive, and theoretical linguistics) along with an opportunity to study areas where linguistics overlaps with other disciplines such as psychology, sociolinguistics, speech pathology, and the like. Students must consult a faculty member involved in the study of the Latin American area.

2510-25  Introduction to Latin American Studies (4, 4)
   - History 3870-80-90, Political Science 3510-20, History 3870-80-90, Political Science 3870-80, Economics 3510-20, History 3870-80, Political Science 3870-80.

3510-36  Introduction to Latin American Studies (4, 4)
   - History 3870-80, Political Science 3510-20, History 3870-80, Political Science 3870-80.

4310-43  Introduction to Latin American Studies (4, 4)
   - History 3870-80, Political Science 3510-20, History 3870-80, Political Science 3870-80.

5360-70  Introduction to Latin American Studies (4, 4)
   - History 3870-80, Political Science 3510-20, History 3870-80, Political Science 3870-80.

2501-26  An introduction to Latin America with Pre-Colonial and Colonial periods through Independence. This course is designed for students who plan to go on to graduate school. In addition, students planning to go on to graduate school are strongly advised to supplement their Medieval studies concentration with extensive work in one of the traditional disciplines.

2600  Biblical Studies (4)
   - History 3870-80, Political Science 3510-20, History 3870-80, Political Science 3870-80.

3000  Historical Linguistics (4)
   - History 3870-80, Political Science 3510-20, History 3870-80, Political Science 3870-80.

3510  An introduction to Latin America with Pre-Colonial and Colonial periods through Independence. This course is designed for students who plan to go on to graduate school. In addition, students planning to go on to graduate school are strongly advised to supplement their Medieval studies concentration with extensive work in one of the traditional disciplines.

2600  Biblical Studies (4)
   - History 3870-80, Political Science 3510-20, History 3870-80, Political Science 3870-80.

3000  Historical Linguistics (4)
   - History 3870-80, Political Science 3510-20, History 3870-80, Political Science 3870-80.
A concentration in urban studies consists of at least 40 quarter hours, including Urban Studies 2500 and 3000, at least 4 hours of Urban Studies 4000, and at least 28 hours from the urban studies curriculum provided below. The urban studies minor consists of at least 24 quarter hours, including Urban Studies 2500 and 3000 plus 16 hours from the urban studies curriculum provided below. For further information consult the chairperson of the Urban Studies Committee, Dr. Samuel Wallace.

3030 Interdisciplinary Urban Studies (6) Fundamentals of: 1) a variety of approaches to urban studies as an ongoing process. Stresses the multidisciplinary nature of urban studies.

3030 Selected Topics in Urban Studies (4) may be repeated with consent of the committee. Maximum credit 12 hrs.

4000 Directed Field Work (1-16) Participant observation and other directed field research in selected sites and organizations. May be done in a concentrated manner, such as a summer, or over the course of a year. Minimum of four credits required. Credit from 3010-20-30-40 count as an elective for concentration and other directed field research in selected sites and organizations. May be done in a concentrated manner, such as a summer, or over the course of a year. Minimum of four credits required. Credit from 3010-20-30-40 count as an elective for concentration and should be repeated with consent of the committee. Maximum credit 16 hrs.

4101 Foreign Study (1-16) Acceptable for credit in any cultural studies concentration or minor except Black studies. Registration by consent of the chairperson of the Women's Studies Committee. For further information consult the chairperson of Women's Studies, Dr. Susan Becker.

2010-20 Women's Studies (4, 4) Explores basic knowledge and sources necessary to understand current and past societal experiences of women. No prerequisites. Suitable for anyone interested in women's studies. 2020-20 Women's Studies (5, 5) Explores basic knowledge and sources necessary to understand current and past societal experiences of women. 2030-30 Women's Studies (6, 6) Explores basic knowledge and sources necessary to understand current and past societal experiences of women. 2040-40 Women's Studies (7, 7) Explores basic knowledge and sources necessary to understand current and past societal experiences of women. 2050-50 Women's Studies (8, 8) Explores basic knowledge and sources necessary to understand current and past societal experiences of women.
program provides advanced courses in Master of Science and the Doctor of Anthropology.

Agricultural Economics

Agricultural Biology

Tennessee, Knoxville, Tennessee 37916.

should be addressed to the Director, obtained from the Graduate School. Inquiries level. Candidates for the doctoral degree are at least 12 quarter hours of college mathematics, and 4 quarter hours of college chemistry, 9 quarter hours of college biology, and 4 quarter hours of college physics.

Program are: (1) admission to the Graduate Program in Ecology, University of Tennessee, Knoxville, Tennessee 37916. COURSES ACCEPTABLE IN PROGRAM

Agricultural Biology

Agricultural Economics

Anthropology

Geography

Nuclear Engineering

Microbiology

Psychology

Zoology

The graduate program in ecology offers opportunities for student research elsewhere faculty research programs provide diversity which is truly unique. In addition, undergraduate programs in basic and applied ecology are intended to prepare students with such an interest should consult the Education Building as early in their program as possible to determine the appropriate concentration.

Students with such an interest should consult the Clarification, Common 212, Clarion Education Building as early in the upper-division program as possible. A minor consists of: (1) Economics, 2110, 2120, and (2) 15 additional hours as part of the upper-division work and should be taken as early as possible. A minor consists of: (1) Economics, 3110 and 3120.

The program in economics combines a broad liberal education with the rigorous study of current issues of the day such as employment, inflation, poverty, wealth, and the benefits and costs of economic growth. Courses offered in the Department of Economics of the College of Business Administration provide opportunity for a major or minor in economics in the College of Liberal Arts. See pages 66 for description of the courses available. Requirements for a major in economics consist of: (1) Economics 2110, 2120, and 2130 or equivalent honors courses, and (2) a minimum of 33 additional hours in upper-division economics courses. Economics 3110 (or the sequels 3111 and 3112) plus 3120 are required as part of the upper-division work and should be taken as early in the upper-division program as possible. A minor consists of: (1) Economics, 2110, 2120, and 2130 or equivalent honors courses, and (2) a minimum of 33 additional hours in upper-division economics courses. Minors are encouraged to include Economics 3110 and 3120.

In addition, certification to teach economics in secondary schools is available. Students with such an interest should consult the Clarification, room 212, Clarion Education Building as early in their program as possible to determine the appropriate requirements. GRADUATE See pages 88-89 in the College of Business Administration. The department offers the following degrees: M.A., M.ACT, M.S., and Ph.D. Also, the MBA degree with a concentration in economics is offered.

English (339)

Professors: J.D. Treadwell (Head), Ph.D. Princeton; P.G. Adams, Ph.D. Texas; E.W. Brattin, Ph.D. Illinois; J. Y. K. Yeow, Ph.D. Davis (Emeritus); E. W. Bratton, Ph.D. (Emeritus); W. D. Ranke, Ph.D. (Emeritus); N. W. Wright, Ph.D. (Emeritus).

Associate Professors: B.T. Stewart, Ph.D. Northwestern; P.L. Soper (Emeritus), Ph.D. Yale; J.M. White, M.A. Cambridge; H.E. Spivey (Emeritus), Ph.D. North Carolina; J.E. Reese (Chancellor), Ph.D. Kentucky; D.A. Carroll, Ph.D.

Professors: L.S. Burghardt, Ph.D. Chicago; D.A. Carroll, Ph.D.
or English language;

Twelve English courses at the 3000-4000 level including:

(1) two courses in linguistics and the English courses in creative writing among those offered by the English department and, with English adviser approval, from Psychology 4140-50; Philosophy 6660, Anthropology 3800, or Linguistics 4030;

(2) four courses in literature.

Individualized Program: The Director of Undergraduate Studies is empowered to approve individualized programs developed by students in consultation with their English adviser. These programs must need not fulfill all the requirements listed above.

Honors Programs: For students who qualify for this program, the English department offers individualized study in the senior year culminating in a senior thesis and a comprehensive examination. If the thesis and examination both receive grades of B or better, the student will be graduated with Honors in English. Interested students should consult their advisers or the Director of Undergraduate Studies.

Minor: An English minor consists of 24 hours at the 2000 level or above, including at least 18 at the 3000-4000 level.

Certification for Teaching: Students planning to teach English in the public schools should consult the Director, 212 Claxton Education Building.

Departmental Course Information: In the English Office, 310 McClung Tower, students may obtain a booklet describing current courses and listing the English courses to be offered each semester throughout the academic year. The booklet is available in advance of University timetables.

Undergraduate Studies is empowered to register for only two other courses.

121 Written and Oral English for Foreign Students (2) Emphasis on the more advanced structural aspects of English. This course replaces the freshman English sequence 1010-20.


teaching English as a second language.

English 1010-20-31 replaces English 1019 concurrently

English 1431 replaces English 1020 for undergraduate foreign students.

English 1441 replaces English 1038 for undergraduate foreign students.

English 1451 replaces English 1039 for undergraduate foreign students.


1212 English Pronunciation for Foreign Students (2) Emphasis on the more advanced structural aspects of English. This course replaces the freshman English sequence 1010-20.

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English 1441 replaces English 1038 for undergraduate foreign students.

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English 1441 replaces English 1038 for undergraduate foreign students.
2560-150 Old and Middle English Literature in Transition (3, 3, 3) Major texts and annals of English literature
2580-18th to early 19th century. 2580-19th and 20th centuries.
2560-70-80 Literature of the Western World (4, 4, 4)
2502 Elizabethan Drama (3) Marlowe, Jonson, and others.
2630 Johann Sebastian Bach (3) Baroque, Renaissance.
2610 Sixteenth-Century Prose and Poetry (3) More and Wastell. 2592 Emma and Frederick. 2592-2600
2452 Colloquium in Literature (3) Discussion of student and professional writing. Exercises in writing in genres, in accordance with techniques learned in basic writing fiction course.
2473 Advanced Poetry Writing (3) Further development of skills acquired in basic writing poetry course. Prereq: English 3450 or consent of instructor.
2391 Introduction to Study of English Language (4) Emphasis upon the literary consciousness of early societies. Topics vary. May be repeated with consent of department. Maximum credit 6 hrs.
2391-20-30 Comparative Literature (3, 3, 3) Survey. Survey of literature dealing with leading movements in politics, science, religion, and the arts. 2310-1900 to 1835. 2350-1850 to 1900.
2325-34 Forms of Popular Literature and Culture (3) Women writers in England and America (3) Emphasis upon the literary consciousness of women. May be repeated with consent of department. Maximum credit 6 hrs each.
and Agraianis, Takion, and more recent writers such as Witty, O'Connor, and Porter.

4880 Emerson and Thoreau (3)
4880 American Humor through Mark Twain (3)
4720-1/2 Ballad and Folktale (3, 3, 3) 4720—Study of traditional English and Scottish popular ballads and their North American ballad and folk-tale. 4741—The folk names and functions, categories, and patterns of storytelling.
4800 Milton (3) Emphasis on major poems.
4960 Seventeenth-Century Prose and Poetry (3) Bacon and Donne to Marvell.
4980-90-100 Studies in Literature (3, 3, 3)"
3710 Origin and Evolution of the Continents and groundwater. 2 lectures and 1 labor field period.
3510 Introductory Environmental Geology (4) Prereq: 2610 or equivalent.

3190 Mineralogy (4) Introduction to crystallography and study of minerals. Laboratory includes handwritten, chemical, and X-ray methods of identification. Not available for credit major. Prereq: 1410. 3 lectures and 2 labs.
3200 Structural Geology (4) Systematic review of important tectonic metamorphic fossil groups. 3190-Permin, to Archean, including cherts, greenstones, biotite phyllites, and quartzites. Includes plotting of structural and geologic data. 3 lectures and 1 lab.
3210-30 Structural Geology Laboratory. 4 hrs.
3220-30 Micropaleontology (4) Microscopic remains of animals and plants with special emphasis on stratigraphically important groups. Prereq: 3190 or consent of instructor. 3 lectures and 1 lab.
3910-50 Petrology (4) Study of rocks and minerals with particular emphasis on (1) comparative petrology and the origin of rocks, minerals, and igneous rocks in the earth's crust. Emphasis on modern concepts of continental drift and plate tectonics. 3 lectures and 1 lab.
4510 Principles of Geomorphology (4) Gradational processes of terrestrial and aerial geologic phenomena. Emphasis on modern concepts of continental drift and plate tectonics. Prereq: 1420 or consent of instructor. 3 lectures and 2 labs.
4333 Quaternary Field and Lab Techniques (4) Techniques for environmental characterization and study of Quaternary deposits. Includes field and laboratory study of Quaternary deposits. Prereq: 1420 or consent of instructor. Two 2-hr lectures.
4370 Tectonic Styles (4) Elements, habitats, and geologic processes involved in modern tectonic environments. Prereq: 1420. 2 lectures and 2 labs.
4310 Geologic Mapping (4) Interpretation of maps and aerial photographs. Emphasis on modern concepts of continental drift and plate tectonics. Prereq: 1420. 3 lectures and 1 lab.
4210-20 Invertebrate Paleontology (4, 4) Systematic study of invertebrate fossils with particular emphasis on (1) comparative paleontology and the origin of invertebrates, (2) Nature of Fossils, (3) Fossil Assemblages, and (4) Fossil assemblages. Prereq: 3190 or consent of instructor. 3 hrs and 1 lab/field/ or seminar period. (Same as Botany 4210.)
4240 Peleobotany (4) Survey of fossil record of plants with particular emphasis on (1) comparative paleobotany and the origin of plants, (2) plant evolution, and (3) Quaternary flora. Prereq: 3190 or consent of instructor. Two 2-hr lectures.
4230 Paleoecology (4) Principles of environmental analysis as applied to fossil assemblages and associated lithologies. Prereq: 3260 or consent of instructor. 3 lectures and 2 labs.
4250 Evolution of Higher Taxa (4) Discussion of current evolutionary theory in context of paleontological patterns of evolution in fossil organisms at family level or higher. Prereq: 3260. 3 lectures and 1 lab.
4200 Biostratigraphy (4) Principles of application of paleontologic data to stratigraphic study, calculation of ages, and correlation of strata. Prereq: 3260. 3 lectures and 1 lab.
4110 Principles of Economic Geology (4) Formation and development of mineral and fuel resources. Emphasis on modern concepts of continental drift and plate tectonics. Prereq: 1420. 3 lectures and 1 lab.
4010 Principles of Economic Geology Laboratory. 4 hrs.
4770 Evolution of Oceans and Continents (4) Introductory discussion of oceanic origins and development of ocean basins and physical and biological processes within ocean basins and their continental and water mass environments. 1410 recommended.
4100 Principles of Economic Geology (4) Formation of mineral deposits. Prereq: 3190. 3 lectures and 1 lab.
4010 Principles of Economic Geology (4) Formation of mineral deposits. Prereq: 3190. 3 lectures and 1 lab.
4370 Tectonic Styles (4) Elements, habitats, and geologic processes involved in modern tectonic environments. Prereq: 1420. 2 lectures and 2 labs.
4310 Geologic Mapping (4) Interpretation of maps and aerial photographs. Emphasis on modern concepts of continental drift and plate tectonics. Prereq: 1420. 3 lectures and 1 lab.
4210-20 Invertebrate Paleontology (4, 4) Systematic study of invertebrate fossils with particular emphasis on (1) comparative paleontology and the origin of invertebrates, (2) plant evolution, and (3) Quaternary flora. Prereq: 3190 or consent of instructor. 3 hrs and 1 lab/field/ or seminar period. (Same as Botany 4210.)
4240 Peleobotany (4) Survey of fossil record of plants with particular emphasis on (1) comparative paleobotany and the origin of plants, (2) plant evolution, and (3) Quaternary flora. Prereq: 3190 or consent of instructor. Two 2-hr lectures.
4230 Paleoecology (4) Principles of environmental analysis as applied to fossil assemblages and associated lithologies. Prereq: 3260 or consent of instructor. 3 lectures and 2 labs.
4250 Evolution of Higher Taxa (4) Discussion of current evolutionary theory in context of paleontological patterns of evolution in fossil organisms at family level or higher. Prereq: 3260. 3 lectures and 1 lab.
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Assistant Professors: E.T. Hankamer (Emeritus), Ph.D. Wisconsin; H. Kratz (Head), Ph.D. Ohio State; J.E. Falen, Ph.D.

6810 Seminar in Geomorphology (3)
6410 Seminar in Mineralogy (3)
6000 Doctoral Research and Dissertation
5850 Regional Studies in Geology (3)
5820 Strata-bound and Stratiform Sulfide Deposits (4)
5750 Petrophysics (3)

Study. See page 181. Students should consult Associate Professors: S. J. Elliott, Ph.D. Michigan; C. J. Mellor, Ph.D. Chicago; D. M. Fiene, Ph.D. Indiana; J. S. Elliott, Ph.D. Michigan; R.L. Nordsieck (Emeritus), Ph.D. Ohio State; B. Bonn (Germany); R.L. Hiller, Ph.D. Cornell; H. W. Fuller, Ph.D. Pennsylvania; M. P. Rice, Ph.D. Vanderbilt.

Major: Majors or minors in German should strongly be urged to consider a minor in some other area of the humanities. Majors and minors in Russian should carefully prepare their programs in consultation with the departmental faculty adviser. Russian 2110-20-30 is prerequisite to the major. Russian 2640-50 is a prerequisite to the major.

The major consists of 36 hours of Russian courses, including Russian 3110-20-30, 3610-20-30, 9 hours from Russian 3210-20-30-40-50-60, and 15 additional hours of courses numbered above 3000, excluding 3010-30-30 and courses in English translation.

Preparation: Students have had previous work in German or Russian either in high school or in another college who should register for the course in which they would normally be placed. During the first week of the quarter a placement test will be given, and students will be advised if a change in registration is indicated.

Proficiency Examinations: Students who have acquired a knowledge of German or Russian may be granted credit for courses by passing a proficiency examination. Students of superior ability. Freshmen are admitted on the basis of high school average and performance on the American College Testing Program. Upperclassmen are admitted to German 1518 with a record of B average of 1518-2518-28 Honors: Elementary and Intermediate German (2, 2, 3) Hours. Honors courses for students of superior ability. Freshmen are admitted on the basis of high school average and performance on the American College Testing Program. Upperclassmen are admitted to German 1518 with a record of B average or higher. A grade of C or better in all college courses in order to continue with 1518. A student obtaining a grade of D or better in 1518 may continue with German 1520. This sequence is equivalent to 1510-1590-1590 and 2110-20-30-40-50-60 and is eligibility to enter the 3000-level German courses.

German 4333
1120-30 Elementary German (4, 4) Must be taken in sequence.
1150-30 Elementary German (4, 4) Must be taken in sequence.
1192-20-21-22 Honors: Elementary and Intermediate German (4, 4, 4, 4) Hours. Honors courses for students of superior ability. Freshmen are admitted on the basis of high school average and performance on the American College Testing Program. Upperclassmen are admitted to German 1518 with a record of B average or higher. A grade of C or better in all college courses in order to continue with 1518. A student obtaining a grade of D or better in 1518 may continue with German 1520. This sequence is equivalent to 1510-1590-1590 and 2110-20-30-40-50-60 and is eligibility to enter the 3000-level German courses.

1330 Elementary German through Individualized Instruction (1-8) Same material as in 1120-20-21-22. May be repeated for credit with the consent of department. Prereq: 1320 and its completion allows the student to enter 3000-level German courses.

1330 Elementary German through Individualized Instruction (1-8) Same material as in 1120-20-21-22. May be repeated for credit with the consent of department. Prereq: 1120-20-21-22. May be repeated for credit.

2050-30 Elementary German for Upper-Division and Graduate Students (3, 3) German, English translation.

5760 Petrophysics (3)
5820 Strata-bound and Stratiform Sulfide Deposits (4)
5850 Regional Studies in Geology (3)
5900 Doctoral Research and Dissertation
6000 Seminar in Geology (3)
6400 Seminar in Mineralogy (3)
6500 Seminar in Geophysics (3)
6810 Seminar in Geomorphology (3)
present an appropriate amount of extra work above that required for 3 hrs.

5710-50-60 German Literature in English Translation (3-4, 4-4, 3-4) No foreign language credit. No change in credit hours after add deadline. Students opting for 4 hrs' credit will be expected to present an appropriate amount of extra work above that required for 3 hrs.

5460 Old Norse Literature in English Translation (3-4) Prose readings of sagas of Norwegian kings, great Icelandic sagas and the heroic epics, and survey of Old Norse literature before the discovery of America around the year 1000. Mythological and heroic poems of the Edda.

5260 German Drama in English Translation (3) From Lessing to presenting. No foreign language credit.

5270 Modern German Novel in English Translation (3) From 1900 to the present. Hermann, Mann, Nietzsche, Scholz, Schnitzler, Sollers, 1938. 6 hrs. No foreign language credit.

5260 Goethe's Faust in English Translation (3) Introduction to Goethe. No foreign language credit.

5310 Dramas of Bertolt Brecht (3-4) Chronological survey of Brecht's dramatic works and theatrical writings in English translation. No foreign language credit.

5320 Novels of Hermann Hesse (3-4) Study and analysis of Hesse's major novels in English translation. No foreign language credit.

5330 Dramas of Heinrich Mann and Thomas Mann (3-4) Study of two principal forerunners of 20th-century drama. Works are read in English translation. No foreign language credit.

5340 Special Topics in German Literature in English Translation (3) Topics and credit hours vary from term to term. Students and Seniors (3, 3, 3) For graduate students preparing for language examinations and seniors desiring reading knowledge of a second foreign language. Prereq: 2 years of some foreign language in college or consent of department. Undergraduate credit only. No credit for students having completed 5350 or 5360.

5350-5360 Introduction to Russian Literature (3, 3) Must be taken in sequence.

5310-5320 Intermediate Russian (3, 3) Must be taken in sequence.

5331-5341 Intermediate-Advanced Russian (3, 3) Must be taken in sequence.

5350-5360 Russian Composition and Conversations (3, 3) Practice in writing and speaking; grammar review and vocabulary building. Prereq: Completion of 5310-5320.

4010 Selected Topics in Russian and Eastern Euro- pean Studies (3) Interdisciplinary seminar on selected topics for advanced students. Prereq: Undergraduate Russian or consent of department. Undergraduate credit only. No credit for students having completed 5310-5320.

5350 Russian poetry. 3620: Russian short stories.

5360 Russian short stories. 2010: Russian drama. 2020: Russian novels since 1900, with emphasis on the expression of this thought in Russian literature.


5380 Special Topics in Russian Literature in English Translation (3) Topics vary and are announced in advance. Student suggestions for topics are welcome. No foreign language credit. May be repeated.

5390 Contemporary Slavic Literature in English Translation (3-4) Survey of Polish, Czech, Yugoslav, and Georgian fiction since 1900 with emphasis on first three.

Greek

See Classics.

Hebrew

See Religious Studies.

History (462)

4210-4220 History of the Jews (3) L. P. Graf' (Head), Ph.D. Harvard; E. Chavel, Ph.D. Harvard; J. C. Daniel, Ph.D. Maryland; R. E. Duvoisin, Ph.D. California Berkeley; R. S. Fink (Emeritus), Ph.D. Princeton; Y. F. Hek, Ph.D. Harvard; A. G. Haase, Ph.D. Chicago; J. P. Haskin, Ph.D. California Santa Barbara; L. P. Graf' (Head), Ph.D. Harvard; S. S. Gross, Ph.D. Columbia; P. L. H. Landon, Ph.D. (Slavic Languages and Literatures), Ph.D. Harvard; J. K. Bird, Ph.D. Princeton.

4230-4240 Hebrew Literature and History (3) P. L. Graf' (Head), Ph.D. Harvard; E. Chavel, Ph.D. Harvard; J. C. Daniel, Ph.D. Maryland; R. E. Duvoisin, Ph.D. California Berkeley; R. S. Fink (Emeritus), Ph.D. Princeton; Y. F. Hek, Ph.D. Harvard; A. G. Haase, Ph.D. Chicago; J. P. Haskin, Ph.D. California Santa Barbara; L. P. Graf' (Head), Ph.D. Harvard; S. S. Gross, Ph.D. Columbia; P. L. H. Landon, Ph.D. (Slavic Languages and Literatures), Ph.D. Harvard; J. K. Bird, Ph.D. Princeton.

4250-4260 Hebrew Literature and History (3) P. L. Graf' (Head), Ph.D. Harvard; E. Chavel, Ph.D. Harvard; J. C. Daniel, Ph.D. Maryland; R. E. Duvoisin, Ph.D. California Berkeley; R. S. Fink (Emeritus), Ph.D. Princeton; Y. F. Hek, Ph.D. Harvard; A. G. Haase, Ph.D. Chicago; J. P. Haskin, Ph.D. California Santa Barbara; L. P. Graf' (Head), Ph.D. Harvard; S. S. Gross, Ph.D. Columbia; P. L. H. Landon, Ph.D. (Slavic Languages and Literatures), Ph.D. Harvard; J. K. Bird, Ph.D. Princeton.

**1510-20 Development of Western Civilization (4,4) Consent of department required.**

1518-28 Honors: Development of Western Civilization (4,4) Consent of department required.

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and supervised experience in one or more medicine, and social work. therapy, hospital administration, law, child abuse, and discrimination. Many of our problems such as crime, poverty, alcoholism, schools to nursing homes, and are wide variety of settings, ranging from nursery live. The Program in Human Services was established in 1971 for the purpose of providing education, training, and experience, at the undergraduate level, for individuals interested in working to enhance and increase the well-being of our society and of the individuals it comprises. The course of study provided by the faculty is also appropriate for individuals who wish primarily to improve their understanding of themselves and of the society in which they live.

Graduates of the program are at work in a wide variety of settings, ranging from nursery schools to nursing homes, and are confronted with the human consequences of problems such as crime, poverty, alcoholism, child abuse, and discrimination. Many of our graduates enter graduate and professional schools, seeking advanced degrees in fields as diverse as guidance counseling, physical therapy, occupational administration, law, medicine, and social work. The curriculum of the program includes required courses, elective courses, advising, and supervised experience in one or more human service agencies or organizations.

Students pursuing a major in Human Services will take 2690, 3100, 3300, 4220, 4229, and 4400—preferably in the order given—and one course from each of the four lists of courses given below; total hours’ credit for the major will vary from 48 to 52, due to differences in the number of hours’ credit awarded for different courses on these four lists.

I. Culture and Personality
American Studies 3010, Anthropology 3410, 3860, 3860, 4420, 4430, 4740
Audiology & Speech Pathology 4250, 4620; Child and Family Studies 3210, 3220, 4810; Educational Psychology 4110, 4800; Geography 3610; Psychology 3210, 3550, 4510; Sociology 3020, 4300; Speech 3021, 3030.

II. Complex Organizations
Geography 3610; Political Science 3556, 4865, 4866; Psychology 4530; Religious Studies/Sociology 3400, Sociology 3160, 3620, 4030, 4560.

III. Research and Statistics
Computer Science 3010; Philosophy 3370, 4720, Psychology 3150, Sociology 3910, 3920.

IV. Community and Society
Economics 3220, 3410; Anthropology 3070, 3450; Child and Family Studies 3215, 3320, 4610; Geography 3000, 3430; Home Economics 3110, Human Services 4900; Philosophy 3320, 3440, 3611; Political Science 3370, 3720, 3730, 3760, 4350, 4350, 4360, Public Health 3330; Religious Studies 3350, 3500, 3610, Rural Sociology 3420; Sociology 3160, 3220, 3330, 3350, 3430, 3510, 3690, 4330, 4530, 4540, 4540, 4590; Special Education 5480, 5620.

Total Credit Hours .............48-52
210 College of Liberal Arts

Associate Professors: C. C. Deak, Ph.D. Loyola University; C. D. Gundlach, Ph.D. New York U.; S. S. Vorderman, Ph.D. Boston U.; J. R. Robson, Ph.D. Chicago U.; R. S. Sale, Ph.D. Stanford U.; S. J. Stewart, Jr., Ph.D. Wisconsin; R. J. Rummel, Ph.D. Virginia; S. M. Sofer, Ph.D. Cornell; J. Smith, Ph.D. California (Berkeley); K. Sun, Ph.D. Oregon State; R. G. Storer, Ph.D. Oregon State or C. Wigner, Ph.D. Duke; J. A. Wain, Ph.D. SUNY (Stony Brook).

Assistant Professor: V. A. Alexander, Ph.D. DePaul U.; D. F. Anderson, Ph.D. Chicago U.; P. D. Gembicki, Ph.D. Brandeis U.; D. F. Nieman, Ph.D. Indiana U.; Y. A. Douglis, Ph.D. Duke; J. L. Gess, Ph.D. California U.; J. E. Graser, Ph.D. California (Berkeley); L. J. Sebas, Ph.D. Cornell; R. H. Rankin.

Ph.D. Students: M. Miller, Ph.D. Illinois; R. P. Soni, Ph.D. Oregon State; R. A. Westen, Ph.D. Wisconsin.

Instructors: C. G. Green, M.S. Tennessee; M. McLean, M.D. Purdue; D. P. Nesh, M.A. Colorado.

Space Institute: 211 University.

UNDERGRADUATE Placement Information for Freshman Courses: Students who need more than one year of mathematics should plan to take 1540-50-60 (or 1542-50-60 or 1548-50-68). The prerequisites for 1540 (and 1942) are two years of regular high school algebra, one year of geometry, and one semester of trigonometry or equivalent. Students who possess an ACT score below 28 in mathematics are urged to take Algebra Refresher, Part I, without a grade of C or better before taking 1540 (or 1942). Students who have not had high school geometry should take 0150 before (or concurrently with) 1540. Students who possess an ACT score of at least 32 in mathematics and a high school average of at least 3.4 are eligible for the honors course 1548. Prospective mathematics majors who meet these requirements are particularly encouraged to enroll in 1540. Exceptions to these requirements are particularly eligible for the honors course 1548.

Basic Requirements: The prerequisites for 1540 are two years of high school algebra, one year of regular geometry, and one term of trigonometry or equivalent. Students who possess an ACT score below 18 in mathematics may subsequently receive credit for Math 1540 or 1545.

Basic Program: Students who have a deficiency in algebra (or equivalent) may remove the deficiency by taking the appropriate refresher course(s) in mathematics, respectively, and then take Algebra Refresher, Part I, in the fall. Students who wish to enter the Advanced Program may take Math 1540 but are advised to take Algebra Refresher, Part I, in the fall-quarter, students who wish to enroll in the appropriate course(s).

Honor Program: An Honors Program in mathematics will consist of at least 27 hours of mathematics courses numbered 3000 or above, including a senior seminar (4120 or 4150) and at least one of these sequences: 3780-90, 3920-30, 4060-4250, 4060-4250, 4120-4500, 4120-4250, 4250-4350, 4510-4250, 4550-4250, 4550-4250, 4710-4500, 4750-4500.

TWO additional advanced hours in mathematics courses numbered 4000 or above, including a senior seminar (4120 or 4150) and at least one of these sequences: 3780-90, 3920-30, 4060-4250, 4060-4250, 4120-4500, 4120-4250, 4250-4350, 4510-4250, 4550-4250, 4710-4500, 4750-4500.

Honor Program: An Honors Program in mathematics will consist of at least 27 hours of mathematics courses numbered 4000 or above, including a senior seminar (4120 or 4150) and at least one of these sequences: 3780-90, 3920-30, 4060-4250, 4060-4250, 4120-4500, 4120-4250, 4250-4350, 4510-4250, 4550-4250, 4710-4500, 4750-4500.

In exceptional cases, other courses of similar level may be accepted in place of the six hours of honor courses. A student who wishes to be considered under the Honors Program will apply the course before the last day of the drop-dead for the new term (but in the spring, if graduation is to be in May). The application will list the 27 hours to be offered, including the honors courses or their proposed substitutes. Students taking more than 27 hours of qualifying courses may select those to be listed. A note of successful completion will be added to the student's transcript.

Students interested in planning an Honors Program should consult their advisors as early as possible.

Minor: Students of 2840-50-60 (or 2848-56-68) or 2850-50-60, and at least 12 hours in courses numbered 3050 or above.

Program Planning for Majors: Mathematics majors have considerable freedom in determining how they will meet the advanced requirements of the major. In order to offer some guidance in program planning, the mathematics department has designed several sample programs which majors may wish to follow. A brief description of these programs appears below, more detailed information about these or any additional programs which the department may design in the future is available in Ayres 121. Completion of the courses suggested in any of the following programs will meet (and, in some cases exceed) the advanced requirements for a major in mathematics.

All students who intend to pursue graduate studies in the mathematical sciences are strongly urged to study French, German, or Russian for at least two years.

Program 1. This program is designed for students who have a general interest in mathematics and do not plan to become professional mathematicians. Supplemented by appropriate non-mathematical electives, such a program might be followed, for example, by students who are law students, by students planning to teach secondary school mathematics, or by those who wish to enter business after graduation. Suggested courses: Mathematics 3150, 3050-60, 3790-90, 3330, 4150-10, 4120, senior seminar, three hours of mathematics electives.

Program 2. This program emphasizes pure mathematics and is designed to prepare students for any of the mathematical sciences. Suggested courses: Mathematics 3150, 3050-60, 3150-60, 3150-60, 3300, 4060-4250, 4710-4500, 4750-4500.

Program 3-A. This program emphasizes numerical mathematics and is designed to prepare the student for employment in industry. Suggested courses: Mathematics 3150, 4205-25, 4105-20, 4105, Computer Science 3160. Mathematics 4990 or Computer Science 4330, senior seminar, six hours of math electives selected from 4450, 4560, 4640, 4710.

Program 3-B. This program emphasizes pure mathematics and is designed to prepare students for any of the mathematical sciences. Suggested courses: Mathematics 3150, 4205-25, 4105-20, 4105, Computer Science 3160. Mathematics 4990 or Computer Science 4330, senior seminar.
Applications of Integration. Prerequisites: Math 1540 or equivalent. Antiderivatives, integration of algebraic functions, mean value theorem, derivatives of algebraic functions, applications to problems in physics, and computer mathematics. Mathematical induction and other elementary number theory. Functions of several variables, partial derivatives, gradients. Prerequisites: Math 1540. 1550-60 Introductory Calculus-General Mathematics. Calculus sequence for pre-professional students, engineers, and scientists in physical sciences for quantitative courses in their fields. The total differential, maxima and minima, line integrals, vector fields, and Green's theorem. Prerequisites: Math 1540 or 1700. 1700 Precalculus Mathematics (4) Functions and their graphs. Polynomial, exponential, logarithmic, and trigonometric functions. Limits, continuity, derivatives, applications of derivatives, and the definite integral. Prerequisites: Math 1540 or 1700. 1840 Precalculus Mathematics (4) Functions and their graphs. Polynomial, exponential, logarithmic, and trigonometric functions. Limits, continuity, derivatives, applications of derivatives, and the definite integral. Prerequisites: Math 1540 or 1700. 1848 Precalculus Mathematics (4) Functions and their graphs. Polynomial, exponential, logarithmic, and trigonometric functions. Limits, continuity, derivatives, applications of derivatives, and the definite integral. Prerequisites: Math 1540 or 1700. 1848-50-60 Single Variable Calculus (4, 4, 4) Functions, graphs, slope of a curve, definition of a derivative, limits, derivatives of algebraic functions, implicit differentiation, the chain rule, differentials, applications. Theorems of Rolle and the Mean Value, Extreme Value Theorem, the Fundamental Theorem of Calculus, applications, antiderivatives, geometric and physical interpretations of area, growth, applications. Prerequisites: Math 1540 or 1700. 1848-50 Honors: Single Variable Calculus (4, 4, 4) Functions, graphs, slope of a curve, definition of a derivative, limits, derivatives of algebraic functions, implicit differentiation, the chain rule, differentials, applications. Theorems of Rolle and the Mean Value, Extreme Value Theorem, the Fundamental Theorem of Calculus, applications, antiderivatives, geometric and physical interpretations of area, growth, applications. Prerequisites: Math 1540 or 1700. 1848-50-60 Single Variable Calculus (4, 4, 4) Functions, graphs, slope of a curve, definition of a derivative, limits, derivatives of algebraic functions, implicit differentiation, the chain rule, differentials, applications. Theorems of Rolle and the Mean Value, Extreme Value Theorem, the Fundamental Theorem of Calculus, applications, antiderivatives, geometric and physical interpretations of area, growth, applications. Prerequisites: Math 1540 or 1700. 1848-50 Honors: Single Variable Calculus (4, 4, 4) Functions, graphs, slope of a curve, definition of a derivative, limits, derivatives of algebraic functions, implicit differentiation, the chain rule, differentials, applications. Theorems of Rolle and the Mean Value, Extreme Value Theorem, the Fundamental Theorem of Calculus, applications, antiderivatives, geometric and physical interpretations of area, growth, applications. Prerequisites: Math 1540 or 1700.

mathematical induction and other elementary number theory. Functions of several variables, partial derivatives, gradients. Prerequisites: Math 1540. 1550-60 Introductory Calculus-General Mathematics. Calculus sequence for pre-professional students, engineers, and scientists in physical sciences for quantitative courses in their fields. The total differential, maxima and minima, line integrals, vector fields, and Green's theorem. Prerequisites: Math 1540 or 1700. 1700 Precalculus Mathematics (4) Functions and their graphs. Polynomial, exponential, logarithmic, and trigonometric functions. Limits, continuity, derivatives, applications of derivatives, and the definite integral. Prerequisites: Math 1540 or 1700. 1840 Precalculus Mathematics (4) Functions and their graphs. Polynomial, exponential, logarithmic, and trigonometric functions. Limits, continuity, derivatives, applications of derivatives, and the definite integral. Prerequisites: Math 1540 or 1700. 1848 Precalculus Mathematics (4) Functions and their graphs. Polynomial, exponential, logarithmic, and trigonometric functions. Limits, continuity, derivatives, applications of derivatives, and the definite integral. Prerequisites: Math 1540 or 1700. 1848-50-60 Single Variable Calculus (4, 4, 4) Functions, graphs, slope of a curve, definition of a derivative, limits, derivatives of algebraic functions, implicit differentiation, the chain rule, differentials, applications. Theorems of Rolle and the Mean Value, Extreme Value Theorem, the Fundamental Theorem of Calculus, applications, antiderivatives, geometric and physical interpretations of area, growth, applications. Prerequisites: Math 1540 or 1700. 1848-50 Honors: Single Variable Calculus (4, 4, 4) Functions, graphs, slope of a curve, definition of a derivative, limits, derivatives of algebraic functions, implicit differentiation, the chain rule, differentials, applications. Theorems of Rolle and the Mean Value, Extreme Value Theorem, the Fundamental Theorem of Calculus, applications, antiderivatives, geometric and physical interpretations of area, growth, applications. Prerequisites: Math 1540 or 1700. 1848-50-60 Single Variable Calculus (4, 4, 4) Functions, graphs, slope of a curve, definition of a derivative, limits, derivatives of algebraic functions, implicit differentiation, the chain rule, differentials, applications. Theorems of Rolle and the Mean Value, Extreme Value Theorem, the Fundamental Theorem of Calculus, applications, antiderivatives, geometric and physical interpretations of area, growth, applications. Prerequisites: Math 1540 or 1700. 1848-50 Honors: Single Variable Calculus (4, 4, 4) Functions, graphs, slope of a curve, definition of a derivative, limits, derivatives of algebraic functions, implicit differentiation, the chain rule, differentials, applications. Theorems of Rolle and the Mean Value, Extreme Value Theorem, the Fundamental Theorem of Calculus, applications, antiderivatives, geometric and physical interpretations of area, growth, applications. Prerequisites: Math 1540 or 1700.
statistics without calculus. Course cannot be used as a prerequisite to majors in mathematics, nor is it available for credit to students in College of Business Administration.

3040 The Ideas of Calculus (4) Study of basic ideas in mathematics, nor is it available for credit to students in the College of Education. Prereq: 1 year of college mathematics. Must not be taken for credit by any student who has previously received credit for any calculus level course.

3050 Elementary Probability and Statistical Analysis (3) Combinatorial problems, sample space, sets, events, and their probabilities, random variables, and their distributions; simple random processes. Prereq: 1500-50 or equivalent.

3060 Elementary Statistical Analysis (3) Elements of the theory of probability and statistics. Prereq: Consent of instructor.

3090 Polynomials and Rings (3) Introduction to abstract algebra, beginning with study of integers. Prereq: 1 year of college mathematics. May not be taken for credit by any student who has previously received credit for any advanced level course in algebra.

3100 Logic and Sets (3) Elements of mathematical logic, elementary algebra of sets. Prerequisites: 3060 or consent of instructor.

3110 Real Number System (3) Laws of arithmetic, rational and irrational numbers, fields. Prerequisites: 3060 or consent of instructor.

3115 Introduction to Numerical Algorithms (3) same as Computer Science 4245. Iterative methods for large, sparse problems. Project emphasis.

3150 Linear Algebra (3) Abstract vector spaces, linear transformations and their matrices, systems of linear equations and determinants, inner products, eigenvalues and eigenvectors, singular values and vectors, hermitian and unitary matrices. Prereq: 2860 or 2560 or consent of instructor.

3155 and 4060. (Same as Computer Science 4245.)

3155 and 4060. (Same as Computer Science 4245.)

3200-30 Topology of Euclidean Spaces (3, 3) Topology will include topologies of line and plane, separation properties, connectedness, completeness, continuous functions, homeomorphisms, compactness, and topological invariants. Must be taken in sequence. Prereq: 3105 or 3960 or consent of instructor.

3200-30 Topology of Euclidean Spaces (3, 3) Topology will include topologies of line and plane, separation properties, connectedness, completeness, continuous functions, homeomorphisms, compactness, and topological invariants. Must be taken in sequence. Prereq: 3105 or 3960 or consent of instructor.

3990 Studies in Mathematics (1-4) Credit determined at registration. Must be taken in sequence. Prereq: 2860 or 4050. Must be taken in sequence.

4005 Calculus of Finite Differences (3) Real difference equations; applications to problems in engineering and physics. Prereq: 2860 or 4100.

4070 Introduction to Mathematical Statistics (3, 3) Introduction to probability; discrete and continuous distributions, correlation, regression, and statistical independence; foundations of sampling theory; significance tests. Must be taken in sequence. Prereq: 2860.

4100-25-40 Differential Equations (3, 3, 3) Introduction to ordinary differential equations. Prereq: 2860 or 4050. Must be taken in sequence.
The Bachelor of Science in Music Education, designed for preparation for institutional teaching, is administered by the Department of Music Education. See page 104 for requirements.

GENERAL

1000 Fundamentals of Music Theory (3) Theory and practice of basic elements of music. 3 hrs.

2007-21-81 Church Service Playing I(1, 1, 1) Practice in the use of music in church services, including keyboard harmony, improvisation, mixed consort, and performance with an equivalent number of quarters of study in Music 2071-81.


2111-21-31 Theory 1 (3, 3, 3) Material of music with emphasis on literature of Baroque, Classic, and Romantic periods. Exercises in writing and analysis. Must be taken in sequence. Grading: C or better must be achieved to continue the course sequence.

4002 Suzuki Piano Method (2) Study of the psychological, pedagogical, and theoretical aspects of the Suzuki piano method. Prereq: Consent of instructor.


4113 Pedagogy of Music Theory (3) Techniques, materials, and methods of music theory instruction. Requires thorough knowledge of analysis of musical compositions by students.

4114 Stage Band Arranging (3) Analysis of scores and related teaching materials. Collateral laboratory experiences accompany the study. Prereq: Consent of instructor.

3052-03 Sight Singing and Ear Training (1, 1, 1) Study and application of sight singing and ear training techniques. Prereq: Consent of instructor.

3044-05 Brass Literature (2, 2) Prereq: Consent of instructor.

3760 Opera Production (1-3) Supervised work on opera productions. May be repeated for credit. Prereq: Consent of instructor.

3771-91 Church Service Playing II (6, 6, 6) Continuation of Music 2197-91, which is prereq.
for credit.

3682-5682 University Chorus (1,1) May be repeated for credit.

3680-5680 Concert Choir (1,1) May be repeated for credit.

3670-5670 Symphony Orchestra (1,1) May be repeated for credit.

3654-5654 Varsity Band (1,1) May be repeated for credit.

3652-5652 Campus Band (1,1) May be repeated for credit.

3650-5650 Concert Band (1,1) May be repeated for credit.

3642-5642 Opera Workshop (1,1) May be repeated for credit.

3636-5636 Symphony Orchestra (1,1) May be repeated for credit.

3620-5620 University Chorus (1,1) May be repeated for credit.

Organizational Psychology Program

See Graduate School.
to late 19th century; 3312-Late 19th century to

ture, functions, value, and epistemic principles of

sophic assumptions and implications in major liter-

Philo-

Philosophical Ideas in Literature (4) Philosophical aspects of philosophy of history.

Philosophy of History (4) Speculative and critical Ethics (4) Ethical theory as related to politics, economics, education, law, religion, and the like.

American Philosophy (4,4) Colonial politics, economics, education, law, religion, and the like.

Philosophy of Law (4) Nature, sources, functions, value, and epistemic principles of

functions of philosophy of history.

Philosophy of Natural Science (4) Consideration of standard topics pertinent to natural science, including reduction of theories and taxonomical ex-

Scientific Revolution: historical evolution of thought in astronomy, mechanics, and philosophy of nature up to Newton. 3750—The development and decline of Newtonian science: histori-

social policies and institutions.

philosophy or consent of instructor.

mutual consent of students and instructor with ap-

Philosophy of History (4) Philosophical ideas in literature.

Philosophy of Language (4) Examination of methods of inquiry and modes of explanation in social sciences. Prereg. 3770 or two years of social sciences.

Philosophy of Language (4) Prereg. 8 hrs of philosophy or consent of instructor.

Graduate: 4000 Special Topics (4) A student- or instructor-initiated course to be offered at a convenient time by a faculty member of the department. May be repeated for credit.

Philosophy of Science (4) Nature and limits of scientific inquiry, and its impact on society.


Arts: 4470 Kant (4) Prereg. 8 hrs of philosophy or consent of instructor.

6310 Seminar in Axiology (4) Philosophical discussion of contemporary art.

6250 Seminar in Philosophy of Religion (4) Standard topics in philosophy of science: scientific method, nature of laws and theories, problem of induction, explanation, measurement. No back-

Instructor: 5080 Philosophy of Logic (4) Prereg. 8 hrs of philosophy or consent of instructor.

Instructor: 5110-20-30-40-50-60 Studies in History of European Philosophy (4,4,4,4,4,4)

Instructor: 5365 Applied Ethical Theory (4) Prereg. 8 hrs of philosophy or consent of instructor.

Instructor: 5410 Philosophy of Language (4) Prereg. 8 hrs of philosophy or consent of instructor.

Instructor: 5750 Clinical Pragmatic Orientation (4) Prereg. 8 hrs of philosophy or consent of instructor.

Instructor: 5950 Clinical Practicum in Medical Ethics (4,4,4,4,4,4)

Instructor: 6270 Advanced Topics in Medical Ethics (4)

Instructor: 6510 Seminar in Epistemology (4)

Instructor: 6700 Advanced Topics in Medical Ethics (4)

Instructor: 6900 Advanced Studies in Medical Ethics (4-12)

Instructor: 7010 Seminar in Metaphysics (4)

Instructor: 7100 seminar in History of Philosophy (4,4,4,4,4,4)

Instructor: 7120 Seminar in History of American Philosophy (4,4,4,4,4,4)

Instructor: 7200 Seminar in Philosophy of Religion (4,4,4,4,4,4)

Instructor: 7210 Seminar in Axiology (4,4,4,4,4,4)


Instructor: 7510 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 7550 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 7710 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 7810 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 7910 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 8010 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 8110 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 8210 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 8310 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 8410 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 8510 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 8610 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 8710 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 8810 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 8910 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 9010 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 9110 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 9210 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 9310 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 9410 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 9510 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 9610 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 9710 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 9810 Seminar in Ethics and Conscience (4,4,4,4,4,4)

Instructor: 9910 Seminar in Ethics and Conscience (4,4,4,4,4,4)
Astronomy (150)

2110-230 Introductory Astronomy (4, 4) Surveys astronomical data and inferences. 2110 concen-

trates on the solar system. 2130 introduces stellar astronomy including binary and variable star clus-

ters and nebulae. It is recommended that the course be taken in sequence. 4 hrs including lab.

2118-230, 238-30 Honors Introductory Astronomy (4, 4) Observation and theories of matter and space in the universe. Planets, stars, and the interstellar medium. Must be taken in sequence. 3 hrs lecture-discussion; 2 hrs per week. Coreq: Math 1810-20-30 or equivalent honors course.


Physics (773)

UNDERGRADUATE

The undergraduate program in physics is designed to give the student a wide background which will permit ready specialization in various areas such as nuclear physics, solid state physics, high energy physics, molecular physics, etc. Students planning to major in physics are urged to consult advisers in the Department of Physics prior to registration in freshman year with regard to selection of proper first course in physics.

Major Physics 1318-238 and Math 1840-50-60 are prerequisites to a major in physics which includes the following courses:

2318-40 Mechanics, 3 hr lecture, 3 hr demonstration lab.
2328-40 Toronto, 3 hr lecture, 3 hr lab.
2338-40 Modern Physics, 3 hr lecture, 3 hr lab.
2340-40 Electricity, 3 hr lecture, 1 hr recitation, 3 hr lab.
2350-40 Waves and Optics, 3 hr lecture, 1 hr recitation, 3 hr lab.
2360-40 Quantum Mechanics, 3 hr lecture, 1 hr recitation, 3 hr lab.
2370-40 Astrophysics, 3 hr lecture, 1 hr recitation, 3 hr lab.

A major in physics with a concentration in health sciences includes Physics 2318-20 or Math 2810-20 and Math 2840-50-60. It is suggested that students take Math 2810-20 or Math 2820-20.

Minor: A minor in Physics consists of Physics 2110-20 to 238-30 and 15 hr hours from physics and astronomy courses numbered 3000 and above. Substitution provisions in the major statement also apply to the minor.

An Engineering Physics Curriculum is also offered. The program is described on page 147 and listed in tabular form on page 127.

1210-30-30 Fundamentals of Physics: Mechanics and Heat (4, 4, 4) First course for physics en-

gineers and liberal arts majors in mechanics and heat. 1210, 1218, and 1220 are equivalent.
30 is equivalent for graduation purposes. Must be taken in physics. Coreqs: Coreq: Math 1810-20-30, 3 hrs of lecture, 2 hrs of lab.

1218-30 Honors Fundamentals of Physics: Me-

chanics and Heat (4, 4, 4) Honors course covers the same material as 1210-30-30. Open to qualified students from other disciplines. Must be taken in sequence. Coreq: Math 1448-60-30, 3 hrs of lecture, 2 hrs of lab.

1410-230, 238-30 Honors The Physics of Light (4, 4, 4) Introductory course in concepts and phenomena of light. The course includes a quantitative model of the universe. Students are taught to think in different modes of the universe. Particular emphasis is placed on the role of light in the physical activity of the universe. Electric- ity, and wave motion are developed and applied to such varied fields as water systems, atomic and molecular behavior, radiation, dynamic changes in the atmosphere and in the earth's crust, and to stellar and galactic phenomena. In the first two terms the topics are concerned with the relation of light to the relativity of the observer, the mathematical aspects of the behavior of light, and the wave properties of light. Basic physical principles are developed with constant of instructor. 4 hrs including demonstra-

tion lab.

1450 Physics of Athletic Activity (4) Principles of physics, particularly mechanics and heat, are intro-

duced. Discussion of these ideas will emphasis their role in physical activities, particularly sport-

cer. Course topics include statics, equilibrium, linear and angular motion, momentum, force, work, and energy. 4 hrs lecture-demonstration.

1510 Physics of Music (4, 4) Production, transmission, and reception of sound waves. Frequency, intensity, time. Basic acoustics of instruments and voice. 4 hrs lecture and demonstration.

2310-30 Elements of Physics (4, 4, 4) 2210-12 ele-

ments of mechanics. Properties of fluids, human body systems, and wave phenomena. Coreqs: Coreq: Math 1810-20-30. Honors course requires in pre-medical, pre-dental, pre-chiropractic, and pre-veterinary programs. Must be taken in se-

quence. Prereq: Coreq: Math 1448-60-30 or Math 1448-60-30 for physics and engineering majors. 3 hrs of lecture and 3 hrs of lab.

2320-30 Elements of Physics for Architects (4, 4, 4) 2240-12 Statics, dynamics, properties of fluids; coreq: Math 1840 or 1550. 2250-30 Heat and thermo-

odynamics. Basic physical principles and applications. 3 hrs of lecture and 3 hrs of lab.


2350-30 Honors Fundamentals of Physics: Elec-

tronics, Waves and Optics, Modern Physics (5, 5, 5, 5) Interaction of charged particles and elec-

trons. Coreqs: Coreq: Math 1810-20-30 or Math 2810-20 or Math 2820-20. 4 hrs lecture, 3 hrs of lab.

2360-30 Foundation of Physics: Electric-

tronics, Waves and Optics, Modern Physics (4, 4, 4, 4) Interaction of charged particles and elec-

trons. Coreqs: Coreq: Math 1810-20-30 or Math 2810-20 or Math 2820-20. 4 hrs lecture, 3 hrs of lab.

2370-30 Foundation of Physics: Electric-

tronics, Waves and Optics, Modern Physics (4, 4, 4, 4) Modern ideas of atomic structure, nuclear changes, particles, and radiation. Not for credit for physics majors. Coreqs: Coreq: Math 1810-20-30 or Math 2810-20-30 and Math 2830 or equivalent. 3 hrs of lecture and 3 hrs of lab.

2380-30 Foundation of Physics: Elec-

tronics, Waves and Optics, Modern Physics (4, 4, 4, 4) Modern ideas of atomic structure, nuclear changes, particles, and radiation. Not for credit for physics majors. Coreqs: Coreq: Math 1810-20-30 or Math 2810-20-30 and Math 2830 or equivalent. 3 hrs of lecture and 3 hrs of lab.


2420-30 Modern Optics (4, 4) Geometrical optics: reflection and transmission of light at a diame-

tric surface; physical theory of interference, lenses, and mirrors; thin lens systems, ray tracing; polarization: magnifying glass, real and virtual. Coreqs: Coreqs: Coreq: Math 2810-20-30 or Math 2830-30. 3 hrs of lecture and 3 hrs of lab.

work in the scientific, professional, and 32 or more hours of upper-division concentrating on psychology. Psychology practicum courses, and 28 or more hours of 2520-30-40 or 2518-28, Mathematics college-level teaching areas of psychology. psychology courses.

22 determined by departmental Undergraduate development of grasp of science of enable superior students to accelerate (Junior-Senior) program leading to the B.A. of Psychology 2500 and 20 additional hours upper-division courses of which 12 hours upper-division psychology, 3150, and one quarter of 2518-28, Honors:General Psychology (4,4) First 2500 General Psychology (4) An introduction to Honors research thesis and passing of a final 

4948-58-68 and Psychology 4978-88-98 . Successful applicants usually have a G.P.A. of more than 24 credit hours maybe earned in courses of independent study and research and empirical basis of learning and thinking. Genetic, evolutionary, ecological, and develop- ment, and principles. (Same as Zoology 4720.)

4720 Comparative Animal Behavior (4) Methods and consent of instructor. 4729 Comparative Animal Behavior Laboratory (4) Laboratory and field studies, Coreq: 4720. (Same as Zoology 4729.)

4729 Comparative Animal Behavior Laboratory (4) Laboratory and field studies, Coreq: 4720. (Same as Zoology 4729.)

4670 Cognitive Development (4) Theory and re- search on development of language and thinking in children and adolescents. Prereq: 3210 or 3550.

4701 Physiological Psychology (4) Nervous system and physiological correlates of behavior. Prereq: One year of biology or zoology and Psychology 2500.

4718 Physiological Psychology Laboratory (4) Laboratory studies of nervous system and physiological correlates of behavior. Coreq: 4718.

4728 Animal and Ontogeny of Social Behavior (4) Genetic, evolutionary, ecological, and develop- ment, and principles. (Same as Zoology 4720.)

4719 Psychology and Current Issues (4) Research and related disciplines. 4650 Personality Theories (4) Prereq: 3650 or consent of instructor.

4670 Contemporary Research in Behavior of Women (4) Study of interaction of culture and biological factors in determining women's roles, with emphasis on physiological mecha- nisms involved. 4880 Afro-American Psychology (4) Review and analysis of psychological literature on Afro- Americans. Prereq: Consent of instructor. (Same as Black Studies 4880.)

4890 Aspects of Urban Environment (4) (Same as Architecture 4900, Human Services 4900, and Real Estate 4903.)

4910 Senior Seminar in General Psychology (4) In- tegrative review of major problems in psychology. Intensive examination of selected topics. Prereq: Consent of instructor.

4546-58-68 Honors: Reading and Research (4, 4, 4) Honors candidates only. English 4546-58-68 Honors: Senior Reading and Research (4, 4, 4) Honors candidates only. 4540 Personality Theories (4) Prereq: 3650 or consent of instructor.

4520 Personality and Social Systems (4) Prereq: 2540.

4510 Group Processes (3) Study and experience of theory and techniques of group processing and facilitation. Those participating in 4510 are ex- peoted to continue into 4520 and 4530. Prereq: 2540 and consent of instructor.

4520-30-40 Group Processes (3) Didactic and laboratory experience for those qualified for further training as group facilitators. Prereq: 4510 and consent of instructor.

4640 Psychological Tests and Measures (4) Theory and construction of individual and group measures. Survey of various methods of assessment of intelligence, personality, special abilities, and educa- tional achievement. Prereq: 3510.

4560 Symbolic Processes (4) Logic of signs and symbols: deductive and inductive reasoning; logic of language. Prereq: 2540 or linguistics background recommended.

4570 Cognitive Development (4) Theory and re- search on development of language and thinking in children and adolescents. Prereq: 3210 or 3550.

2520 recommended.

4106-40-60 Human Relations (2, 2) Experience and study of human relations in groups and small and large groups. SYRC.

4105-20-30 Methods (4, 4, 4) Honors candidates only. 4101 Foreign Study (1-6) See page 181.

4102 Off-Campus Study (1-6) See page 181.

4103 Psychology (4) 4107, 4109, and 4110 are courses of independent study and research taken by consent of instructor only. Course requirements, meeting times, and grading procedures are determined by agreement between the student and a member of the psychology faculty. For each credit hour, a maximum credit 18 hrs. 4107 Experience in Individualized Instruction (4-6) Prereq: Minimum credit 12 hrs. Graded for letter grade only. Prereq: Consent of instructor.

4108 Undergraduate Participation in Community Research (16-18) May be repeated. Maximum credit 16 hrs. 4109 Undergraduate Research (1-18) May be repeated for credit to maximum of 16 hrs. Prereq: Contact with instructor.

4110 Undergraduate Participation in Community Research (16-18) May be repeated. Maximum credit 16 hrs. 4120 Topical Topics in Social Psychology (4) Intensive analysis of selected research topics. Prereq: 3120 or 3210, or consent of instructor.

4125 Probability Models in Psychology (4) Introduction to use of probability models in theory of behavioral science. Prereq: 2540 or consent of instructor.

4126 Sensory Processes and Perception (4) Survey of sensory and perceptual processes with emphasis on audition and vision. Prereq: 3150, 2320 recom- mend.

4127 Laboratory in Sensory Processes and Per- ception (2) Prereq: 4126 or 4125.

4128 Organization and Personality (3) Cannot be taken for credit by students who have credit for Management 4460. (Same as Management 4460.)

4130 Personality Theories (4) Prereq: 3650 or consent of instructor.
### Minor: Problematic of Religion
- 3600-10, 3611, 3612, 3613, 3650, 3660, 3671, 3672, 3680, 3710, 3711, 3730, 4210, 4310, 4450, 4460, 4470, 4810-20, 30.

### History and Literature of Religion
- 3011, 3012, 3021, 3031-71, 3110, 3120, 3210-20, 3230, 3311, 3330, 3340, 3411-12, 3460, 3490, 3510-20, 3530, 3560, 3560, 3660, 3671, 3762, 3860, 3710, 3711, 3730, 4210, 4310, 4450, 4460, 4470, 4810-20, 30.

### Religious Studies (863)

#### Professors:

#### Instructor:
- A. J. Humphreys, Ph.D. (Yale).

#### Assistant Professor:

### Undergraduate:
- **Major**: Two options are available in religious studies. One religious studies 2000-level course is a prerequisite for either option, and Religious Studies 4850 is required in both options.

- **Basic option**: consists of 36 hours of courses at the 3000 level or above including 4850 with a minimum of 12 hours selected from courses listed below under History and Literature of Religion.

- **Student-initiated option** is recommended for persons who plan to pursue graduate study in religion or a closely related field. Further details are available in the department office, located at 501 McClurigh Tower, or by any member of the religious studies faculty.

### Faculty:
- **Professors**:
  - J.K. Kim, Ph.D. (Yale);
  - D.L. Dungan, Th. (Harvard);
  - R.V. Norman, Jr. (Chicago).
- **Associate Professors**:
  - D.E. Linge, Ph.D. (Vanderbilt).
- **Assistant Professors**:
  - R.R. Earl (Chicago); W.L. Humphreys, Th.D. (Union);
  - D.L. Dungan, Th. (Harvard);
  - D. L. Lusby (Head).
- **Instructors**:
  - A.J. Humphreys, Ph.D. (Yale);
  - R.S. Reynolds, Ph.D. (Harvard);
  - J.K. Kim, Ph.D. (Yale);
  - D.E. Linge, Ph.D. (Vanderbilt).
- **Research affiliates**:
  - D.A. Colgate (Rochester), Ph.D.;
  - D.L. Dungan, Th. (Harvard).

### Department of Religious Studies:
- At least 36 hours of courses at the 3000 level or above (including 4850) are required for this major.

### Major:
- The basic option consists of 36 hours of courses at the 3000 level or above (including 4850) with a minimum of 12 hours selected from courses listed below under History and Literature of Religion and a minimum of 12 hours selected from courses listed below under Problematic of Religion. Majors are invited to discuss their programs with a member of the religious studies faculty.

### Student-initiated option:
- is to be specified in an individual program defined in consultation with each student and the Department of Religious Studies. At least 36 hours of courses at the 3000 level or above (including 4850) are required for this major. Students whose educational goals would best be served by such a major are encouraged to construct their own plans of study in consultation with a member of the religious studies faculty.

### History and Literature of Religion:
- 3011, 3012, 3021, 3031-71, 3110, 3120, 3210-20, 3230, 3311, 3330, 3340, 3411-12, 3460, 3490, 3510-20, 3530, 3560, 3660, 3671, 3762, 3860, 3710, 3711, 3730, 4210, 4310, 4450, 4460, 4470, 4810-20, 30.

### Problematic of Religion:
- 3600-10, 3611, 3620, 3630, 3650, 3660, 3671, 3762, 3760, 3860, 3710, 3711, 3730, 4210, 4310, 4450, 4460, 4470, 4810-20, 30.

### Minor:
- Twenty-four hours of courses at the 3000 level and above. It is suggested that students minor in religion through courses in the College of Liberal Arts.
3612 Issues in Religious Studies (4) Introduction to selected religious problems and alternatives. HISTORY AND LITERATURE OF RELIGIONS 3000-70 History of Western Religious Thought and Institutions (2, 2, 2) 3000—First century to 5th century; 3070—4th century to 15th century; 3080—16th century to 1900. (Same as History 3060-70.)
3110 Ancient Israel's Historical and Religious Traditions (4) Literature, religious and cultural history and traditions of ancient Israel from earliest period to Exile.
3120 The Rise of Judaism (4) Political, religious, and cultural history and traditions of the Israelite and early Jewish cultures through the Exilic and Persian periods.
3130 Religious Traditions of Ancient Egypt (4) Religious and cultural traditions of ancient Egypt from the Old Kingdom to the Hellenistic period.
3131 Religious Traditions of Ancient Mesopotamia (4) Religious and cultural traditions of ancient Mesopotamia, Babylonians, and Assyrians.
3180 Early Greek Mythology (3) (Same as Classics 3210.)
3210 Greek Mythology in the Classical Period (3) (Same as Classics 3220.)
3220 Roman Mythology (3) (Same as Classics 3230.)
3230 Greek Mythology in the Classical Period (3) (Same as Classics 3240.)
3240 Roman Mythology (3) (Same as Classics 3250.)
3270 Russian Philosophical and Theological Thought (4) (Same as Russian 3270 and Philosophy 3270.)
3281-12 Images of Jesus (4) Introduction to ancient and modern portrayals of Jesus, understood within their historical milieu. May be taken in sequence.
3340 Judaism in the Common Era. (3) Survey of literature and traditions of Judaism in the Common Era.
3411-13 Renaissance and Reformation (3, 3, 3) (Same as History 3411-12-13.)
3460 Religion of Prehistoric Peoples (2) (Same as Anthro 3460.)
3490 African Religious Traditions (4) Examination of religious beliefs and practices of Africa's indigenous peoples. May be taken independently.
3500-20 Religion in Africa (4) A survey but a selective presentation of religious beliefs and practices of Africa's indigenous peoples. May be repeated once for credit. (Same as Anthropology 3490 and Black Studies 3490.)
3510-20 Religion in America (4) A survey, but a selective presentation of religious beliefs and practices of American Indians, Afro-Americans, and Hispanics. May be repeated once for credit. (Same as Anthropology 3490 and Black Studies 3490.)
3550 Religion and Racism in America (4) Historical and sociological study of race relations and religious response in support of and criticizing American racial injustice. (Same as Black Studies 3550.)
3555 Black Religion in America (4) Historical and sociological study of race relations and religious response in support of and criticizing American racial injustice. May be repeated once for credit.
3560 Black Religion in America (4) (Same as Philosophy 3560.)
3561 Buddhism and Religion in India (4) (Same as Philosophy 3561.)
3562 Buddhist and Religion in India (4) (Same as Philosophy 3562.)
3567 Religion and Philosophy in China (4) (Same as Philosophy 3567.)
3570 Religion and Society in Japan (4) (Same as Sociology 3570.)
3590 Islam (4) Origin and early history, rapid spread as a world religion, development of Islamic theology, history of Islamic societies, the great Islamic empires, and contact with Europe. (Same as Eng Lit 3590.)
3590 Literature of English Bible (5) (Same as English 3590.)
3711 Literature of the English Bible (5) (Same as English 3570.)
3720 Zen Buddhism (3) Examination of historical, philosophical, and meditational matters of Zen. Special emphasis upon Zen theories of emptiness, no-mind, sudden enlightenment, and the koan.
3420 Topics in Ancient Near East and Ancient Near Eastern Religions (4) Prereq: 3100-20 or consent of instructor. May be repeated once for credit.
3413 Jesus and Paul Compared (4) Jesus' teaching and activity in context of 1st-century Palestine. Jewish analysis of what Paul wrote of the teaching of and about Jesus. May be repeated once for credit.
4120 Topics in American Religion (4) Prereq: One of the following: 3510, 3520, 4410 or consent of instructor. May be repeated once for credit.
4140 Topics in Early Christianity and Hebrew Religions (4) Selected figures, issues, and institutions. Students and graduate students only, except by consent of department. Prereq: 3500-20. May be repeated. Maximum credit 12 hrs.
4140 Topics in Early Christianity and Hebrew Religions (4) Selected figures, issues, and institutions. Students and graduate students only, except by consent of department. Prereq: 3500-20. May be repeated. Maximum credit 12 hrs.
4140 Topics in Early Christianity and Hebrew Religions (4) Selected figures, issues, and institutions. Students and graduate students only, except by consent of department. Prereq: 3500-20. May be repeated. Maximum credit 12 hrs.
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4140 Topics in Early Christianity and Hebrew Religions (4) Selected figures, issues, and institutions. Students and graduate students only, except by consent of department. Prereq: 3500-20. May be repeated. Maximum credit 12 hrs.
4140 Topics in Early Christianity and Hebrew Religions (4) Selected figures, issues, and institutions. Students and graduate students only, except by consent of department. Prereq: 3500-20. May be repeated. Maximum credit 12 hrs.


Following sequences:

Level:

Foreign Study (4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.

Minor: Consists of 60 hours in courses numbered above 3310 or above. Students whose primary interest is literature must have a minimum of 8 hours chosen from the following sequences:

Spanish (924)

Undergraduate

Spanish (3410-20) Traditional Reading in Spanish and Spanish American Literature (4, 3, 3). Students who wish to study literature in Spanish as a major or minor will have a total of 15 so that each student may receive more attention. This class will cover the normal Spanish program for the first year, but will be enriched wherever possible. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular course for students of superior ability. 1518 not counted toward either a major or a minor.

110-20 Elementary Spanish (3, 3) This course strongly recommended for students intending to take upper-division courses in Spanish. Must be taken in sequence. 3 hrs and 2 labs.

2130-20 Intermediate Spanish (3, 3) This course strongly recommended for students intending to take upper-division courses in Spanish. Must be taken in sequence. 3 hrs and 2 labs.

2150-20 Intermediate Spanish (4, 4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.

2310-20 Advanced Spanish (6, 6, 6) Must be taken in sequence. 6 hrs and 3 labs.

2510-20 Portuguese Literature (3, 3, 3) May be repeated for credit). Portuguese literature: a course of variable sequence (directed readings in Brazilian and Portuguese literature) with special emphasis on reading, including literaryoterapy, and current periodicals. Open to students who have taken Spanish in high school. Freshmen are admitted on the basis of a diagnostic test or conversation, or the equivalent. High school average, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. This class will cover the normal Spanish program for the first year, but will be enriched wherever possible. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular course for students of superior ability. 1518 not counted toward either a major or a minor.

2310-20 Intermediate Spanish (3, 3) This course strongly recommended for students intending to take upper-division courses in Spanish. Must be taken in sequence. 3 hrs and 2 labs.

2350-20 Intermediate Spanish (4, 4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.

2510-20 Portuguese Literature (3, 3, 3) May be repeated for credit). Portuguese literature: a course of variable sequence (directed readings in Brazilian and Portuguese literature) with special emphasis on reading, including literaryoterapy, and current periodicals. Open to students who have taken Spanish in high school. Freshmen are admitted on the basis of a diagnostic test or conversation, or the equivalent. High school average, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. This class will cover the normal Spanish program for the first year, but will be enriched wherever possible. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular course for students of superior ability. 1518 not counted toward either a major or a minor.

Courses which are the equivalents of the following sequences may be substituted with consent of the department; but courses in Spanish literature in English translation are not counted toward either a major or a minor.

1110-20 Elementary Spanish (3, 3) This course strongly recommended for students intending to take upper-division courses in Spanish. Must be taken in sequence. 3 hrs and 2 labs.

1510-20 Elementary Spanish (4, 4) Must be taken in sequence. 4 hrs and 3 labs.

1518-20 Honors Elementary Spanish (4) Honors course for students of superior ability. 1518 not open to students who have taken Spanish in high school. Freshmen are admitted on the basis of a diagnostic test or conversation with the instructor, high school average, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. This class will cover the normal Spanish program for the first year, but will be enriched wherever possible. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular course for students of superior ability. 1518 not counted toward either a major or a minor.

4410-70 Advanced Conversation (2, 2) Intensive training in prepared and spontaneous conversational skills. Focus on various aspects of the contemporary period and current periodicals. Open to students who have taken Spanish in high school. Freshmen are admitted on the basis of a diagnostic test or conversation with the instructor. High school average, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. This class will cover the normal Spanish program for the first year, but will be enriched wherever possible. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular course for students of superior ability. 1518 not counted toward either a major or a minor.

4500-60-70 Hispanic and Latin American Literature and Culture (3, 3, 3) May be repeated for credit). Latin American literature: a course of variable sequence (directed readings in Latin American and Spanish literature) with special emphasis on reading, including literaryoterapy, and current periodicals. Open to students who have taken Spanish in high school. Freshmen are admitted on the basis of a diagnostic test or conversation with the instructor. High school average, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. This class will cover the normal Spanish program for the first year, but will be enriched wherever possible. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular course for students of superior ability. 1518 not counted toward either a major or a minor.

4501 Foreign Study (1-14) See page 181.

4510-20-30 Spanish Literature of the Golden Age (3, 3, 3) The picaresque novel; Cervantes, the Castile.

4511-70-80 Advanced Conversation (2, 2) Intensive training in prepared and spontaneous conversational skills. Focus on various aspects of the contemporary period and current periodicals. Open to students who have taken Spanish in high school. Freshmen are admitted on the basis of a diagnostic test or conversation with the instructor. High school average, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. This class will cover the normal Spanish program for the first year, but will be enriched wherever possible. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular course for students of superior ability. 1518 not counted toward either a major or a minor.

4520-30 Advanced Grammar (3, 3) Prereq: 2130, 2520, or equivalent.

4525 Introduction to Descriptive Linguistics (3, 3, 3) A course of variable sequence (directed readings in Latin American and Spanish literature) with special emphasis on reading, including literaryoterapy, and current periodicals. Open to students who have taken Spanish in high school. Freshmen are admitted on the basis of a diagnostic test or conversation with the instructor. High school average, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. This class will cover the normal Spanish program for the first year, but will be enriched wherever possible. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular course for students of superior ability. 1518 not counted toward either a major or a minor.
Social Work. Students contemplating entrance into the field of professional social work will have an opportunity to plan their upper-division programs to this end. Suggested course offerings for students planning a social work career can be obtained from the Graduate School of Social Work. The address and general information on the School are given on page 52.

Students who contemplate professional training in social work should discuss their upper-division programs with the Knoxville campus representatives of the School of Social Work.


1520 Sociology of Social Problems (4)

Sociology of Behavior (4) Processual analysis of such collective phenomena as crowd behavior, social obedience, riots, faiths, popular cultures, and mass movements; nature of the public, functional analyses of public opinion; problems of democracy as viewed from the standpoint of organized collective action.

1530 Political Sociology (3) Sociological analysis of American political system; attention given to consideration of concepts of order and social action, the basic values of our society, the social factors related to social change. The course also relates to one's role within society.

1540 Deviance and the Social Order (4) Examination of relations between deviance and social order, focusing on structural changes connected with the idea of deviant behavior. The course also relates to one's role within society.

3130 Social Psychology (4) Social behavior, social perception of the self and others, social categorization, social roles, social interaction, social information processing, social norms, social identity, social influence, social networks, social networks and society, social networking sites.

3140 Sociology of Science (3) Sociological analysis of the structures, processes, and products of scientific research. The course also relates to one's role within society.

3150 General Sociology (4) Social origins, social structure, social processes, social change, social inequalities, and social problems. The course also relates to one's role within society.

3160 Sociology of Medicine (4) Introduction to the sociology of health and illness. The course also relates to one's role within society.

3170 Urban Problems (4) Crises and the urban condition; urban society; the nature of the delinquency problem, major causes and consequences of being poor. The course also relates to one's role within society.

3180 Social Stratification (4) Study of economic, social, and political stratification, and the causes and consequences of social inequality. The course also relates to one's role within society.

3190 Sociology of Occupations (4) Introduction to the sociology of Occupations. The course also relates to one's role within society.

3200 The Family (4) Origin and anthropology of the family as a social institution. The course also relates to one's role within society.

3210 Juvenile Delinquency (4) Critical assessment of the research on delinquency, major theoretical perspectives on the causes of delinquency, and approaches to the control and administration of juvenile justice. The course also relates to one's role within society.

3220 Occupations as Organizations (4) Organizations as interest groupings; their impact on work life, work roles, and occupational structure; work and social movement. The course also relates to one's role within society.

3230 Religion and Society (4) General treatment of social origins and consequences of religion and social life. The course also relates to one's role within society.

3240 Sociology of Family (4) The family as a social institution. The course also relates to one's role within society.

3250 Political Sociology (3) Sociological analysis of American political system; attention given to consideration of concepts of order and social action, the basic values of our society, the social factors related to social change. The course also relates to one's role within society.

3260 Sociology of Occupations (4) Introduction to the sociology of Occupations. The course also relates to one's role within society.

3270 Sociology of Science (3) Sociological analysis of the structures, processes, and products of scientific research. The course also relates to one's role within society.

3280 Sociology of Social Problems (4) Sociological analysis of American social problems; attention given to consideration of concepts of order and social action, the basic values of our society, the social factors related to social change. The course also relates to one's role within society.
6070 Problems in Field Research (3)
6080 Research Problems in the Study of Social Groups (3)
6090-6100 Survey Design and Analysis (3, 3)
6120 Seminar in Mass Behavior and Related Topics (3)
6140 Advanced Reading in Sociological Theory (4)
6150 Advanced Reading in Sociological Methods (4)
6160 Advanced Special Social Investigation (4)
6170 Cross-cultural Aspects of Human Fertility (3)
6180 Theory and Method in Human Ecology (3)
6190 Advanced Special Social Investigation (4)
6240 Theory and Research in Human Migration (3)
6250 Advanced Issues in Criminological Theory (3)
6260 Sociology of Deviance (3)
6350 Sociology of Law (3)
6460 Readings in Criminology and Deviance (3)
6560 Flex Hours: Sociology of Deviance (4)
6550 Advanced Studies in Community (3)
6810 Seminar in Formal Organization (3)
6820 Seminar in Formal Organization (3)
6710 Seminar in Class and Status (3)
6910 Advanced Studies in Social Psychology (3)
6940-95 Social Change (3, 3)
6940-95 Advanced Studies in Urban Sociology (3)
6950 Seminar in Population Theory (3)

Spanish
See Romance Languages.

Speech and Theatre

Professor: R. G. Allen, D.P.A., Yate, T. P. Cooke, Ph.D., Department, R. M. Cohrnn, Ph. J. F. Fields (Emeritus), M. A. Ohio State

Instructor: C. W. Juodvalkis, M. A. Northern Illinois.

Undergraduate:

Speech 1211-21 is prerequisite to a concentration in theatre which consists of 24 hours in theatre courses numbered 3000 or above, 12 hours of which may be cognate areas approved by the department. At least one-half of the hours in the concentration must be earned at the 3000 level or above. Cognate: nine hours from courses listed in the Dramatic Arts option of the Language, Literature, Arts Triad.

Minor: Two minors are offered: speech and theatre. Theatre 1211-21 is prerequisite to a minor in theatre which consists of 24 hours in theatre courses numbered 3000 and above. Theatre 1230-34-40 is prerequisite to a minor in theatre which consists of 24 hours in theatre courses numbered 3000 and above, 6 hours of which must be in history and criticism.

Certification for Teaching Speech and English, Certification Clerk, Room 212, Clinton Education Building.

Graduate:

The general requirements for the master's degree are given in the Graduate Catalog.

Speech (943)
1211 Communication and Society (4) study of communication media posters, speeches, song, demonstrations, films, and social change.

1211 Introduction to Speech Communication (4) Fundamental theories and practices with particular emphasis on definition, semantics, psycholinguistics, and ethical values in communication.

1211 Voice and Diction (3) Voice production, attention to individual speech problems.

1211 Presentation (4) Basic principles of speech preparation and delivery.

1231 Argumentation and Debate (4) Recommended: 2311.

2341 Parliamentary Procedure (3) Various techniques and procedures for collective decision making in assemblies.

2361 Business and Professional Speaking (4) Basic concepts of oral communication, public speaking, the persuasive speech, delivery techniques.

2371 Communication and Society (4) Study of social and political characteristics of various speech situations.

2410-20-30 Intercollegiate Forensics (1, 1, 1) Supervised work in tournament debate and individual events.

3011 Persuasion (4) Persuasive theory: psychological dimensions of communication, and cultural dimensions.

3012 Projects (2) Materal presented in Speech 2311 is applied to off-campus projects, emphasis on written and oral communication.

2410-20-30 Intercollegiate Forensics (1, 1, 1) Supervised work in tournament debate and individual events.

3011 Persuasion (4) Persuasive theory: psychological dimensions of communication, and cultural dimensions.

3012 Projects (2) Materal presented in Speech 2311 is applied to off-campus projects, emphasis on written and oral communication.

2410-20-30 Intercollegiate Forensics (1, 1, 1) Supervised work in tournament debate and individual events. The general requirements for the master's degree are given in the Graduate Catalog.
University Studies (995)

(Non-Departmental)

University studies deal with important contemporary topics which are sufficiently comprehensive to require study and attention of students and faculty from more than one college. They are open to all qualified members of the UTK community.

3010 Technology and Society (3) Interdisciplinary lectures and discussions concerning science and technology, their interaction with contemporary social and political institutions, and their impact upon human values. May be repeated. Maximum credit 9 hrs.

4100 Energy Needs and Our Environment (3) Problems of present and projected energy resources and development, the social and environmental opportunities and constraints, national impacts of energy production and consumption, and effects of energy federal and state policies.

May be repeated with approval of instructor.

Women’s Studies

See Cultural Studies. (995)

Zoology (995)


UNDERGRADUATE

Prerequisites (to upper-division courses): Biology 1210-20-30 or Zoology 1118-28 are prerequisites for all upper-division courses with the exception of 3990 and 4900. Additional prerequisites are included with course descriptions. Courses numbered in the 4000s are no more advanced than those in the 3000s except as may be indicated by the course description.

Major: Consists of Biology 3110, 3120, 3130. 18 hours of upper-division zoology courses (except 3010-20-30) and 3 quarters of chemistry or biochemistry at the 2000 level or above. Of the 18 hours of upper-division zoology courses a minimum of 6 hours must be at the 4000 level, and at least one laboratory or field course. Prerequisites to this major are: Biology 1210-20-30 or Zoology 1118-28 (Zoology 2900 may be substituted for Zoology 1118-20-30). Chemistry 1110-20-30. Corequisites are: Mathematics 1441-51, or 1450-50-60 or 1550-60 (Mathematics 1484-51 is the recommended choice); and a year sequence in physics (except 1410-20-30).

Note: Students majoring in zoology are advised to exercise care in fulfilling the Science and Mathematics Triad requirements. Mathematics 1840-50 or 1841-51 or 1540-60-60 and Chemistry 1110-20-30 or equivalent (20 or 21 hours altogether) must be completed to be eligible for the second quarter.

Minor: Consists of 24 hours of zoology, or zoology and biology, courses. Zoology courses must be at the upper-division level, but biology courses may be 1000 level or above (with the exception of 3010-20-30). Biology 1118-20-30 is equivalent to Zoology 1118-20-30 and is accepted as zoology major.

Note: Certain zoology courses require organic chemistry or other prerequisites—consult the catalog description for each course.

Note: Students majoring in zoology or biology must complete the three-quarter Biology 1210-20-30 sequence and Biology 1118-28 Honors: General Zoology (6,6) Course description for each course.

1118-20-30: Honors General Zoology (6,6) Course description for each course.
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information and control which examines kinetosis and integration of cellular activities. Prereq: Cell biology or any physiology, and organic chemistry. Biochemistry recommended. 3 lectures and 1 lab.

438 Animal Ecology (4) Environmental factors determining distribution and numbers of animals; intra- and inter-specific relations; problems and methods. Prereq: Biology 3130. 2 hrs and 2 labs.

439 Comparative Animal Physiology I (2) Environmental physiology. Survey of physiological mechanisms and their relation to ability of animals to survive in diverse physical environments. Prereq: Biology 3120-30. 2 years of courses, 3 hrs.

439F Comparative Animal Physiology Laboratory I (1) Coreq: 439F.

439F Comparative Animal Physiology II (3) Sensory, affective and integrative physiology. Prereq: 3920. 3 hrs.

439G Comparative Endocrinology (5) Comparative analysis of the physiology and morphology of endocrine glands in vertebrates and invertebrates. Their role and interaction in maintenance of the endocrine glands in vertebrates and invertebrates. Analysis of the physiology and morphology of endocrine glands. Prereq: Biology 3120. 3 hrs and 2 labs.

439H Morphology (4) Classification, distribution, life histories, classification, and identification of amphibians and reptiles, primarily of local species. 2 hrs and 2 lab. (Not open to students with credit for 3919.)

439I Ornithology (4) Morphology, physiology, behavior, reproduction, populations, evolution, field identification. 2 hrs and 2 labs. (Not open to students with credit for 3920.)

439J Arachnology (4) Biology of spiders, mites, scorpions, and relatives. Prereq: 3110 or 3920. 2 hrs and 3 labs. (Not open to students with credit in 3919.)

4410 General Parasitology (4) Morphology, taxonomy, and life histories, collection, and identification of parasites of man or animals. Prereq: Biology 3110 or 3150. 2 hrs and 2 labs.

4450 Protozoology (4) Morphology, taxonomy, and biology of protozoa in relation to fundamental biological concepts. Recommended: Biology 3120. 3 hrs and 2 labs.

4450F General Protozoology Laboratory (1) Coreq: 4450F.

4450G Comparative Animal Pathology (2) Abnormal morphological changes and their causes. 4419—Cell and tissue changes, 4430—Organ, organ system, and organism changes. Recommended: 3060, 3020, 3060.

4450H Comparative Animal Pathology (2) Abnormal morphological changes and their causes. 4419—Cell and tissue changes, 4430—Organ, organ system, and organism changes. Coreq: 4419-30. 2 hrs and 2 labs.

4450I Limnology (4, 4) Environmental physiology of protozoa in relation to fundamental biological concepts. Recommended: Biology 3120. 3 hrs and 1 lab. (Not open to students with credit for 3919.)

4450J Arachnology (4) Biology of spiders, mites, scorpions, and relatives. Prereq: 3110 or 3150. 2 hrs and 3 labs.

4450K Comparative Animal Behavior (4) Methods and principles. (Same as Psychology 4720.)

4450L Comparative Animal Behavior Laboratory (4) Laboratory and field studies. Coreq: 4720 (Same as Psychology 4729.)


4450N Physiology of Exercise (4) Functions of body in muscular work; physiological aspects of fatigue, training, and physical fitness. Prereq: 3920 or 3060. 3 hrs and 1 lab. (Not open to students with credit for 3940.)

GRADUATE

6000 Thesis

6050 Graduate Research Participation (5)

5110-20-30 Special Problems (2, 2, 2)

5120 Zoological Bibliography (1)

5130 Fresh-Water Invertebrates (4)

5140 Plant Parasitic Nematodes (4)

5150 Physiology of Hormones (4)

5210 Advanced Neuroumuscular Physiology (5)

5215 Insect Physiology and Behavior (4)

5279 Animal Populations (2)

5280 Methods of Experimentation with Laboratory Animals (5)

5420 Parasitology (4, 5) 4419—Internal morphology of both generalized and specialized forms. 4420—Taxonomy of major orders. 4430—Taxonomy of minor orders and invertebrates. Prereq: 4450-30. 3 hrs and 1 lab or course. (Not open to students with credit in 3950.)