suit with major department for additional approved courses. Course credits should be taken in the major area unless otherwise approved by the department. It is recommended that this option be satisfied during the senior year (within 45 credit hours of graduation).

Chemistry 4000 Topics in the Development of Chemistry; Chemistry 4811 Senior Seminar; Chemistry 4821 Senior Seminar; Chemistry 4831 Senior Seminar.

Classics 4220 Seminar in Classical Studies.

History 4000 Reflections on History; History 4010 Colloquium in History.

Human Services 4300 Working within the System.

Mathematics 4910 Senior Topics; Mathematics 4940 Mathematical Modelling.

Physics 4010 Background of Physics; Physics 4020 Forefront of Physics.

Psychology 4910 Senior Seminar on Great Ideas in Psychology.

Areas of Concentration

(1) Required 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 or more 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. In either case the student should work out a 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 personal counseling is available in the Liberal Arts Advising Center and from designated faculty advisors in each major department or area.

Requirements for specific majors vary by program and are discussed under each department or program. A major consists of at least 39 credit hours in courses numbered 2000 or above as specified by the department or program. Up to 8 credit hours taken in the major may also be used to satisfy basic skills or distribution requirements where listed. A minimum grade of C must be earned in every course counted as part of a major. Students transferring from other institutions must complete at least 12 credit hours at UTK in each major awarded on this campus. Students may elect as many courses as desired in any department or program. In lieu of a major, students may develop an Individualized Program (described below). Majors available in the Basic Program for a B.A. or B.S. include: Anthropology, Art, Art History, Audiology, Biology, Botany, Chemistry, Classics, Computer Science, Cultural Studies, Economics, English, French, Geography, Geology, German, History, Human Services, Italian, Mathematics, Microbiology, Music, Philosophy, Physics, Political Science, Psychology, Religious Studies, Russian, Sociology, Spanish, Speech Pathology, Speech and Theatre, Statistics, and Zoology.

(2) Optional Multiple Majors

After the general requirements of basic skills, distribution and a major have been satisfied, additional majors may be recorded on the transcript without regard to course overlap among the additional majors and Basic Skills and Distribution requirements. Students developing multiple majors must declare this intent at the time of application for graduation. Once a student has graduated, the establishment of additional majors becomes subject to University second-degree requirements.

Students who satisfy the requirements of a degree in a college other than Liberal Arts may also major inside the College of Liberal Arts with the approval of the degree granting unit. These students need complete only the major requirements, not the Basic Skills or Distribution requirements for Liberal Arts degrees. The Liberal Arts major may also be listed on the student’s transcript.

(3) Optional Minors

At the time of application for graduation, single or multiple minors may be recorded on the academic record without regard to course overlap among minors and majors or among minors and Basic Skills and Distribution requirements.

The minimum requirement for a minor is 24 credit hours in courses numbered 2000 or above. Minors are available in most departments or programs in which majors are offered and also in: Biochemistry, Physical Sciences, Political Science, Women’s Studies. Minors may be developed in other colleges or schools of the University, but must be approved by the department head in which the minor is proposed and by the Associate Dean for Student Academic Affairs in Liberal Arts. At least 6 of the 24 credit hours required for a minor must be completed at The University of Tennessee, Knoxville.

A business minor is available to students who successfully complete the following required courses: Accounting 2110-20-30; Economics 2510-20; and Statistics 2100. Also, 16 hours of upper-division electives must be taken. Minors may be taken in addition to other more than six upper-division hours of accounting, economics, or statistics may be used for the minor. Students are responsible for meeting prerequisites for any upper-division courses taken in a particular concentration.

(4) Supplementary Elective Courses

At least one-fourth of each student’s curriculum in the Basic Program will be made up of courses selected according to the individual’s interests to supplement and support the work being done in the major and Basic Skills and Distribution requirement. This dimension of the student’s experience in the University represents that freedom within which total education may be rounded out and enriched. Elective courses should be chosen with care so that they will truly enhance the student’s total program and help in the achievement of well thought-out educational objectives.

Some of the choices which the student might make in selecting the elective courses are:

(1) Additional courses in the major field;
(2) A related minor;
(3) An area in the arts;
(4) An off-campus quarter.

Only the student’s imagination and initiative and the willingness to conceive and develop a totally meaningful academic program limit the choices of supplementary elective courses.

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 any departmental or interdepartmental majors specified in the Basic Program. For these students the Individualized Program has been established as a means of attaining a closer correlation between student needs and academic programs.

Students in the Individualized Program will satisfy the all Basic Skills and Distribution requirements, 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 in principle on the choice of courses of 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 proposed courses of study must have some clear central purpose, usually implemented through intensive work in two or three departments; an undirected 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 30 credit hours are invited each year to enter this distinguished honors curriculum. Selection is based on 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 advisor (tutor) 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 students will be heavily involved in independent study or research, required of all College Scholars. When College Scholars fulfill departmental requirements for additional majors or minors, these will be recorded on the Scholars’ transcripts. Scholars will not be required to meet Basic Skills or Distribution
IV. Preparation for the Health Professions

Pre-Dental
Pre-Dental Hygiene
Pre-Medical
Pre-Medical Record Administration
Pre-Medical Technology
Pre-Mental Health
Pre-Pharmacy
Pre-Physical Therapy
Pre-Veterinary Medicine

Other Health Professions

Pre-health professional programs are available for students who plan a career in one of the health professions. The programs preparing students for the study of medicine, dentistry, and pharmacy include the specified courses required for admission to the respective colleges of The University of Tennessee for the Health Sciences at Memphis (UTCHS), as well as those required for the Bachelor of Arts or Science degree in the College of Liberal Arts at the University of Tennessee, Knoxville. The two year pre-medical technology program prepares students to undertake professional training during the third year of study at UTCHS. The Science Medical Technology Program prepares students to undertake professional training during the fourth year of study at the University of Tennessee, Knoxville. Other pre-health professional programs—dental hygiene, medical record administration, cytotechnology, nursing, and physical therapy—are offered for those students who are planning to pursue professional training in health professional areas which lead to an undergraduate degree from UTCHS but not to a degree from UTK.

Admission to any program at UTCHS or Knoxville is at the discretion of that program’s admissions committee. Admission to the University of Tennessee and completion of a pre-health professional program in the College of Liberal Arts does not assure admission to any professional training program.

Because the competition for admission to most programs in the health professions is keen, pre-health professional students are encouraged to work towards the completion of a degree program in a major which will enable the individual to adapt to an alternative program in the event admission to the desired program is not achieved. The preparatory courses necessary for professional study can be incorporated into the chosen major program.

Students in a pre-health professional program should consult with a health professions advisor in the Liberal Arts Advising Center (220 Ayres Hall) for more information about the programs outlined below. Specific requirements often change in the health professions programs. Bulletins describing the various pre-health professional programs, including a detailed statement on requirements, may be obtained from the Health Professions Office, 220 Ayres Hall.

PRE-DENTAL PROGRAM

The college offers both a three-year program leading to a Bachelor of Arts degree and a four-year program leading to a Bachelor of Science degree for students preparing for the study of dentistry. Both programs are based upon the curriculum outlined below. In the three-year program the student must complete at least 138 credit hours while enrolled in the college, and the B.A. degree is granted upon satisfactory completion of the first year of study at UTCHS. In the four-year program the degree is granted upon completion of 190 or more credit hours while enrolled in the college, including a major of 36 or more hours in addition to the courses listed below. The requirement for a major is waived for those completing their fourth year at UTCHS. Students in either the three- or four-year program must complete the last 45 hours of credit in residence at The University of Tennessee, Knoxville, before entering UTCHS.

Although the B.A. or B.S. degree is not required for admission to the College of Dentistry at Memphis, most of the students accepted into the study of dentistry have the baccalaureate degree before admission. Therefore, pre-dental students are encouraged to plan to complete all requirements for the B.A. degree before enrolling in the College of Dentistry.

Freshman

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<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>1English 1010-11; 1020; 1031 or 1033 or equivalent</td>
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</tr>
<tr>
<td>1Chemistry 1110-20-30</td>
<td>12</td>
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</tr>
<tr>
<td>1Biology 1210-20-30 or Zoology 1118-28-38</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>1Mathematics</td>
<td>9</td>
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<tr>
<td>Basic Skills B. Foreign Language (Intermediate Level Sequence)</td>
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Sophomore

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<tr>
<th>Course</th>
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<tr>
<td>English Literature</td>
<td>8-9</td>
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<tr>
<td>Advanced Biology and/or Zoology</td>
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<tr>
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<tr>
<td>Divisional Distribution (B) Social Sciences</td>
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Junior

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<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Physics 2210-20-30</td>
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<tr>
<td>Speech 2311</td>
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<td>Divisional Distribution (C) Social Science</td>
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<td>Divisional Distribution (D) Humanities (2)</td>
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<td>Foreign Studies</td>
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Total: 138-147 hours

Senior

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<tr>
<th>Course</th>
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<tr>
<td>Completion of major program and B.A./B.S. requirements or completion of one year at UT Center for the Health Sciences</td>
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</table>

*Total Minimum Required: 190 hours

1 Equivalent honors courses
2 Any student who has had two years of biology or one very good year in high school should take the proficiency tests for Biology 1210-20-30 to determine eligibility for biology courses directly into Biology 3110 or 3120.
3 Math placement, based on high school courses and grades, ACT scores, and B.A./B.S. requirements. Math is a prerequisite for Physics. A math placement handout is available in the Liberal Arts Advising Center, 220 Ayres Hall.
Senior
Completion of major program and B.A./B.S. requirements for at least one year at UT Center for the Health Sciences.

Total Minimum Required: 190 hours
Bullets describing the pre-medical program and requirements in detail may be obtained from the Health Professions Office, 220 Ayres Hall.

1Or equivalent honors courses.
2Many colleges of medicine require, and others strongly recommend, preparation in calculus; therefore, students preparing for the study of medicine are strongly encouraged to include 1440-50 in their programs. In some cases, Mathematics 1550-60 may be substituted. Math placement depends on high school courses and grades, ACT scores, and B.A./B.S. requirements. Math is a prerequisite for physics. A math placement handout is available in the Liberal Arts Advising Center, 220 Ayres Hall.
3The College of Medicine at E.T.S.U. requires two quarters of literature.
4Although not specifically required by the College of Medicine, the Health Professions Advisory Committee strongly recommends that students include additional work in Chemistry 2140-49 or 4910-20, in Zoology 3060 and 3080, and in Microbiology 3700-3519.

PRE-MEDICAL RECORd ADMINISTRATION PROGRAM
Admission to the pre-medical record administration program at UTCHS, leading to a Bachelor of Science in Medical Record Administration, requires completion of 135 hours of prescribed courses. Classes are admitted in September; applications must be filed by April 15. The entry process usually includes interviews with members of the faculty.

Students interested in the pre-medical record administration program are encouraged to consult with a health professions advisor in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for more information. Bulletins describing the pre-medical record administration requirements and program in detail may be obtained from the Health Professions Office, 220 Ayres Hall.

PRE-MEDICAL TECHNOLOGY PROGRAMS
The college offers two programs leading to the study of medical technology:
(1) The Science-Medical Technology Curriculum leading to a Bachelor of Arts degree with a major in medical technology from The University of Tennessee, Knoxville.

(2) The Pre-Medical Technology Program leading to a degree of Bachelor of Science in medical technology from UTCHS. Science-Medical Technology Curriculum

The Science-Medical Technology Curriculum is a three-year program consisting of a minimum of 140 credit hours in college. Students who complete this curriculum satisfactorily may apply for admission to the pre-medical technology program at The University of Tennessee Memorial Research Center and Hospital in Knoxville (UTMREQ). Successful completion of this course, which results in the granting of 50 credit hours, makes the student eligible for a Bachelor of Arts degree with a major in medical technology from The University of Tennessee, Knoxville. In addition, a Certificate of Laboratory Training will be awarded by UTMREQ. Students will then be eligible for examination by the Board of Registry of the American Society of Clinical Pathologists in order to be certified as registered medical technologists.

Freshman

<table>
<thead>
<tr>
<th>Hours Credit</th>
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<tbody>
<tr>
<td>English 1010-11; 1020; 1031 or 1033 or 1033</td>
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<td>9</td>
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<td>Biology 1200 or 1118-28-38-112</td>
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<td>Chemistry 1110-20-30-12</td>
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<td>12</td>
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<tr>
<td>Basic Skills B. Foreign Language (Intermediate Level Sequence)</td>
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<td>9</td>
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<tr>
<td>Mathematics</td>
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Sophomore

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<td>Biochemistry 3110</td>
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<td>Zoology 2200-30</td>
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<tr>
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<td>7-8</td>
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<tr>
<td>Microbiology 3200 and 3519</td>
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<tr>
<td>Divisional Distribution (A) Non-U.S. History</td>
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Junior

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<td>Microbiology 4270</td>
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<td>Chemistry 2140-49</td>
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<td>Microbiology 4270</td>
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<td>6-8</td>
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<tr>
<td>Upper Level Distribution (A) U.S. Studies</td>
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Senior

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<tr>
<td>Medical technology course of study at UTMRCH</td>
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PRE-PHARMACY PROGRAMS

The college offers three programs preparing students for the study of pharmacy at UTCHS. The Doctor of Pharmacy (Pharm.D.) degree is conferred by UTCHS upon completion of four years of professional study at Memphis following any of the three programs. Bulletins describing the three pre-pharmacy programs in detail may be obtained from the Health Professions Office, 220 Ayres Hall.

The two-year program prepares students to be admitted to the College of Pharmacy upon completion of 90 hours of a prescribed course of study at UTCHS. Further information may be obtained from the Health Professions Office, 220 Ayres Hall.

The three-year program leading to a B.A. degree and the four-year program leading to either a B.A. or B.S. degree from The University of Tennessee, Knoxville, as well as to the professional degree in pharmacy from UTCHS, are based upon the program outlined below. In the three-year program, the student must complete at least 134 credit hours while enrolled in the College of Liberal Arts, and the B.A. degree is granted upon satisfactory completion of the first year of study at Memphis. In the four-year program, the B.A. or B.S. degree is granted upon completion of 190 or more credit hours while enrolled in the college, including a major of 36 or more hours in addition to the courses outlined below. The requirement for a major is waived for those taking their fourth year at UTCHS. Students in either the three- or four-year program must complete the last 45 hours of credit in residence at The University of Tennessee, Knoxville, before enrolling in the College of Pharmacy.

Freshman

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<th>Hours Credit</th>
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<td>English 1010-11; 1020; 1031 or 1033 or 1033</td>
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<td>Chemistry 1110-20-30-12</td>
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<td>Basic Skills B. Foreign Language (Intermediate Level Sequence)</td>
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Sophomore

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<tr>
<td>Biology 1209-20-30 or Zoology 1118-28-38</td>
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<td>Chemistry 3211-21-31 &amp; 3219-29-39</td>
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<td>Speech 2311</td>
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<td>Divisional Distribution (C) Social Sciences</td>
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<td>Divisional Distribution (D) Humanities (1)</td>
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<tr>
<td>8-9</td>
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</tbody>
</table>
The College of Veterinary Medicine.

This program does not assure admission to the College of Liberal Arts. The Bachelor of Arts degree will be conferred by the College of Liberal Arts upon successful completion of the first year (three quarters) of the professional veterinary medicine curriculum, the Bachelor of Arts degree will be conferred by the College of Liberal Arts.

The College of Pharmacy requires a minimum of 28 hours in studio courses, and courses in business administration, particularly accounting, economics, and marketing. Recommended electives include Classics 2710 and 2720 and courses in business administration, particularly accounting, economics, and marketing.

The Studio Art core is required of all B.F.A. candidates. It is designed to give a broad art background, in both studio and art history, at the earliest possible time. This background, during the freshman and sophomore years, gives a foundation upon which the student may build, and provides an opportunity to become acquainted with the various artistic disciplines. This gives each student the understanding to plan a better program during the remaining two years. Unless otherwise stated the art core courses are non-sequential.

The B.F.A. in Studio Art is a professional-oriented degree especially intended for those students planning careers or graduate study in the visual arts.

Students may be accepted into advanced media concentration in (1) Ceramics, (2) Drawing, (3) Painting, (4) Printmaking, (5) Sculpture, (6) Watercolor, (7) approved Inter-Area combinations, after passing the appropriate portfolio course.

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**GRAPHIC DESIGN/ILLUSTRATION MAJOR**
The Graphic Design/Illustration major is specifically designed to provide the basic visual education for those persons who wish to pursue careers in the commercial application of art in fields such as advertising, art direction, package design, publications, television, etc.

A minimum of 190 credit hours are required for graduation. Two options are available: graphic design or illustration. Students are advised that courses in Graphic Design/Illustration must be taken in sequence, and that successful completion of Art 3500 (Portfolio Review, S/NC) is required for admittance to all upper-division courses.

**GRAPHIC DESIGN OPTION**

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<tr>
<td>Art History</td>
<td>1. Art 1815, 1825, 1850</td>
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<tr>
<td>2. Electives</td>
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<tr>
<td>Studio</td>
<td>1. Art 1115, 1125, 1135</td>
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<tr>
<td>2. Art 2105, 2115, 2205 (or 2305)</td>
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Subtotal: 37 hours

**II. Graphic Design**

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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art 3500 (S/NC)</td>
<td>Art 3500 (S/NC)</td>
<td>1</td>
</tr>
<tr>
<td>Drawing: Art 2115 (6 hrs.), 4 hrs. electives</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>C. Photography: Art 2905</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>D. Art 1501, 2505, 2515, 2525, 3515, 3535, 3545, 4505, 4515, 4516 in sequence</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>E. Art 3555</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>F. Art 4502</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: 70 hours

**III. Design Electives**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art 2506, 3516, 3517, 3525, 4506</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: 12 hours

**IV. Studio Electives (3 hours from each category)**

- A. Fiber-Fabric
- B. Printmaking
- C. Sculpture

**V. Professional Electives**

- Advertising 3000, 3630, 4000; Broadcasting 4030; Marketing 3110
- Subtotal: 9 hours

**VI. General Curriculum**

- English 1010 or 1011; 1020; 1031 or 32 or 33
- Music 1111-21-31
- Music 1113-23-33
- Music 1199
- Music 2200
- Applied music
- Ensemble
- Liberal arts elective (not in music)
- Music 2000
- Sophomore
- Music 2111-21-31
- Music 2113-23-33
- Music 2320-30-40
- Music 2599
- Applied music
- Ensemble
- Liberal arts electives (not in music)
- Music 3112-22
- Music 3113-23
- Music 4121 or 4131
- Applied music
- Ensemble
- Music electives
- Music history/literature (3000 level and above)
- Electives
- Music 2300
- Senior
- Music 4100
- Music 4111-41
- Music 4121 or 4131
- Music 3199
- Applied music
- Ensemble
- Music electives
- Liberal arts electives (not in music)
- Electives
- Music 2000

Total: 190 hours

**COLLEGE ARTISTS PROGRAM**

A program of 189 hours is to be determined by the student and approved by the Department of Art honors committee. This program allows the gifted student greater opportunity for establishing a unique education in studio art, which may include independent study, off-campus study, or foreign study in addition to formal class work. 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 normally be considered after the completion of 90 hours. Admittance of 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) the 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 exhibition 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/or outside work
C. Recommendation of the studio faculty, and/or 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, juniors in 3008, 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, electronic music, music history and literature, and applied music (voice; piano; organ; church music—organ or piano; church music—voice; piano—literature; strings; woodwind, brass, and percussion instruments; multiple keyboard instruments; multiple woodwind instruments; studio music and jazz; 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 outlined below.

**Note:** In addition to the concentrations offered in the Bachelor of Music curriculum, a major in music with a concentration in either music history and literature or applied music is available in the Bachelor of Arts curriculum. (See page 193.)

**MUSIC THEORY**

**Freshman**

- English 1010 or 1011; 1020; 1031 or 32 or 33
- Music 1111-21-31
- Music 1113-23-33
- Music 1199
- Music 2200
- Applied music
- Ensemble
- Liberal arts elective (not in music)
- Music 2000
- Sophomore
- Music 2111-21-31
- Music 2113-23-33
- Music 2320-30-40
- Music 2599
- Applied music
- Ensemble
- Liberal arts electives (not in music)
- Music 3112-22
- Music 3113-23
- Music 4121 or 4131
- Applied music
- Ensemble
- Music electives
- Music history/literature (3000 level and above)
- Electives
- Music 2300

**Junior**

- Music 2310
- Music 3111-21-31
- Music 3112-22
- Music 3113-23
- Music 4121 or 4131
- Applied music
- Ensemble
- Music electives
- Liberal arts electives (not in music)
- Music 2000

**Senior**

- Music 4100
- Music 4111-41
- Music 4121 or 4131
- Music 3199
- Applied music
- Ensemble
- Music electives
- Liberal arts electives (not in music)
- Electives
- Music 2000

Total: 180 hours

**COMPOSITION**

**Freshman**

- English 1010 or 1011; 1020; 1031 or 32 or 33
- Music 1111-21-31
- Music 1113-23-33
- Music 1199
- Music 2200
- Applied music
- Ensemble
- Liberal arts electives (not in music)

**Hours Credit**

- Freshman: 9
- Sophomore: 9
- Junior: 9
- Senior: 9
Ensemble ........................................ 3
Liberal arts electives (not in music) ........ 8
Music 2000 ........................................ 0
Sophomore
Music 1111-21-31 ................................ 9
Music 2113-23-33 ................................ 9
Music 2320-30-40 ................................ 9
Principal applied study .......................... 12
Ensemble ......................................... 3
Liberal arts electives (not in music) ......... 8
Music 2000 ........................................ 0
Junior
Music 2310 .......................................... 3
Music 3113-23 ....................................... 6
Music 2311-91 ....................................... 3
Music 3121 .......................................... 3
Principal applied study .......................... 12
Ensemble ......................................... 3
Music recital 3000 ................................. 0
Electives .......................................... 12
Liberal arts electives (not in music) ......... 3
Music 2000 ........................................ 0
Senior
Music 4060 .......................................... 3
Music 3071-81-91 ................................. 3
Music 4003-04-05 .................................. 3
Principal applied study .......................... 12
Ensemble ......................................... 3
Senior recital 4000 ............................... 0
Liberal arts electives (not in music) ......... 8
Electives .......................................... 6
Music 2000 ........................................ 0
Total: 180 hours

CHURCH MUSIC (Organ or Piano)
Freshman  
Hours Credit
English 1010 or 1011; 1020; 1031 or 32 or 33 ... 9
Music 1111-21-31 ................................ 9
Music 1113-23-33 ................................ 3
Music 2000 ........................................ 0
Sophomore
Music 2310 .......................................... 3
Music 3113-23 ....................................... 6
Music 2311-91 ....................................... 3
Music 3121 .......................................... 3
Principal applied study .......................... 12
Ensemble ......................................... 3
Liberal arts electives (not in music) ......... 8
Electives .......................................... 6
Music 2000 ........................................ 0
Junior
Music 2310 .......................................... 3
Music 3113-23 ....................................... 6
Music Education 4420 ......................... 3
Music 4074-84 ..................................... 6
Music 3112 .......................................... 3
Principal applied study .......................... 9
Ensemble ......................................... 3
Religious Studies Electives .................... 8
Electives .......................................... 2
Senior recital 4000 ............................... 0
Total: 181 hours

STRINGS
Freshman  
Hours Credit
English 1010 or 1011; 1020; 1031 or 32 or 33 ... 9
Music 1111-21-31 ................................ 9
Music 1113-23-33 ................................ 3
Music 2300 ........................................ 0
Principal applied study .......................... 12
Ensemble ......................................... 3
Liberal arts elective (not in music) ......... 3
Music 2000 ........................................ 0
Sophomore
Music 4340 .......................................... 3
Music 4060 .......................................... 3
Music 4012-23-32 .................................. 3
Music 3112 .......................................... 3
Principal applied study .......................... 9
Ensemble ......................................... 3
Religious Studies Electives .................... 8
Electives .......................................... 2
Senior recital 4000 ............................... 0
Total: 180 hours

MULTIPLE WOODWIND INSTRUMENTS
Freshman  
Hours Credit
English 1010 or 1011; 1020; 1031 or 32 or 33 ... 9
Music 1111-21-31 ................................ 9
Music 1113-23-33 ................................ 3
Music 2300 ........................................ 0
Principal applied study .......................... 12
Music 1019-20-30 .................................. 9
Senior recital 4000 ............................... 0
Liberal arts electives (not in music) ......... 8
Electives .......................................... 6
Music 2000 ........................................ 0
Junior
Music 2340 .......................................... 3
Music 3112 .......................................... 3
Music 3113-23 ....................................... 6
Applied area literature ........................... 4
Principal applied study .......................... 12
Ensemble ......................................... 3
Senior recital 4000 ............................... 0
Liberal arts electives (not in music) ......... 8
Electives .......................................... 6
Music 2000 ........................................ 0
Senior
Music Education 4430 ......................... 3
Principal applied study .......................... 12
Applied area literature ........................... 4
Principal applied study .......................... 12
Ensemble ......................................... 3
Senior recital 4000 ............................... 0
Liberal arts electives (not in music) ......... 8
Electives .......................................... 6
Music 2000 ........................................ 0

CHURCH MUSIC (Voice)
Freshman  
Hours Credit
English 1010 or 1011; 1020; 1031 or 32 or 33 ... 9
Music 1111-21-31 ................................ 9
Music 1113-23-33 ................................ 3
Music 2300 ........................................ 0
Principal applied study .......................... 9
Music 1019-20-30 or Music 1590 .............. 3
Ensemble ......................................... 9
Psychology or Philosophy electives ........... 6
Music 2000 ........................................ 0
Sophomore
Music 2310-21-31 ................................ 9
Music 2113-23-33 ................................ 9
Music 2320-30-40 ................................ 9
Principal applied study .......................... 12
Ensemble ......................................... 3
Music 2040-50-60 or Music 1590 .............. 3
Elective ........................................... 3
Music Edu. 2110 .................................... 3
Music 2050-55-65 ................................. 9
Music Edu. 3130 .................................... 3
Ensemble ......................................... 3
Foreign Language ................................. 9
Elective ........................................... 0
Music 2000 ........................................ 0
Senior
Music 4340 .......................................... 3
Music 4060 .......................................... 3
Music 4012-23-32 .................................. 3
Music 3112 .......................................... 3
Principal applied study .......................... 9
Ensemble ......................................... 3
Religious Studies Electives .................... 8
Electives .......................................... 2
Senior recital 4000 ............................... 0
Total: 180 hours

Music 1113-23-33 ................................ 3
Music 2300 ........................................ 0
Principal applied study .......................... 9
Music 1019-20-30 or Music 1590 .............. 3
Ensemble ......................................... 9
Psychology or Philosophy electives ........... 6
Music 2000 ........................................ 0
Sophomore
Music 2310-21-31 ................................ 9
Music 2113-23-33 ................................ 9
Music 2320-30-40 ................................ 9
Principal applied study .......................... 12
Ensemble ......................................... 3
Music 2040-50-60 or Music 1590 .............. 3
Elective ........................................... 3
Music Edu. 2110 .................................... 3
Music 2050-55-65 ................................. 9
Music Edu. 3130 .................................... 3
Ensemble ......................................... 3
Foreign Language ................................. 9
Elective ........................................... 0
Music 2000 ........................................ 0
Senior
Music 4340 .......................................... 3
Music 4060 .......................................... 3
Music 4012-23-32 .................................. 3
Music 3112 .......................................... 3
Principal applied study .......................... 9
Ensemble ......................................... 3
Religious Studies Electives .................... 8
Electives .......................................... 2
Senior recital 4000 ............................... 0
Total: 180 hours

Music 1111-21-31 ................................ 9
Music 1113-23-33 ................................ 3
Music 2300 ........................................ 0
Principal applied study .......................... 12
Music 1019-20-30 .................................. 9
Senior recital 4000 ............................... 0
Liberal arts electives (not in music) ......... 3
Music 2000 ........................................ 0
Sophomore
Music 2310-21-31 ................................ 9
Music 2113-23-33 ................................ 9
Music 2320-30-40 ................................ 9
Principal applied study .......................... 12
Ensemble ......................................... 3
Music 2040-50-60 or Music 1590 .............. 3
Elective ........................................... 3
Music Edu. 2110 .................................... 3
Music 2050-55-65 ................................. 9
Music Edu. 3130 .................................... 3
Ensemble ......................................... 3
Foreign Language ................................. 9
Elective ........................................... 0
Music 2000 ........................................ 0
Senior
Music Education 4430 ......................... 3
Principal applied study .......................... 12
Applied area literature ........................... 4
Principal applied study .......................... 12
Ensemble ......................................... 3
Senior recital 4000 ............................... 0
Liberal arts electives (not in music) ......... 8
Electives .......................................... 6
Music 2000 ........................................ 0

Senior
Music Education 4430 ......................... 3
Principal applied study .......................... 12
Applied area literature ........................... 4
Principal applied study .......................... 12
Ensemble ......................................... 3
Senior recital 4000 ............................... 0
Liberal arts electives (not in music) ......... 8
Electives .......................................... 6
Music 2000 ........................................ 0

Senior
Music Education 4430 ......................... 3
Principal applied study .......................... 12
Applied area literature ........................... 4
Principal applied study .......................... 12
Ensemble ......................................... 3
Senior recital 4000 ............................... 0
Liberal arts electives (not in music) ......... 8
Electives .......................................... 6
Music 2000 ........................................ 0

College of Liberal Arts  
157

* Piano Majors substitute: Music 4025-26-37-38 (8), Music 4055-56-57 (6), Music 3041 (1)
STUDIO MUSIC AND JAZZ

Freshman

English 1010 or 1011; 1020; 1031 or 1032 or 1033
Music 1111-21-31
Music 2111-21-31
Music 2113-23-33
Music 2310-20-30
Music 3022-20
Music 2000
Music 1010-20
Principal applied study
Ensemble
Liberal arts elective
Music 2340
Music 3112
Music 3113-23
Music 4114
Music 4400

 sophomore

English 1010 or 1011; 1020; 1031 or 1032 or 1033
Music 1111-21-31
Music 1113-23-33
Music 2300
Music 3950
Music 3960
Music 2010
Music 2810
Music 1020-40
Principal applied study
Ensemble
Liberal arts elective
Music 2310-20-30
Music 2320-30-40
Music 2599
Applied Music
Music 2113-23-33
Music 2199
Music 3199
Music 1113-23
Music 2340
Music 3113, 3123
Music 3119-29-39
Music 3410-20-30, 3429-30
Applied Music
Applied Music
Music 2199
Music 2300
Music 2000

Junior

English 1010 or 1011; 1020; 1031 or 1032 or 1033
Music 1111-21-31
Music 1113-23-33
Music 1189
Music 2300
Applied Music
Music 2010
Applied Music
Music 2199
Music 3199
Music 1113-23
Music 2340
Music 3113, 3123
Music 3119-29-39
Music 3410-20-30, 3429-30
Applied Music
Applied Music
Music 2199
Music 2300
Music 2000

Senior

Principal applied study
Ensemble
Senior recital 4000
Music 4009-19-29
Music 3016
Music 4007-17-27
Liberal arts electives (not in music)
Electives
Music 2000

Total: 180 hours

ELECTRONIC MUSIC

Freshman

English 1010 or 1011; 1020; 1031 or 1032 or 1033
Music 1111-21-31
Music 2111-21-31
Music 2113-23-33
Music 2320-30-40
Music 2599
Applied Music
Music 2113-23-33
Music 2199
Music 3199
Music 1113-23
Music 2340
Music 3113, 3123
Music 3119-29-39
Music 3410-20-30, 3429-30
Applied Music
Applied Music
Music 2199
Music 2300
Music 2000

Junior

English 1010 or 1011; 1020; 1031 or 1032 or 1033
Music 1111-21-31
Music 1113-23-33
Music 1189
Music 2300
Applied Music
Music 2010
Applied Music
Music 2199
Music 3199
Music 1113-23
Music 2340
Music 3113, 3123
Music 3119-29-39
Music 3410-20-30, 3429-30
Applied Music
Applied Music
Music 2199
Music 2300
Music 2000

Senior

Principal applied study
Ensemble
Senior recital 4000
Music 4009-19-29
Music 3016
Music 4007-17-27
Liberal arts electives (not in music)
Electives
Music 2000

Total: 180 hours

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 a 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

Chemistry 310-20-30 (or 1110-20-30-
2000 or 2018-28-38...
Chemistry 1325-35...
Mathematics 1840-50-60 or 1848-58-68...
English Composition (3 course sequence)
Divisional Distribution A, C, or D...

Sophomore

Chemistry 3211-21-31, 3219-29-39...
Chemistry 2140-49...
Mathematics 2840-50-60 or 2848-58-68...
Physics 2510, 2310-20...
Divisional Distribution A, C, or D...

Junior

Chemistry 3410-20-30, 3429-39...
Chemistry 4210-19, 4220-29...
Computer Science 3150...
Divisional Distribution A, C, or D...

Senior

Chemistry 4110-19...
Chemistry 4810 and 4710...
Chemistry 4820...
Chemistry 4811-21-31...
Electives...

Total: 190 hours

BACHELOR OF SCIENCE IN CHEMISTRY

Students who desire to major in chemistry may select from among three courses of study: Bachelor of Science/Concentration A, Bachelor of Science/Concentration B, or Bachelor of Science in Chemistry. The last program is approved by the Committee on Professional Training of 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 and college teaching. A student in the B.S. in Chemistry or cooperative program should, at the earliest opportunity, ask the Liberal Arts Advising Center for assignment of a faculty advisor in the Chemistry Department. For further information, contact the head of the Chemistry Department, 575 Buehler Hall.

A minimum average of C must be made in each chemistry course applied to the Bachelor of Science in Chemistry degree.
eral arts base of humanities and the social and behavioral sciences in order to help students understand human diversity and the transactions between people and their environment. The curriculum contains classroom theory and agency-based field placements. Educationally directed field placements, which consist of over 400 clock hours of supervised field instruction in agency settings throughout greater Knoxville, provide extensive and challenging opportunities for students to apply the lessons of the classroom to the problems of society and to prepare for employment.

Students interested in pursuing the Bachelor of Science in Social Work should confer with the Director of the Social Work Program during their first academic year. Those completing this course of study will be prepared to engage in beginning professional social work practice and enter many graduate schools of social work with advanced standing. This program is accredited by the national accreditation agency, the Council on Social Work Education.

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1010 or 1011</td>
<td>3</td>
</tr>
<tr>
<td>1020 or 1031</td>
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</tr>
<tr>
<td>1032 or 1033</td>
<td>3</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>3</td>
</tr>
<tr>
<td>History (Non-U.S.)</td>
<td>3</td>
</tr>
<tr>
<td>Physical Science</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 2510-20-30</td>
<td>3</td>
</tr>
<tr>
<td>Social Work 2000-2500</td>
<td>3</td>
</tr>
<tr>
<td>Computer Science 1510</td>
<td>3</td>
</tr>
<tr>
<td>Social Sciences 2530, Political Science 2564, Women's Studies 2010</td>
<td>3</td>
</tr>
<tr>
<td>Humanities</td>
<td>17 (14)</td>
</tr>
<tr>
<td>U.S. Studies</td>
<td>8 (6)</td>
</tr>
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</table>

**Junior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Work 3400-10</td>
<td>3</td>
</tr>
<tr>
<td>Social Work 3110</td>
<td>3</td>
</tr>
<tr>
<td>Social Work 3500-10</td>
<td>3</td>
</tr>
<tr>
<td>Child &amp; Family Studies 3515</td>
<td>3</td>
</tr>
<tr>
<td>Economics Electives</td>
<td>3</td>
</tr>
<tr>
<td>Foreign Studies</td>
<td>3</td>
</tr>
<tr>
<td>Sociology 3910-20</td>
<td>3</td>
</tr>
<tr>
<td>Human Services 3200</td>
<td>3</td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Work 4100-20</td>
<td>3</td>
</tr>
<tr>
<td>Social Work 4520-20</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>11 (15)</td>
</tr>
</tbody>
</table>

\*Courses selected with faculty advisor from approved list.

### Preparation for Other Professions

#### Law

Students who plan to study law should consult the statement regarding admission to the College of Law in the Graduate Catalog and discuss their programs with advisors in the Liberal Arts Advising Center.

#### Library Science

Certain courses in the Graduate School of Library and Information Science are open to students in the College of Liberal Arts interested in beginning positions in a library or in pursuit of the graduate study in professional librarianship. For further information, see page 53 or consult the Director of the Graduate School of Library and Information Science.

### Planning

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 53. 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.

#### Public Administration

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.

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political Science 2510-20, 2530</td>
<td>8</td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics 2510-20</td>
<td>8</td>
</tr>
<tr>
<td>Political Science 2565-66</td>
<td>3</td>
</tr>
<tr>
<td>Political Science 3545-46 or 3801-02-03-04</td>
<td>8</td>
</tr>
<tr>
<td>Economics 3340</td>
<td>3</td>
</tr>
<tr>
<td>Accounting 2110-20-30</td>
<td>9</td>
</tr>
</tbody>
</table>

**Junior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political Science 4610-20</td>
<td>8</td>
</tr>
<tr>
<td>Political Science 4410</td>
<td>4</td>
</tr>
<tr>
<td>Economics 3410</td>
<td>3</td>
</tr>
<tr>
<td>Accounting 3510</td>
<td>3</td>
</tr>
<tr>
<td>Economics 4750-60</td>
<td>6</td>
</tr>
</tbody>
</table>

### General Information

#### Association with the College

For information regarding association with the College of Liberal Arts, see page 16.

#### 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 18, 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 (S/NC) 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
not 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. The following regulations apply:

(1) S/NC courses, except those offered only on this basis, may not count for Basic Skills or Distribution Program credit in a major and minor or corequisites unless specifically permitted by petition. This restriction applies to major or minor requirements or corequisites.

(2) The maximum number of S/NC elective hours which may be counted toward graduation is 30, exclusive of courses offered only S/NC, physical education courses, and/or satisfactory hour earned by examination, military service, etc.

(3) A student who desires to take a course S/NC should indicate that intention at the time of registration or in the college advisor's office. If S/NC credit is granted, the course will appear on the student's record as S/NC and No Credit will be calculated in the student's grade point average. Satisfactory or NC grades will not be calculated in the college's grade point average. Satisfactory No Credit courses are essentially designed for students who wish to do such independent work should obtain the approval of the faculty members and the departments concerned prior to embarking upon their study. Credit per quarter will vary from 1-16 hours. Up to 24 hours of credit earned in this way may be applied toward a degree in the college, although individual departments may limit the number of hours which may be applied toward a specific major.

Study Abroad and Foreign Study Courses
Several opportunities for study abroad are available to students in the college. One avenue is through group programs arranged and supervised by departments of the college on a full-quarter or summer term basis. A second is through group programs conducted abroad by other academic institutions to which UTK students with approval may enroll for credit. Assistance in identification of and registration in such programs may be obtained through the Overseas Study Information Service located in the University's Division of International Education. A third opportunity is through individualized programs under the foreign study number 1401. The nature of this work as well as credit for it should be negotiated by students prior to departure with the appropriate liberal arts departments. Credit will be awarded only after completion of all agreed upon requirements, and may vary from 1-16 hours in any one department. Up to 24 hours of such credit, exclusive of that earned in group programs offered by departments, could apply toward a degree in the college. Departments may in any of the above forms, however, limit the hours of 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, 220 Ayres Hall, as well as through the several major departments. The Advising Center is staffed on a regularly scheduled basis by members of the college faculty, each of whom has been trained for this specialized work. Students in their first quarter of residence are assigned to the Advising Center where they may relate themselves to a particular advisor of their choice or consult the person on duty at the time they need assistance. Most students continue in this relationship to the Advising Center until they have determined their major, normally by the beginning of the junior year, at which time they may be transferred for advising to a faculty member in the major department.

Student Academic Affairs Office
Academic assistance for students is also provided through the Student Academic Affairs Office, 218 Ayres Hall. This office serves primarily students not assigned to the Liberal Arts Advising Center, helping them meet a variety of 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, 602 Volklund 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 institutions 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 outpatient 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 facility for graduate 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 mental health agencies. Treatment services are available to anyone regardless of residence, sex, age, race, or citizenship.

University Theatres
The Department of Speech and Theatre offers a full schedule of dramatic presentations through 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 (mathematics and computer science), Austin Peay (psychology), Hesler (botany), Walters Life Science (biochemistry, biology, microbiology, and zoology), The Nielson Physics Building (physics and
hours are required in each of these subfields: (a) Cultural; (b) Physical; and (c) Archaeology.

(a) Cultural: 3410, 3420, 3440, 3450, 3530, 3540, 3580, 3700, 4200, 4240, 4250, 4400, 4420, 4440, 4550, 4560, 4740, 4741; (b) Physical: 2910, 2920, 2930, 3070, 3900, 4930, 4940, 4950, 4980; (c) Archaeology: 3610, 3611, 3620, 3630, 3630, 3670, 4190, 4610, 4610, 4640. At least 24 of these hours must be at the 3000-level or above. Students with senior standing may also substitute appropriate 5000-level courses with permission of the appropriate Instructor.

A minor in anthropology consists of 27 hours including the 2510, 2520, 2530 introductory courses.

2510 Human Orgins (4) Non-technical survey of man’s primate background, fossil primates, fossil man, and living races of mankind.

2520 Prehistoric Archaeology (4) Survey of prehistoric culture with specific emphasis on method and theory in archaeology; prehistory of western Europe and Africa, archaeology in Americas.

2530 Human Culture (4) Introduction to ethnography: survey of nature of culture and its diversity and material. Recommended: 2530 or Linguistics 2000. (Same as Linguistics 3420.)

2590 The Biology of Human Races (3) Processes of adaptation. Prereq: 2510.

2610 Archaeology of United States and Canada I (3) Survey of prehistoric peoples of the United States and Canada from first European contact to present. Emphasis on change and adaptation. 2530 recommended.

3333 Visiting Lecture Program (3) A course in which a visiting scholar or scholars present a series of lectures, discussions, and demonstrations on various topics of interest. 3 hrs.

3410 Principles of Cultural Anthropology (3) Basic concepts and objectives in study of culture. Range of cultural phenomena and approaches to its study. 2530 recommended.

3420 Linguistic Anthropology (3) Basic linguistic concepts and their application in cultural anthropology. Prereq: 2530 or Linguistics 2000. (Same as Linguistics 3420.)

3440 Religion of Primitive Peoples (3) Religions of non-literate peoples. Place of religion in their social and cultural systems. 2530 recommended. (Same as Religious Studies 3440.)

3450 Community Studies in Complex Culture (3) Review of cross-cultural comparative urban and village communities and the ethnographic techniques used in community studies. 2530 recommended.

3460 Alcohol, Health and Culture (3) Socio-cultural perspectives and consequences of alcohol use/abuse in various cultural groups.

3490 African Religions (4) (Same as Religious Studies 3490 and Afro-American Studies 3490.)

3530 Peoples and Cultures of Africa (3) Ethnographic survey of aboriginal cultures of Sub-Saharan Africa. Cultural diversity and human ecology in a real perspective. 2530 recommended. (Same as Afro-American Studies 3530.)

3540 North American Indians (3) Ethnographic survey of cultures of Arctic, Southwest, Plains, and Eastern areas of United States. Emphasis on cultural differences of peoples occupying these areas during pre-colonial period. 2530 recommended.


3555 Cherokee Ethnography (3) Survey of sociopolitical aspects of internal affairs and external relationships of first European contact to present. Emphasis on 18th and 19th centuries.

3575 Afro-American Anthropology (3) Anthropological perspectives on Blacks in New World: examination of Afro-American via anthropological theories and methodology. (Same as Afro-American Studies 3575.)

3590 Peoples and Cultures of Mesoamerica (3) Ethnographic survey of aboriginal peoples and post-conquest changes in Indian cultures. Emphasis upon analysis of small rural communities using modern techniques as well as prehistoric populations. Recommended: 2530 or 2560. Prereq: 2530. (Same as Latin American Studies 3580.)

3610 Archaeology of United States and Canada II (3) Survey of prehistoric peoples north of Mexico from initial occupation to European contact. 2520 recommended.

3611 Archaeology of United States and Canada II (3) Historical archaeology of Euro-American, Afro-American, and Asian American cultures in the United States and Canada from the 15th to the 20th centuries.

3620 European Prehistory (3) Cultural developments during Paleolithic, Mesolithic, and Neolithic periods. 2520 recommended.

3630 European Prehistory II (3) Cultural developments during Metal Ages. From close of Neolithic through Iron Age. 2520 recommended. 3620 recommended. 3630 should be taken in sequence.

3660 Prehistory of Tennessee (3) History of archaeological research in Tennessee and survey of prehistoric American Indian cultures identified through research.

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

3700 Forms of Folklore (3) Introduction to anthropological study of folklore.

3811 Introduction to Museology (3) (Same as Art 3811.)

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

4101 Foreign Study (1-16) See page 160.

4102 Off-Campus Study (1-16) See page 160.

4103 Independent Study (1-16) See page 160.

4111 Non-Western Education: Anthropological Approaches (3) Historical 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 paid to American Indians, African tribal groups, and Asian cultures. (Same as Education C 4111.)

4200 Contemporary North American Indians (3) Survey of Indian cultures from initial Euro-American contact to present. Emphasis on human ecology in a real perspective. Prereq: 2530 or consent of instructor.

4240 Applied Cultural Anthropology (3) Applications of anthropological theory, methods, and findings in programs of community and national development.
Consent of instructor.

4730 Physical Growth and Constitution (3) Compar-ative growth patterns throughout the life cycle of monkeys, skeletal and dental maturation; sex differences in growth, human constitutional types. Prereq: 2510 or consent of instructor. Biology 2110 strongly recommended.

4940 Biology of Native Americans (3) American Indian origins and evolution from standpoint of skeletal remains and morphology and morphology of living, modern Indians. Emphasis on North American Indians. Prereq: 2510 or consent of instructor.

162 College of Liberal Arts

The Department of Art serves the University both generally and specifically; students from the various colleges enroll in art courses. The Department of Art has two aspects: the history of art and art history. Knowledge of art history is required of studio majors. The practice of art. Knowledge of the practice of art. Knowledge of the practice of art. Assistant Professors: D. M. Habel, Ph.D. Michigan; B. Lee, M.F.A. Yale; S. Metz, M.F.A. Michigan State; A. L. Neff, Ph.D. Pennsylvania; T. C. Sauer, M.F.A. Wisconsin; R. Wells, B.F.A. Memphis State.

The Department of Art serves the University both generally and specifically: exhibitions are initiated within the Art and Architectural Studies Program. Lecture discussion of the field, history, social impact and economics. Prereq: 2510 or consent of instructor. Biology 2110 strongly recommended.

Art has two aspects: the history of art and the practice of art. Knowledge of the practice of art. Art history majors are required of studio majors. Studio courses within the Department of Art require 3 hours of class time for each credit hour earned.

The Department reserves the right to accept student studio work.

UNDERGRADUATE

B.F.A. Majors: see page 154.

B.A. Major: Art History (Pre-requisites Art 115, 1825, and 1850 (12 hrs.); art history courses 2000 and above, which may include Greek and Roman art and archaeology (26 hrs.); studio courses 2000 and above (9 hrs.); Philosophy 3910 (4 hrs.); Museology 3811 and 3821 (6 hrs.). Undergraduate work in art history is enhanced by knowledge of at least one foreign language and by studio art experience. Graduate work normally requires reading knowledge of at least two foreign languages, usually German, French, and any other language appropriate to an area of specialization.

Students anticipating possible careers in the museum or gallery field are advised that elective hours in Art 4811 Museum Internship should be considered.

B.A. Minor: Art History—Consists of 24 hours in art history: courses numbered 2000 and above. Art 1815 and 1825 are prerequi-sites to Art 4811.

B.A. Major: Art (Concentration in Studio)—Art 1000, 1115, 1125, 1135, 1850, and eight additional hours of art history are prerequisites to a major of 36 hours in courses numbered 2000 and above, including a minimum of 21 hours in upper-division courses. Concentration may be in Ceramics, Drawing, Fiber-Fabric, Painting-Watercolor, Printmaking, Sculpture or a combination from these areas.

1000 The Visual Artist (2) Lecture course with guest artists for art majors and non-art majors. Role of visual artist. Language of art and design. Materials and processes of art disciplines (painting, sculpture, graphics, craft, photography, and architecture). Major issues and concerns in visual arts and career opportunities. Must be taken freshman year.

1105 Introduction to Studio Art: Various Media (3) Introduction to individual studio media. Individual sections for various art media. Course may be repeated, medium may not be repeated. Maximum 12 hrs.

1115 Studio Fundamentals (2) Development of observational skills and the practice of art fundamentals of drawing—line, tone, space, form, and composition. Primarily for art, architecture, interior design, and art education majors.

1125 Studio Fundamentals (2) Surface composition and color. Primarily for art, architecture, interior design, and art education majors.

1135 Studio Fundamentals (2) Real space and volume. Primarily for art, architecture, education, and interior design and housing majors.

1501 Orientation to Graphic Design/Illustration (2) Lecture/discussion of the field, history, social impact and economics. Prereq: 1115, 1125.

1705 Experiencing Art (4) Form and meaning in visual arts. Lecture discussion. Especially for non-majors.

1815 World Art I (4) Art from ancient, classic and imperial civilizations; art in service of Buddhism, Christianity, and Islam; art as observation of natural world. Course content is drawn from art of Europe, Asia, and Americas in periods from prehistory to 1400.

1825 World Art II (4) Study through slides and lectures of works of great artists from Leonardo da Vinci and Michelangelo to Matisses and Picasso.

1850 Survey of Contemporary Art (4) History of development of modern art from Surrealism through Abstract
Expressionism, Pop Art, Post-Painterly Abstraction, Op Art, Kinetic Art, Happenings, Environments, Conceptual Art, Postmodern Art, and Super Realism.

2004 Special Topics (1-4) Student or instructor initiated course offered at convenience of Department. May be repeated.

2006 Special Topics (2-4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hours.

2008 Honors: Art (3) Intensified study for the exceptional student. May be repeated for a maximum of 16 credit hours.

2105 Survey of Drawing (3) Further exploration and refinement of fundamental aspects of drawing with more emphasis on composition and techniques. Prereq: 1115.

2106 Special Topics in Drawing (3) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 12 hours.

2115 Life Drawing (3) Further development of drawing and observational skills with special emphasis on structure and painting techniques in human and figure environment. Prereq: 2105. May be repeated. Maximum 6 credit hours.


2205 Introduction to Painting (3) Capacities of oil and acrylic painting on canvas. Prereq: 1115, 1125, 1135 for art majors, none for non-art majors.

2206 Special Topics in Painting (3) Student or instructor initiated course offered at convenience of department to enhance and expand the painting curriculum. Prereq: to be determined by department. May be repeated. Maximum 12 credit hours.

2215 Painting II (3) Techniques of expression in oil and/or acrylic. May be repeated. Maximum 8 credit hours. Prereq: 2205 for art majors, none for non-art majors.

2258 Special Topics in Fiber and Fabrics (3) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum 12 credit hours.

2260 Fabric: Painting and Dyeing (3) Survey of painting and dyeing techniques and processes. Prereq: 1115. May be repeated. Maximum 8 credit hours.

2265 Fiber: Three-Dimensional Non-woven Structures (3) Development of three-dimensional structures through non-woven fiber techniques. Crochet, half-stitch knotting, and/or coiling.


2405 Sculpture: Clay and Plaster (3) Problems in clay modeling and construction, and basic plaster casting techniques.

2406 Special Topics in Sculpture (3) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum 12 credit hours.

2407 Sculpture: Mixed Media (3) The use of two or more materials in the development of sculptural techniques, joined to create dimensional form. Possibilities include carving, modeling, molding, construction and found objects. May be repeated. Maximum 12 credit hours.

2408 Sculpture: Metal Casting (3) Introductory metal casting methods in bronze or aluminum. May include lost wax, styrofoam sand, ceramic shell casting methods. May be repeated. Maximum 6 credit hours.

2409 Sculpture: Welding and Metal Fabrication (3) Introduction to metal fabrication/arc and oxyacetylene welding and other joining techniques in steel sculpture. May be repeated. Maximum 6 credit hours.

2415 Sculpture: Plaster and Clay II (3) Development and extension of skills and techniques begun in 2405. May be repeated. Maximum 6 credit hours.

2450 Introduction to Wood Sculpture (3) Exploration of wood as sculptural medium. Possibilities include use of hand and power tools, carving and constructing. Prereq: 1115-25-35 for art majors, none for non-art majors.

2460 Wood Sculpture II (3) Development and extension of skills and techniques begun in 2450. May be repeated. Maximum 6 credit hours.

2505 Lettering and Typography (4) Use of designer tools and equipment. Forms of letters and type for the designer. Hand lettering, hot and cold type, copy fitting. Prereq: 1115, 1125, 1135 or consent of instructor. May be repeated. Maximum 6 credit hours.


2516 Advertising Design (4) Fundamentals of lettering and layout for newspaper, magazine, television, outdoor advertising. Prereq: consent of department. S/NC only.


2565 Introduction to Printmaking (3) Beginning non-photographic techniques in three of the basic printmaking media: intaglio, lithography, relief and screen printing.

2606 Special Topics in Printmaking (3) May be repeated. Maximum 12 credit hours.

2615 Intaglio II (3) Metal plate intaglio printing in traditional and contemporary techniques of etching, drypoint, mezzotint, aquatint, and photoetching. May be repeated. Maximum 8 credit hours.

2616 Lithography II (3) Exploration of stone and aluminum plate lithography applying traditional and contemporary printing techniques. May be repeated. Maximum 6 credit hours.

2617 Screen Printing II (3) Creative explorations of a variety of screen printing techniques. May be repeated. Maximum 6 credit hours.

2655 Introduction to Metal Design (3) Basic techniques of jewelry and metalworking. Prereq: 1115, 1125, 1135 for art majors, none for non-art majors. May be repeated. Maximum 6 credit hours.

2665 Metal Design II: Jewelry (3) Additional jewelry and metalworking techniques including casting, ston- setting, and forming. Prereq: 2655. May be repeated. Maximum 6 credit hours.

2675 Metal Design II: Enameling (3) Exploration of vitreous enamel as individual art form and in combination with other materials. Prereq: 2655. May be repeated. Maximum 6 credit hours.

2706 Special Topics in Art History (4) Student or instructor initiated course offered at convenience of department. Prereq: determined by department. May be repeated. Maximum 16 credit hours.

2725 Black Art (4) Black art history in America. 19th century to contemporary trends. (Same as Afro-American Studies 2725.)

2705 Introduction to Photography (3) Introduction to the art of black and white photography. Field and studio shooting, history of photography, basic developing and enlarging techniques.

2706 Special Topics in Photography (3) Student or instructor initiated course offered at convenience of department. Prereq: determined by department. May be repeated. Maximum 12 credit hours.

2735 Film Design (3) Introductory theory and practice of filmmaking and graphic elements through use of motion picture camera.

2510 Introduction to Ceramics (3) Exploration of ceramic designs and construction, pottery forms using pinch, coil, slab, and wheel techniques. Prereq: 1115-25-35 for art majors, none for non-art majors.

2556 Special Topics in Ceramics (3) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum 12 credit hours.

2660 Ceramics II: Handbuilding Techniques (3) Prereq: 2550.

2770 Ceramics II: Wheel Techniques (3) Prereq: 2660.

2500 Inter-Area Portfolio Review (5) A review of prior studio work. Successful completion required prior to registration for junior and senior courses. Prereq: consent of department. S/NC only.

2008 Honors: Intermediate Art (4) Intensified study for the exceptional student. May be repeated for a maximum of 24 credit hours.

3100 Drawing Portfolio Review (1) A review of prior work in drawing. Successful completion required prior to registration for junior and senior courses. Prereq: consent of department. S/NC only.

3115 Drawing III (4) Development of personal drawing techniques and concepts through class projects. May be repeated. Maximum credit 12 hours. Prereq: 2115.

3200 Painting Portfolio Review (1) A review of prior work in painting. Successful completion required prior to registration for junior and senior courses. Prereq: consent of department. S/NC only.

3125 Painting IV (4) Individual expression with varied materials on canvas. Prereq: Maximum credit 12 hours. Prereq: 8 hours of credit in 2215 for art majors; consent of instructor for non-art majors.

3270 Fabric: Individual Class Projects (4) Prereq: 8 hours from 2265, 2275, 2285 or consent of instructor. May be repeated. Maximum 12 hrs.

3275 Fiber: Individual Class Projects (4) Prereq: 8 hours from 2265, 2275, 2285 or consent of instructor. May be repeated. Maximum 12 hrs.

3300 Watercolor Portfolio Review (1) A review of prior work in watercolor. Successful completion required prior to registration for junior and senior courses. Prereq: consent of department. S/NC only.

3315 Watercolor III (4) Individual expression with varied materials on canvas. Prereq: Maximum credit 12 hours. Prereq: 8 hours of credit in 2265 for art majors; consent of instructor for non-art majors.
3616 Lithography III (4) Color lithography from stone or plate extra techniques—stone engraving, ac- 
tinting, reversing. May be repeated. Maximum credit 12 hours.

3617 Screen Printing II (4) Stencils; making of hand- 
made negatives and print from film. May be repeated. Maximum credit 12 hours.

3665 Metal Design III: Individual Class Projects (4) 
Prereq: 2665 or 2675 or consent of instructor. May be repeated. Maximum credit 12 hours.

3704 Medieval Art I (Byzantine and western art of 
Middle Ages: manuscript illumination, mosaic, Roman-
esque painting, and French cathedral. Jan van Eyck, 
Roger van der Weyden, Bosch, and Durer; early printmakers.

3715 Early Italian Renaissance Art: 1300-1450 (4) 
Prereq: Determined by department. May be repeated. Maximum 12 credit hours.

3725 Art of Southern Europe and New World, 1550- 
1830 (4) Tintoretto, El Greco, Caravaggio, Zurburan, Velazquez, Rubens, Goya. Artistic relationships between 
Iberia and Latin America.

3726 The Art of Northern Europe, 1550-1765 (4) 
Concentrated study of Bruegel, Rubens, Rembrandt, 
Georges de La Tour, Vermeer, Poussin, and Hals.

3735 History of Nineteenth-Century Painting in 
Europe and America (4) Emphasis on France: Neoclas-
sicism, Romanticism, Friedrich, Constable, Turner, 
Corot and Barbizon landscapes, Hudson River Group, 
Pre-Raphaelite Brotherhood, Manet, Courbet, Impres-
sionism, Eakins, Homer, Seurat through Cezanne.

3745 History of Modern Architecture in Europe and 
America (4) Faulkner, Die Brucke, Cubism, Der 
Blase Reiter, Futurism, Dada and Surrealism, geo-
metric abstraction, social commentary painting, Abstract 
Expressionism in the U.S.A. and parallels in Europe; 
Pop, Op, Minimal, and Concept art.

3750 Lithography III (4) Color lithography from stone or plate extra techniques—stone engraving, ac-
tinting, reversing. May be repeated. Maximum credit 12 hours.

3821 Museology II (4) Museum legal procedures, grant 
writing. Exhibition concepts and development. Prereq: 3811 or consent of instructor.

3831 Exhibition Design and Gallery Techniques (4) 
Practical exhibition preparation and installation, pub-
licity, production, shipping and storage procedures. 
Prereq: 3821 or consent of instructor.

3905 Intermediate Photography (4) Individual expres-
sion in the photographic medium. May be repeated. 
Maximum 12 hours. Prereq: 2905 or consent of instruc-
tor.

3915 History of Photography I (4) Study of photography 
as a fine art. Emphasis on the work of Daglie, O'Sullivan, Evans and Frank. Prereq: 2905, 3915.

3933 Photographic Portrait (4) Problems and possi-
bilities of portraits with a camera. Assigned photographic 
projects and study of the works of August Sander, 
Diane Arbus and others. Prereq: 2905.

3935 Film Design (4) Theory and practice of film 
making. Prereq: 3925.

3941 Photographic Technical Workshop I (4) 
Investigation of the theories and practices of film exposure 
and development. Introduction to the zone system. 
Prereq: 2905.

3942 Photographic Technical Workshop II (4) 
Investigation of the theories and practices of film exposure 
and development. Introduction to the zone system. 
Prereq: 2905.

3968 Honors Ceramics III: Individual Class Projects 
(4) Prereq: 3950, 3959 and consent of instructor. 
May be repeated. Maximum 8 credit hours.

4004 Special Topics I-4 (4) Student or instructor initi-
cated course offered at convenience of Department. 
May be repeated.

4006 Special Topics I-4 (4) Student or instructor initi-
cated course offered at convenience of Department. 
Prereq: Determined by department. May be repeat-
ed. Maximum credit 16 hours.

4008 Honors: Advanced Art I-4 (6) Intensive study 
for the exceptional student. May be repeated for a 
maximum of 24 credit hours.

4015 Individual Problems I-4 (4) May be repeated for a 
maximum credit of 12 hours. Prereq: Consent of Instruc-
tor.

4101 Foreign Study I (1) See page 160.

4102 Off-Campus Study I (1) See page 160.

4103 Independent Study I (1) See page 160.

4106 Special Topics in Drawing I (4) Student or instructor- 
initiated course offered at convenience of depart-
ment. Prereq: Determined by department. May be repeat-
ed. Maximum credit 16 hours.

4115 Drawing IV (6) Individualized pursuit of person-
al drawing techniques and concepts, supplemented 
by individual and group critiques as well as weekly 
life drawing sessions. May be repeated. Maximum 18 credit hours. Prereq: 12 hours of 3115.

4206 Special Topics in Painting I (3) Student or instruc-
tor-initiated course offered at convenience of depart-
ment to enhance and expand the painting curriculum. 
Does not substitute for basic program. Prereq: To be deter-
mined by Department. May be repeated. Maximum 12 credit hours.
4215 Painting IV (6) Advanced painting stressing individual concepts and personal expression with varied medias. Prereq: 12 hours in 3215. May be repeated. Maximum 18 credit hours.

4256 Special Topics in Fiber and Fabrics (3) Student or instructor initiated course to be offered at convenience of department. Prereq: determined by department. May be repeated. Maximum 15 credit hours.

4270 Fabric: Advanced Projects (4-6) Prereq: 8 hours of 3279 or consent of instructor. May be repeated. Maximum 12 hours.

4275 Fiber: Advanced Projects (4-6) Prereq: 8 hours of 3279 or consent of instructor. May be repeated. Maximum 12 hours.

4315 Watercolor IV (6) Advanced painting with water-based media on paper stressing individual concepts and personal approaches. Prereq: 12 hours in 3315. May be repeated. Maximum 18 credit hours.

4406 Special Topics in Sculpture (3) Student or instructor initiated course offered at convenience of department. Prereq: determined by department. May be repeated. Maximum 12 credit hours.

4415 Advanced Sculpture IV (4-6) Individual development of sculptural problems and techniques. May be repeated. Maximum 18 credit hours. Prereq: Permission of instructor.

4470 Advanced Wood Sculpture (4-6) Application of ligaure, glazing, carving, finishing techniques in design and construction of contemporary forms. Prereq: 2450 or consent of instructor. May be repeated. Maximum 18 credit hours.

4502 Graphic Design/Illustration Practicum (1-16) Practical work experience in the design or illustration field only by prearrangement with the department. Prereq: Senior standing and consent of instructor. May be repeated. Maximum 16 credit hours.

4505 Advanced Graphic Design (4) Advanced projects in conceptual and applied design for printed materials; publications, posters, advertisements. Prereq: 3545.

4506 Special Topics in Graphic Design/Illustration (3) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum 12 credit hours.

4509 Product Illustration (4) Advanced media, techniques, styles and concepts as applied to illustration of products for printed reproduction. Prereq: 3529 or consent of instructor.

4515 Corporate Design (4) Concepts of corporate graphic problems including all areas of graphic design and illustration. Prereq: 3535. May be repeated. Maximum 12 credit hours.

4516 Portfolio and Exhibition Techniques (4) Application of design principles as they relate to promotion, construction, display, and evaluation for two- and three-dimensional artists. Prereq: Senior or graduate standing or consent of instructor.

4519 Editorial Illustration (4) Advanced study of conceptual approaches in Editorial illustration for printed reproduction. Prereq: 4509 or consent of instructor.

4506 Special Topics in Printmaking (3) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum 12 credit hours.

4615 Intaglio IV (4-6) Photographic, collage techniques; combine printing with other print media. May be repeated. Maximum 18 credit hours.

4616 Lithography IV (4-6) Extensive use of aluminum plates, color combine printing, photographic techniques. May be repeated. Maximum 18 credit hours.

4617 Screen Printing IV (4-6) Traditional hard cut and photographic stencil, combine printing on paper and other surfaces. May be repeated. Maximum 18 credit hours.

4605 Metal Design IV: Advanced Projects (4-6) Prereq: 3665. May be repeated. Maximum 18 credit hours.

4706 Special Topics in Art History (4) Student or instructor initiated course offered at convenience of department. Prereq: determined by department. May be repeated. Maximum 16 credit hours.

4811 Museum Internship (1-16) Prereq: 8 hours from 3811-21-31 and consent of instructor. May be repeated. Maximum 16 credit hours.

4855 Studies in Art History (2) Concentration in selected areas. Prereq: 16 hours of art history and consent of instructor. May be repeated. Maximum credit 6 hours.

4905 Advanced Photography (4) Individual development of photographic problems and techniques. Prereq: 3905, 3915, 3925. May be repeated. Maximum 12 credit hours.

4906 Special Topics in Photography (3) Student or instructor initiated course offered at convenience of department. Prereq: determined by department. May be repeated. Maximum 16 credit hours.

4956 Special Topics in Ceramics (3) Student or instructor initiated course offered at convenience of department. Prereq: determined by department. May be repeated. Maximum 12 credit hours.

4960 Ceramics IV: Advanced Projects (4-6) Prereq: 3960. May be repeated. Maximum 18 credit hours.

4968 Honors Ceramics IV: Advanced Projects (4-6) Prereq: 3960 and consent of instructor. May be repeated. Maximum 18 credit hours.

4975 History of Ceramics Seminar (4) A survey of historical and contemporary ceramics, dealing with clay sculpture, architecture, and pottery. Oriental, Ancient Greek, Pre-Columbian, and American ceramics. Will not apply to art history requirements. Prereq: 2950, 2960, and 2970.

PI BETA PHI ARROWMONT SCHOOL OF ARTS AND CRAFTS

Lecturers, spring-summer 1984:

R. Adams; D. Bailey; P. Baldwin; J. Bassler; W. Bates; L. Bjorklund; B. Bobick; K. Borgeson; T. Carson; N. Crow; R. Daehmer; P. Dufour; E. Eagle; H. Easterwood; D. Ellsworth; C. Evans; F. Fenster; W. Fiorini; M. Ford; J. Franco; R. George; M. Goldenstein; L. Goldsmith; P. Grayson; J. Hall; S. Hogbin; W. Hylec; E. Iverson; F. Jacobs; E. Kalke; E. Kochansky; L. Kosciusko; M. Kodani; G. Kroll; J. Kristoferson; C. Kumata; E. Lambert; T. Lang; R. Laskin; R. Nash; B. Lee; M. Lenderman; J. & D. Liles; M. Lloyd; R. Lockhart; S. Lunelden; T. Malone; P. Marion; T. & G. Marsh; R. Mawdaly; T. & C. McCollery; D. Millard; M. Monroe; J. Myers; D. Nelson; D. Nish; W. Nottage; J. Osgood; R. Osolnik; J. Otle; N. Putnam; N. Quagliata, Sr.; R. Rewor; T. Riesing; B. Roberson; H. Sadov; R. Smiler; D. Smith; S. Stephenson; E. Streetman; T. Troy; F. Woolf; K. Woolf; C. Yardborough.

Arrowmont, located 40 miles from the UK campus, is a visual arts complex which functions as a regional and national cultural center. In 1984, Pi Beta Phi Fraternity established an affiliation with The University of Tennessee and with the Department of Art in 1978. The program currently includes spring and summer one and two week media workshops, special weekend conferences, and community classes. Media offerings include: clay, fiber, fabric, metal, wood, stained glass, leather, papermaking, drawing, painting, graphics and photography. Students may receive audit, undergraduate or graduate credit for spring and summer classes through The University of Tennessee, Department of Art. Facilities include well equipped studios, on campus book and supply store, a large auditorium, art library, and resident accommodations. The Arrowmont Gallery presents changing juried, invitational, theme or media oriented exhibitions. The Gallery and Library are open to the public Monday-Saturday, 8:30-4:30 p.m. Arrowmont receives financial support from chapters of the Pi Beta Phi Fraternity, alumnae clubs, and individual members.

The following courses are offered periodically ONLY at the Pi Beta Phi Arrowmont School of Arts and Crafts, Gatlinburg, Tennessee. Content varies with faculty. Students should check specific course content as printed in the Arrowmont timetable published each spring.

2104 Drawing (1-4) Beginning to intermediate. May be repeated.

2204 Painting (1-4) Beginning to intermediate. May be repeated.

2254 Fiber Processes (1-4) Beginning to intermediate. May be repeated.

2264 Fiber Constructions (1-4) Beginning to intermediate. May be repeated.

2274 Fabric Surface Design (1-4) Beginning to intermediate. May be repeated.

2284 Fabric Construction (1-4) Beginning to intermediate. May be repeated.

2304 Watercolor (1-4) Beginning to intermediate. May be repeated.

2404 Sculpture (1-4) Beginning to intermediate. May be repeated.

2504 Graphic Design/Illustration (1-4) Beginning to intermediate. May be repeated.

2604 Printing (1-4) Beginning to intermediate. May be repeated.

2654 Metal Design (1-4) Beginning to intermediate. May be repeated.

2664 Enameling (1-4) Beginning to intermediate. May be repeated.

2904 Photography (1-4) Beginning to intermediate. May be repeated.

2954 Ceramics (1-4) Beginning to intermediate. May be repeated.

4104 Drawing (1-4) Intermediate to advanced. May be repeated.

4204 Painting (1-4) Intermediate to advanced. May be repeated.

4254 Fiber Processes (1-4) Intermediate to advanced. May be repeated.

4264 Fiber Construction (1-4) Intermediate to advanced. May be repeated.

4274 Fabric Surface Design (1-4) Intermediate to advanced. May be repeated.

4284 Fabric Construction (1-4) Intermediate to advanced. May be repeated.

4304 Watercolor (1-4) Intermediate to advanced. May be repeated.

4404 Sculpture (1-4) Intermediate to advanced. May be repeated.

4504 Communication Design (1-4) Intermediate to advanced. May be repeated.

4604 Printing (1-4) Intermediate to advanced. May be repeated.

4654 Metal Design (1-4) Intermediate to advanced. May be repeated.

4664 Enameling (1-4) Intermediate to advanced. May be repeated.

4904 Photography (1-4) Intermediate to advanced. May be repeated.

4954 Ceramics (1-4) Intermediate to advanced. May be repeated.

GRADUATE

The degree of Master of Fine Arts is offered with concentrations in ceramics, drawing, fiber-fabric, painting, printmaking.
sculpture, watercolor and inter-area. In addition to meeting the requirements of the Graduate School, applicants must have an undergraduate major in art or outstanding proficiency. Examples of work will be requested. For additional information regarding these programs, write to the head of the department.

The department reserves the right to acquire student studio work.

Consult the Graduate Catalog for listing of graduate level courses.

Asian Studies
See Cultural Studies.

Astronomy
See Physics and Astronomy.

Audiology and Speech Pathology (160)

Professors:
H. L. Luper (Head), Ph.D. Ohio State; S. Adler, Ph.D. Ohio State; S. A. Loper, Ph.D. Ohio State; P. J. Matuszak, Ph.D. Iowa State; G. H. Loper, Ph.D. Iowa State; K. M. Loper, Ph.D. Iowa State; L. V. N. A. B. Loper, Ph.D. Iowa State.

Associate Professors:

Assistant Professors:
T. R. Singletary, M.S. Colorado State.

Instructors:

UNDERGRADUATE

General Information. The Department of Audiology and Speech Pathology offers course work in the scientific study of human communication sciences and disorders. The two undergraduate majors (audiology and speech pathology) are pre-professional; that is, they are preparatory to graduate work and to professional certification in some aspect of speech, language and hearing disorders. The master's degree is required for most professional certificates and employment positions. Information about the audiology and speech pathy programs may be obtained from the departmental office, 457 So. Stadium Hall, and students are strongly encouraged to consult with the undergraduate advisors in the department as early as possible in their programs. Suggested electives for non-departmental majors include 3010, 3040, 3050, 3060, 3070, 4070, and 4720.

A B.A. major in speech pathology consists of Audiology and Speech Pathology 3010, 3040, 3050, 3060, 3070, 3170, 3410, 4040, 4230, 4330, 4550, 4720 plus not less than 6 nor more than 12 hours from the following: 4340, 4460, 4470, 4610, 4650, 4940. Additional recommended courses for speech pathology majors are: Audiology and Speech Pathology 4250, 4460, 4470; Anthropology 2530 and 3410; Curriculum and Instruction 3010; Educational Psychology 3100; Psychology 2500, 2520, 2530, 3150, 3550, Special Education 3333, 4030, 4341, 4342, 4610 and Child and Family Studies 4810.

A B.A. major in audiology consists of Audiology and Speech Pathology 3010, 3040, 3050, 3085, 3220, 3310, 3710, 4040, 4320, 4330, 4450, 4720, 4930 plus not less than 6 nor more than 12 hours from the following: 4340, 4460, 4470, 4610, 4650, 4940. Additional recommended courses for audiology students: Psychology 2500, 2520, 2540, 3150 and Special Education 3333, 4230, 4231, 4250.

1261 English Pronunciation for Foreign Students (3) (Same as English 1261) E.

3010 Basic Acoustics in Speech and Hearing (3) Fundamental aspects of acoustics in speech and hearing including physics of sound. Prereq: Consent of instructor. W, S.

3040 Introduction to Speech Pathology and Audiology (3) Nature, etiology, and incidence of speech, hearing, and language disorders. F, S.

3050 Speech Science I: Phonetics (3) Basic phonetics including recognition and production of spoken English sounds with analysis of their formation; acoustic characteristics of speech and speech perception. F, W.

3065 Speech Science II (4) Anatomy and physiology of speech production mechanism. Prereq: 3050. W, S.

3200 Speech and Language Development (4) Speech and language development in the normal child including development of distinctive features and implications of this process for diagnosis of speech and language development. Prereq: Psychology 3550 or Educational Psychology 2430 recommended. F, W.

3310 Articulation Disorders (4) Etiology, diagnosis, and treatment of articulatory defects. Prereq: 3040, 3050, or consent of instructor. (Same as Special Education 3310). F, W.

3710 Audiology I (3) Fundamental aspects of auditory anatomy and physiology. Introduction to disorders of hearing and their remediation. (Same as Special Education 3710). F, W.

4040 Appraisal of Speech and Language Disorders (4) Diagnostic procedures for children and adults with speech and language problems including observation and practice with diagnostic tests. Prereq: 3040, 3050, or consent of instructor. (Same as Special Education 4040) F.

4070 Free Association (4) Oral and written free association as process for diagnosing and treating communication disorders. Includes didactic self analysis. W, SU.

4103 Independent Study (1-16) See page 160.

4190 Speech Development of the Hearing Impaired (3) Prereq: 3050. (Same as Special Education 4190.) W.

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

4210 Language Development of the Hearing Impaired I (3) (Same as Special Education 4210.) W.

4220 Language Development of the Hearing Impaired II (3) (Same as Special Education 4220.) W.

4260 Introduction to the Psychology and Education of the Hearing Impaired (3) (Same as Special Education 4260.) W.

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

4320 Introduction to Clinical Practice in Speech Pathology (3) Prereq: 3040, 3050, 3310, 4040, and consent of instructor. S/NIC. (Same as Special Education 4320.) E.

4330 Clinical Practice in Speech Pathology (1-6) Prereq: 4320 and consent of instructor. S/NIC. (Same as Special Education 4330.) E.

4340 Clinical Practice in Speech Pathology (1-6) Prereq: 4330 and consent of instructor. May be repeated for credit. S/NIC. (Same as Special Education 4340.) E.

4400 Voice Disorders (4) Etiology, diagnosis, and treatment of organic and functional voice disorders. Prereq: 3040, 3050, or consent of instructor. (Same as Special Education 4400.) W, S.

4450 Clinical Practice in Audiology (1-6) Prereq: 4730 and 4930. (Same as Special Education 4450.) E.

4460 Clinical Practice in Audiology (1-6) Prereq: 4450, 4720, and 4930. May be repeated. Maximum credit 9 hours. (Same as Special Education 4460.) E.

4470 Clinical Practice in Audiology (1-6) Prereq: 4460, 4720, and 4930. May be repeated. Maximum credit 9 hours. (Same as Special Education 4470.) E.

4520 Speech Pathology (3) Independent study of special problems in speech pathology. Prereq: Consent of instructor. E.

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

4610 Introduction to Language Pathology in Children (4) Nature, etiology, and treatment of language retardation. Observation and clinic experience prior to the initial practicum. Prereq: 3040, 3050, or consent of instructor. F, S.

4620 Birth Defect Syndromes and Language Retardation (3) Examination of research literature relevant to birth defects and language retardation including clinical, educational, and socio-emotional implications of such disorders. Prereq: 4610 or consent of instructor. S.

4630 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. F.

4640 Parent Participation in Language Habilitation Programs (3) 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. S.

4650 Speech and Language of the Culturally Different Child (3) Discussion of speech and language differences of children of various minority groups, of different geographic regions; their causes and their effects upon educational programs. F, W, SU.

4660 Topics in Language Retardation and Its Habilitation (3) Lectures on selected topics by representatives of various fields as special education, early childhood education, educational psychology, genetics, and psychology. Prereq: 4610 or consent of instructor. SU.

4720 Audiology II (4) Basic principles of clinical audiology; pure-tone, masking, and overview of special auditory tests. Prereq: 3710. (Same as Special Education 4720.) F, W, SU.

4760 Introduction to Hearing Conservation (4) Flies
of noise-hazard evaluation, medical monitoring, health education, hearing protective devices, administrative controls, and acoustical engineering controls in hearing conservation. Prereq: 3710; consent 4720. F, SU.

4930 Aural Rehabilitation: Speechreading and Auditory Training (3) Discussion of rehabilitation of acoustically impaired by maximizing use of residual hearing and utilization of speechreading as a receptive communicative process. Prereq: 4720. (Same as Special Education 4990.) F, W, SU.

4940 Introduction to the Verbal-Tonal System (4) Prereq: 3710; 4930 and 3050 recommended. (Same as Special Education 4450.) F, W, SU.

GRADUATE Consult the Graduate Catalog for listing of graduate level courses.

Bacteriology

See Microbiology.

Biochemistry (188)

Professors:
W. D. Wicks, Ph.D. Harvard (Head); J. E. Churchich, Ph.D. Sheffield (England); G. J. Joshi, Ph.D. Poona (India); K. J. Monty, Ph.D. Rochester.

Associate Professors:
L. Huang, Chancellor’s Research Scholar, Ph.D. Michigan State.

Assistant Professors:
R. H. Feinberg, Ph.D. California (Berkeley); E. Fries, Ph.D. Virginia; J. Koontz, Ph.D. Kentucky.

UNDERGRADUATE

A B.S. major in biochemistry consists of Biology 3110-20, Chemistry 3211-21-31, 3219-29-39, Physics 2210-20-30, Biochemistry 4110-20-30, 4119-29, 4210-20-30, and four hours chosen from: Biochemistry 4500, Botany 3210, Microbiology 3519, 3700, 4140, 4270, 4279; Zoology 3050, 3090, 3095, 4210, 4270, 4279. Prerequisites to this major are Biology 1210-20-30, Chemistry 1120-20-30, Math 1800-50-60, and Computer Science 1510.

For the Bachelor of Arts degree with a minor in biochemistry, the following courses are required: Biology 2140-49, 3211-21-31, 3219-29-39, and Biochemistry 4110-20 and 4119. Additional credits from Biochemistry 4210-20-30 and/or 4500 are desirable.

3110 Introduction to Biochemistry (4) Biochemical principles underlying physiological events in animal tissues. Metabolism of carbohydrate, lipid, protein, and nucleic acids. Biochemistry of body fluids. Action of drugs and hormones. Prereq: Chemistry 1120-20-30 or 1510-28-30 and 2 quarters of introductory biological sciences. Not available for credit if credit has been previously received for 4110, 4120 or 4130.

4110-20 Cellular and Comparative Biochemistry (4,4) Electrolyte behavior; chemistry and structure of proteins; enzyme behavior and biological function; catabolism and energy capture; synthetic metabolism; nucleic acid function, protein synthesis, and biochemical genetics; regulation of biological processes. Must be taken in sequence. Prereq: Chemistry 3211-21-31, 3219-29-39, and one course from Biology 1210-20-30 or Botany 1110-20. Three lectures and discussion.

4119 Cellular and Comparative Biochemistry Laboratory (2) Basic analytical and biochemical procedures in cell physiology: preservation, cell and tissue cultures, spectrophotometry, chromatography, electrophoresis, sedimentation and enzyme assays. Prereq or coreq: 4110 or equivalent. F, S.

4129 Cellular and Comparative Biochemistry Lab (2) In-depth study experiments with enzymes, nucleic acids and membranes/organelles. Chromatography, kinetics, hybridization, sequencing, sedimentation, radioscintillation labeling, and immunological analysis. Prereq. or coreq: 4110-20 or 4119. W.

4130 Selected Topics in Biochemistry and Molecular Biology (3) Selected topics of current research interest (e.g., recombinant DNA, monoclonal antibodies, biochemistry, etc.). Emphasis will be on original literature and the experimental basis of current knowledge. Historical background, impact on society, the making of moral and ethical judgments, and future development of the technologies will also be discussed. Written reports required. Prereq: 4110-20. S.

4210-20 Introduction to Physical Biochemistry (3,3) 4210—Introduction to thermodynamics; phase stability and phase change; chemical potential; osmotic pressure; activity and the Debye-Huckel model; electrolyte behavior; structure and transport; absorption and fluorescence, sedimentation and transport; hydrodynamic; electrostatics; mobility, light scattering, and structural x-ray crystallography of proteins and nucleic acids. Prereq: 4220 or Chemistry 3450, or equivalent.

4500 Independent Research in Biochemistry (1-6) Special experiments under direction of a graduate student. Limited to undergraduates and by consent only. May be repeated for credit. Prereq or coreq: 4110-20, 4119.

GRADUATE

Master’s and doctoral degree requirements, as well as course listings, are found in the Graduate Catalog. Master’s degree candidates usually should offer an undergraduate major in biochemistry, biology or chemistry. Doctoral degree candidates must present an undergraduate major in biochemistry, biology or chemistry.

Biology (190)

Chairperson of Biology Consortium Board: W. D. Wicks
Co-chairperson: R. W. Holton
A B.A. major in biology may be obtained by completing one of the three following concentrations:

A. Concentration in Cell Biology. Consists of Biology 3110-20-30, Chemistry 3211-21-31, 3219-29-39, Biochemistry 4110-20-30, and 12 hours of upper-division courses from: Biochemistry 4119, 4500; Botany, any 3000 or 4000-level courses (except 3050, 3070, 3090); Microbiology 3200, 3700, 3519, 4110-19, 4140-49, 4270-79, 4420, 4909; Zoology 3050, 3060, 3080, 3150, 3320, 4010, 4050, 4110-20-30, 4250, 4280, 4369, 4380, 4470, 4500, 4720. Requirement includes upper-division minimum requirement, not less than 8 hours may be credited from any one biological science department, and not more than 4 hours of research courses may be credited. Prerequisites to this concentration are Biology 1210-20-30 or Botany 1110-20 or 1118-28 or Zoology 1118-28 and Chemistry 1110-20-30. Corequisites are a 3-course math package described under Concentration A above, or 1550-60 plus 3000; Physics 1210-20 or 2210-20.

Minor: Consists of Biology 3110-20-30 and 12 hours of upper-division courses chosen from the list below. Biochemistry courses (except 4000-level courses), Microbiology, any 3000- or 4000-level courses; Zoology, any 3000- or 4000-level courses except 3010-20-30. (In meeting the upper-division minimum requirement, not more than four hours of research courses may be credited.) Prerequisites to this minor are the concentration in cell biology described under Concentration A above, or 1550-60, plus 3000; Physics 1210-20 or 2210-20.

A 1210-30 General Biology (4,4) 1210—Biology of cells; chemical basis of life, cell structure and function, energy metabolism, cell division, DNA, RNA, and protein synthesis, monera, prokaryota, and fungi. 1220—Biology of plants and animals; survey of plant kingdom, structure and function of plant tissues, plant growth and reproduction, survey of the animal kingdom, reproduction and development in animals, animal tissue and organ systems. 1230—Genetics, evolution, populations and ecology. Biology 1210-20 or 2210-30 may not also receive credit for Botany 1110-20, 1118-28 or Zoology 1118-28. 1210-F, W, SU; 1220-W, S, SU; 1230-S, SU.

3190 General Genetics (4) Classical and modern principles of heredity. Prereq: 1210-20 or Botany 1110-20 or equivalent of 2 years of high school biology and
satisfactory ACT scores; Chemistry 1110-20-30, 3 hours and 1 additional class meeting. May be taken in any sequence or combination with 3110 and 3130. E.

3120 Cell Biology (4) Organization and function of the cell. Prereq: Same as 3110. 3 hours and 1 additional class meeting. May be taken in any sequence or combination with 3110 and 3130. E.

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

4510 Scientific Illustration (3) Introduction to design and production of graphs, charts, for scientific illustration; planning of poster presentations and displays. No artistic talent assumed. Prereq: Advanced standing in a science curriculum; consent of instructor.

**Botany (198)**

**Professors:**

**Associate Professors:**
- C. C. Amundsen, Ph.D. Colorado; A. S. Heilman, Ph.D. Ohio State; P. L. Walne, Ph.D. Texas; J. F. McCormick (Director of Ecology Program), Ph.D. Emory; F. H. Norris (Emeritus), Ph.D. Ohio State; R. H. Peterson*, Ph.D. Ohio State; J. W. Sharp (Emeritus), Ph.D. Ohio State; P. L. Walne, Ph.D. Texas.

**Assistant Professors:**
- E. E. Schilling, Ph.D. Indiana; D. K. Smith, Ph.D. Tennessee; B. E. Wolford (Curator), Ph.D. Tennessee.

**Instructor:**
- K. D. McFarland, M.S. Ohio University.

*Alumni Distinguished Service Professor *

**UNDERGRADUATE**

The undergraduate program offers a basic liberal arts degree with optional concentrations in cellular and molecular, and organismal botany. The curriculum design emphasizes study in the sciences with primary emphasis in Botany. A minimum of 39 credit hours is required to fulfill the major, 25 credit hours for a minor. The undergraduate degree in Botany is designed to furnish necessary experiences in academic and practical skills to prepare graduates for immediate entry into the job market or for continuing graduate education in pure or applied biological sciences.

A **B.A. major** consists of Biology 3110-20-30; Botany 3101-20-30, 3210, 1 hour from Botany 3710-20-30, 2 hours from Botany 4000 or 4110-20-30, 4 additional hours of upper-division Botany (not more than 3 hours allowed from Botany 3050-70-90) and 4 hours of upper-division courses from related biological sciences (zoology, microbiology, biochemistry, entomology and plant pathology, forestry, ornamental horticulture and landscape design, plant and soil science, or other with approval of undergraduate coordinator and department head).

**Prerequisite:** Prerequisites to this major are Botany 1110-20-30 or 1118-28-38 or Biology 1210-20-30 and Chemistry 1110-20-30.

**Corequisites:** Math 1550-60, 1841-51; Chemistry 3211-21-31, 3219-29-39; and Physics 1210-20 (or 2210-20), or Geology 1410-20. (See Note.)

**Options for Concentrations consists of Organismal or Cellular and Molecular Botany, Concentration requirements will be individualized and must be approved in writing by the undergraduate coordinator. Consult the departmental lists of recommended courses for areas of concentration.

A. **Organismal Botany**—At least 5 hours beyond the major of 3900-level or above from Botany or related Biological Sciences.

B. **Cellular and Molecular Botany**—At least 8 hours beyond the major of 3900-level or above from Botany or related Biological Sciences. (Biochemistry 4110-20 is recommended to complete this requirement.)

A **minor** consists of Biology 3110-20-30, 10 hours of upper-division in Botany (not more than 3 hours from 3050, 3070, 3090) and 4 hours of upper-division courses in related biological sciences (as described under the major). Prerequisites to the minor are Botany 1110-20-30 or 1118-28-38 or Biology 1210-20-30.

**Note:** Students who anticipate continuing beyond the Bachelor's level into graduate studies in Botany or related sciences should consult a Botany advisor for direction and design of coursework.

**1110-20 Fundamentals of Botany (4,4) Nature and development of plants, including processes, structure, life histories, inheritance, ecology, and importance to man. Enrollment in sequence is desirable. Two 1-hour discussions and approximately 3 hours audio-visual laboratory per week. Students may not receive credit for both Botany 1110-20 and Biology 1210-20-30, 1110-F, SU; 1120-W, SU.

**1118-28-38 Honors: Fundamentals of Botany (4,4,4) Honors course designed for superior students in beginning botany. Open to freshmen with a score of 27 or better on the ACT, or 1141 or better on the SAT, and sophomores who have a cumulative GPA of 3.25 (or 3.5 in the sciences) or who are approved through an interview with a member of the department. Students receiving a grade of C or D in 1118 must transfer to 1130. Three 2-hour lecture-lab-discussion period must be taken in sequence. Students may not receive credit for both Botany 1118-28-38 and Biology 1210-20-30, F, W.

**1119-29 Laboratory in Fundamentals of Botany (0,0)

**1130 Selected Topics in General Botany (4) Areas will include plant growth, population genetics, environmental interactions, and impact of human activities on biological resources. Lectures, laboratory, field trips, and individual projects. Two hours lecture-discussion and 4 hours laboratory per week. Occasional field trips. Prereq: Botany 1110-20 or Biology 1210-20-30. S.

**1130 Laboratory In Selected Topics in General Botany (0) Students must also register for 1130.

**3010-20 Plants In Evolution (4,4) Monera to angiospermae; emphasis on evolutionary relationships, morphology, and some functional aspects of plant reproduction. Prereq: 6 hours in biological sciences. F, W.

**3011 Plants and People (3) Botany of domesticated food plants from prehistoric times to the present with consideration of their origin, spread and relationship to development of civilization and to present problems of hunger. Not open to botany majors.

**3030 Field Botany (4) Study of plants in natural environments including plant identification, collection, preservation, and basic ecological concepts. Prereq: 6 hours in biological sciences. Not for botany graduate credit. S, SU.

**3031-32 Field Botany (4,4) Emphasis on fall and winter flora, respectively. Prereq: 3030. Need not be taken in sequence. F, W.

**3050 Socio-Economic Impact of Plants (3) Significance of plants in origin and development of human culture, production of improved cultivated plants, and role of plants in present civilizations. Occasional field trips. Not for botany graduate credit. S, SU.

**3070 Genetics and Society (3) An introduction to genetics, anthropological aspects of genetics, with emphasis on their implications for human society. Not for botany graduate credit. (Same as Anthropology 3070.) W, A.

**3090 Biology and Human Affairs (3) Basic biological principles involved in deterioration and preservation of an environment in which humans and their cultures may survive. Not for botany graduate credit. (Same as Zoology 3090.) F.

**3130 Introductory Plant Pathology (4) (Same as Entomology and Plant Pathology 3130.)

**3210 Introductory Plant Physiology (4) Organismal physiology of plants, general and internal nutrition, morphogenetic elements of metabolic processes, effects of age, light, natural rhythms, temperature, and other environmental factors. Lectures and field trips. Not for botany graduate credit. Prereq: One year general chemistry and one year biological science. F, S.

**3300 Biological Oceanography (3) Distribution of abiotic factors in the sea and their effect on plankton growth, composition of zoo- and phytoplankton and processes affecting each; food webs in the sea; role of hyperproductive regions (e.g. upwellings). Prereq: Chemistry 1110-20-30 and either Biology 1210-20-30 or Botany 1110-20 or Geology 2710. S.

**3710-20 Junior Seminar (1,1,1) At least 1 hr. is required for a Botany major. Prereq: Junior standing. 4000 Tutorial in Botany (1-3) Individual, independent study under guidance of selected staff. By application only. May be repeated with consent of department. Maximum credit 6 hours. E.

**4017 Field Mycology (3) Field experience on identification of higher fungi. Frequent field trips emphasizing field recognition of species and habitats. Laboratory sessions for discussion and practice with techniques and literature for accurate identification. Prereq: 6 hours of botany. Recommended: Botany 3010-20-30. S.

**4021 Field Botany (3) Field experience on identification of mosses and liverworts. Frequent field trips emphasizing field recognition of species and habitats. Laboratory sessions for discussion and practice with techniques and literature for accurate identification. Prereq: 6 hours of botany. Recommended: Botany 3010-20-30. S.

**4022 Field Lichenology (3) Field experience on identification of lichens. Frequent field trips emphasizing field recognition of species and habitats. Laboratory sessions for discussion and practice with techniques and literature for accurate identification. Prereq: 6 hours of botany. Recommended: Botany 3010-20-30. S.

**4023 Field Agrostology (3) Field experience on identification of grasses. Frequent field trips emphasizing field recognition of species and habitats. Laboratory sessions for discussion and practice with techniques and literature for accurate identification. Prereq: 6 hours of botany. Recommended: Botany 3010-20-30. S.

**4030 Mechanisms of Plant Speciation (3) Processes of plant speciation emphasizing population genetics, isolation, drift, variation of HGT, origins of domestication, establishment of population barriers, and other aspects of plant speciation. Prereq: 3010-20 and Biology 3110. W.

**4045 Aquatic Vascular Plants (3) Field experience...
Chemistry (235)

Professors:    G. Mamantov (Head); Ph.D. Louisiana State; J. E. Block; Ph.D. Emory (Atlanta); P. S. Bowman (Emeritus); Ph.D. Princeton; C. A. Buehler (Emeri-
tus); Ph.D. Ohio State; W. E. Bull; Ph.D. Illinois; J. Q. Chambers (Dean Emeritus); Ph.D. Michigan; J. F. Eastham; Ph.D. Colorado
(Boulder); W. H. Fletcher (Emeritus); Ph.D. Minnesota;
G. W. Kabat; Ph.D. Wisconsin; C. Kleinfelder; Ph.D. Princeton; M. H. Listzke, Ph.D. Wisconsin; R. M. Magid, Ph.D. Yale; R. M. Pagni;
Ph.D. Wisconsin; R. Peterson; Ph.D. California
(Berkeley); G. K. Schweitzer1; Ph.D. Illinois; D. A. Shirley (Emeritus); Ph.D. Iowa State; W. T. Smith (Emeritus); Ph.D. Ohio State; W. A. Van Hook;
Ph.D. Johns Hopkins; E. L. Wehry; Ph.D. Purdue;
T. E. Williams2; Ph.D. London (England); J. H. Wood (Emeritus); Ph.D. North Carolina.

Associate Professors:    J. L. Adock, Ph.D. Texas; F. A. Grimm, Ph.D. Cornell;
J. M. Harris, Ph.D. Texas (Austin); J. D. Kovac; Ph.D. Yale; C. A. Lane; Ph.D. California
(Berkeley); L. J. Magid, Ph.D. Tennessee; D. F. Schell; Ph.D. Indiana; C. Woods; III, Ph.D. North Carolina.

Graduate Student Instructors:    S. D. Alexandros; Ph.D. California (Berkeley); C. E. Barnes; Ph.D. California; E. Barthens; Ph.D. Northwestern;
K. D. Cook; Ph.D. Wisconsin; M. J. Sepaniak; Ph.D. Iowa State.

1 Alumni Distinguished Service Professor.

UNDERGRADUATE

For information regarding the Bachelor of Science in Chemistry degree and the coopera-
tive program in chemistry, see page 158.

For students wishing to major in chemistry and desiring a more flexible course of study
than the B.S. in Chemistry, there are two programs: the B.S./Concentration A and the B.S./Concentration B. Because these two
centrations are designed for students with different career goals, the following par-
agraphs should be carefully considered before selecting courses.

A student who decides to major in chem-
istry should ask the Liberal Arts Advising
Center for assignment of a faculty advisor in the Chemistry Department. Further infor-
mation, concerning chemistry degrees, is
available in the Chemistry Department, 575 Buehler Hall.

The B.S./Concentration A is designed to prepare the student for a career as a profes-
sional chemist or for entrance into graduate school in such fields as chemistry, biochem-
istry, geochemistry, etc. This program has
similarities to that leading to the degree of
Bachelor of Science in Chemistry (page 158), but with greater opportunity for selec-
tion of electives outside the department and
outside of science. Unlike the Bachelor of Science in Chemistry, the B.S./
Concentration A degree is not approved by
the Chemistry Department for the Ph.D. in
Sailing of the American Chemical Society.

Prerequisites to the major are Chemistry
1110-20-30 (or preferably) 1310-20-30.
Chemistry 1225-35, and Mathematics 1840-
50-60. Corequisites to the major are Mathemat-
ics 2480-50 and Physics 2510, 2310-20.
The major consists of Chemistry 2140,
2149, 3211-21-31, 3219-29-39, 3410-20-30,
4329, either 4240 or 4220, 4229, 4811-21-
31, and 6 hours of additional upper-division
work in chemistry (no more than 4 hours of
Chemistry 4710 may be applied to this require-
ment). Up to 4 hours of the following
courses may be applied to the 6-hour require-
ment: Biochemistry 4110, 4120-20-30, Geology 4610, Chemical Engineering 3610-20, Metallurgical Engineering 4510,
Polymer Engineering 4910-20-30-40.) Approp-
riate honors courses may be substituted for
the specified requirements.

Although not required, certain courses are
highly recommended for students planning careers as chemists: Mathematics 2860,
Computer Science 3150, Chemistry 4310
and 4420. Associate degrees in chemistry are granted by the Department of Chemical, Metallurgical, and Polymer Engineering. Because professional chemists need a reading knowledge of
foreign languages, intermediate level
competence should be acquired in German,
French, or Russian.

The B.S./Concentration B is intended for students who have career objectives in
fields other than chemistry, but in fields
where chemistry knowledge is applied such as medicine, dentistry, pharmacy, business,
and ecology. This program, supplemented
by appropriate courses from other areas, is
suitable for students planning careers in these fields. The B.S./Concentration B degree is specifically designed to provide
more elective hours for preparing for one of
the above-mentioned careers; this course of
study is not appropriate for students intend-
ing to become professional chemists.

Because of the more flexible requirements in
the B.S./Concentration B degree, a student in one of the pre-health programs will com-
mence it as a second major in one of the
biological sciences.

Prerequisites to the major are Chemistry
1110-20-30 or (preferably) 1310-20-30,
Chemistry 1325-35 Mathematics 1840-50 or
1841-51, Mathematics 1860 or 3861 or
Computer Science 1510 or 1610. Corequi-
site to the major are Physics 2210-20-30.
The major consists of Chemistry 2140,
2149, 3211-21-31, 3219-29-39, 4910-20-30,
4920 and 10 hours of additional upper-
division work in chemistry including at least
one of the following courses: Chemistry
4210, 4220, 4310, 4510, 4550, 4560 (Up to 6
hours of Biochemistry 4110-20 or Geology
4610 may be applied to the 10-hour require-
ment.)

A minor in chemistry shall consist of the
successful completion of 24 hours of chem-
istry 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 3410-20-30 (9 hours) or
Chemistry 4910-20-30 (9 hours).

Placement in Freshman Sequences: The
sequences which meet all requirements of
a year of general chemistry and which serve
as prerequisite for upper-division courses
are 1110-20-30 and 1310-20-30; chemistry
majors are strongly encouraged to take the
latter sequence and are required to elect
1325-35. The 1510-20-30 sequence has
more limited applications; it emphasizes
organic and biochemistry and may be used
as prerequisite only for 2230 and 3810. It
is possible to move from one sequence to
another if permission for substitution is
obtained in advance. For example, a student
who finds a need to complete the 1110
sequence may use it in place of 1310.
series after having completed 1510 may substitute 1510 for 1110 with approval of the chemistry department and may then take 1120 followed by 1130. However, no single quarter of the four may be substituted for 1120 or 1130. Credit may be received for only one of the courses 1110, 1310, or 1510.

In any chemistry course above the freshman level which has Chemistry 1120-20-30 as a prerequisite, 1510-20-30 may be used as a prerequisite with approval of the chemistry department.

Chemistry 1118-28-38 is an honors course designed for the student who has already made considerable progress in science. Class size may be limited to promote faculty-student interaction. Selection is based on ACT scores, high school chemistry grade, and if necessary, performance on a placement examination to be given during the first class meeting. A student receiving a passing grade below B in 1118 will complete the year's work by taking 1120-30 or 1310-20. A student receiving a grade of C or D in 1118-F; 1128-S. 

Beginning students who have had high school chemistry and who have had additional experience (e.g. summer institute study, special research projects, home laboratory) are invited to apply during the summer to the head of the department for permission to take a proficiency examination in one or more quarters of freshman chemistry. If a satisfactory grade is made on the examination, credit will be allowed for the quarter (or course) for which the exam was taken.

1110-20-30 General Chemistry (4) (4,4,4) General courses of theoretical and descriptive chemistry. 1110—Modern atomic theory, chemical bonding, stoichiometry, and quantitative treatment of gas laws. 1120—Quantitative aspects of solution chemistry, kinetics, chemical equilibria, and thermodynamics. 1130—Descriptive chemistry of non-metallic and metallic elements, electrochemistry, and introduction to organic and biochemistry. Must be taken in sequence. 3 hours and 1 lab. E.

1118-28-38 Honors: General Chemistry (4,4,4) See explanation above. 3 hours and 1 lab. 1118-F; 1128-W; 1138-S.

1310-30-30 General Chemistry (4,4,4) A general chemistry course for chemistry majors. Subject matter similar to Chemistry 1110-20-30. Must be taken in sequence. 3 hours and 1 lab.

1320-35 Chemical Programming (1,1) A course in which the computer is utilized in solving problems encountered in general chemistry. Required of and corresponding laboratory (3219-29-39) is coreq for students not having credit for the laboratory. 3211-21-F, W, S; 3231-E.

3210-39 Organic Chemistry Laboratory (1,1) Experiments on topics discussed in 3211-31. Corresponding lecture (3211-31-33) is coreq for students not having credit for the lecture. 3219-29-F, W, S; 3231-E. 

3219-29-39 Organic Chemistry Laboratory (1,1,1) Experiments on topics discussed in 3211-21-31. Corresponding lecture (3211-21-33) is coreq for students not having credit for the lecture. 3219-29-F, W, S; 3231-E.

3230-39 Physical Chemistry Laboratory (2,2) Gases, liquids, chemical equilibria, solutions, phase equilibria, reaction kinetics, and electrochemistry. Prereq or coreq: Corresponding courses (3420 and 3430). 1 lab. 3249-W, S; 3439-S.

3511-31 Principles of Organic Chemistry (3,3,3) Structure and reaction of aliphatic and aromatic compounds. Techniques for solving synthetic utility. Use of spectroscopic and physical techniques to elucidate mechanisms of organic reactions. Prereq for entering graduate students who have completed 4610.) F.

4229 Advanced Analytical Chemistry Laboratory (2) Lab. Corresponding lecture (3211-21-31) is coreq for students not having credit for the lecture. 3429-W, S; 3539-S.

4311 Physical Chemistry Laboratory (2,2) Lab. Analytical methods of analyses (including potentiometry, colorimetry, polarography, and voltammetry; magnetic, resonance, infrared, and mass spectrometry; x-ray absorption and fluorescence techniques. Prereq: 3410-49; 3430 or 4520 recommended. S.

4329 Advanced Analytical Chemistry Laboratory (2) Experiments on topics discussed in 4219. Coreq: 4220. W.


4560 Chemical Instrumentation (4) Principles of chemical instrumentation; practice in the design and construction of chemical instruments. 2 hours and 2 labs. Prereq: 3231-39 or 3231-35. 4610 Research in Chemistry (2) Open to senior majors with consent of department head. Written report must be submitted to research director at termination of project. May be repeated. Maximum credit 6 hours. C.

4811-21-31 Senior Seminar (1,1,1) Discussion by faculty and students of current research and topics from the recent literature which illustrate the role of chemists and the impact of chemistry in confronting present-day societal concerns (e.g., environment, energy, medicine and health, warfare, etc.) Oral and written reports required. All chemistry majors are encouraged to attend. Prereq: Senior standing in chemistry.

4910 Physical Chemistry (3) Theoretical aspects of chemical kinetics. Quantum mechanics of atomic and molecular systems; wave-particle duality, quantum states, and quantum states. Statistical thermodynamics. Prereq: 3450. F. W.

4911 Physical Chemistry Laboratory (2) Solutions, phase equilibria, reaction kinetics and spectroscopy. Coreq: 4110. F. W.

4160-70 Intermediate Physical Chemistry (3,3) (Designed for entering graduate students who have had one year of physical chemistry.) 4160—The chemical laws of thermodynamics, phase equilibria and solutions, and chemical equilibria. 4170—Gases and kinetic theory, chemical kinetics, molecular spectroscopy, and introduction to chemical statistics. 4160-F; 4170-W.

4210 Advanced Analytical Chemistry (3) Chemical separations including chromatography, ion exchange, and solvent extraction; spectroscopic techniques. Prereq: 3410-49. W.

4219 Advanced Analytical Chemistry Laboratory (2) Experiments on topics discussed in 4219. Coreq: 4220. W.

4220 Advanced Analytical Chemistry (3) Electrometrical methods of analysis (including potentiometry, colorimetry, polarography, and voltammetry; magnetic, resonance, infrared, and mass spectrometry; x-ray absorption and fluorescence techniques. Prereq: 3410-49; 3430 or 4520 recommended. S.

4229 Advanced Analytical Chemistry Laboratory (2) Experiments on topics discussed in 4220. Coreq: 4220. W.

4310 Introductory Polymer Chemistry (3) Fundamental principles, stressing the role of chemistry in the interdisciplinary field of polymer science; relation of molecular structure to properties; influence of polymer structure on the mechanical properties of plastics. Prereq: 3211; Prereq or Coreq: 4920 or 3430. S.

4420 Physical Inorganic Chemistry (3) Theoretical concepts leading to an understanding of inorganic chemistry; quantum theory of the atom, principles of molecular structure, and elementary nuclear chemistry. Prereq: 3410-20-30. W.

4430 Intermediate Inorganic Chemistry (3) Application of theoretical concepts to inorganic elements, their chemical states, and their reactions. Prereq: 4420. S.

4510 Organic Qualitative Analysis (3) Identification of compounds and mixtures using advanced instrumental techniques as well as classical chemical approaches. Prereq: 2140-49. 3 labs. Not open to students who have completed 4610.) F.


4610 Advanced Chemical Experimentation (2) Laboratory course in application of modern experimental techniques to solution of chemical problems. Synthesis and characterization of organic and inorganic compounds with emphasis on independent study using advanced techniques. Prereq: 3211-39 or 3231-35; 3430-39, 4420. Students who receive credit for 4610 may not also receive credit for 4510. W.

4640 Chemical Instrumentation (4) Principles of chemical instrumentation; practice in the design and construction of chemical instruments. 2 hours and 2 labs. Prereq: 4100-49. W.

4710 Research in Chemistry (2) Open to senior majors with consent of department head. Written report must be submitted to research director at termination of project. May be repeated. Maximum credit 6 hours. C.

4811-21-31 Senior Seminar (1,1,1) Discussion by faculty and students of current research and topics from the recent literature which illustrate the role of chemists and the impact of chemistry in confronting present-day societal concerns (e.g., environment, energy, medicine and health, warfare, etc.) Oral and written reports required. All chemistry majors are encouraged to attend. Prereq: Senior standing in chemistry.
4910-20-30 Biophysical Chemistry (3,3,3) Physical-chemical principles with applications to biological systems. Must be taken in sequence. Not open to students having 3410-20-30, 4610—Gas laws; first, second, and third laws of thermodynamics; equilibria, 4920—Solution chemistry; electrochemistry; kinetics. Nuclear chemistry. 4930—Elementary quantum chemistry; optical and magnetic spectroscopy; light scattering; properties of molecules. Prereq: 3231-39, Math 1550-60 or equivalent. 4910-F; 4920-W; 4930-S.

4929 Biophysical Chemistry Laboratory (2) Experiments in the physical chemistry of biologically important systems. Coreq: 4920. Not open to students in 3410-20-30-29-39. S.

GRADUATE

Students majoring in chemistry for the M.S. or Ph.D. degree are required to present as 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, as well as course listings, 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.

Chinese

See Cultural Studies (Asian Studies).

Classics (257)

Professors:
H. C. Rylleidge (Head), Ph.D. Ohio State.

Associate Professors:
G. C. Gesell, Ph.D. North Carolina (Chapel Hill); J. E. Shelton, Ph.D. Vanderbilt.

Assistant Professors:
C. P. Craig, Ph.D. North Carolina (Chapel Hill); S. D. Martin, Ph.D. Michigan; D. W. Tandy, Ph.D. Yale.

The Classics major consists of two tracks: Greek and Latin. The Classics major concentrating in Greek may take a minor concentration in Latin. The Classics major concentrating in Latin may take a minor concentration in Greek.

Greek

UNDERGRADUATE

A B.A. major concentration in Greek consists of 39 hours distributed as follows: 30 hours of Greek language courses numbered above 2000, and including 6 hours of Classics 4220 (senior seminar) 9 hours chosen from Classics 2210-20-30, 3310, 3340, 3350, History 3121. The student minoring in Classics is encouraged to take 3 hours of Classics 4220 (senior seminar).

2120-29-30 Beginning Greek (3,3,3) Must be taken in sequence. F, W, S.

2510 Intermediate Greek: Grammar Review and Selected Readings (3) F.

2520 Intermediate Greek: Homer (3) W.

2530 Homer: Iliad (4)

2540 Intermediate Greek: New Testament (3) Prereq: 2610 or consent of instructor. S.

2550 Readings in Hellenistic Greek (4) Reading and discussion in religious and secular literature of Hellenistic Greece. Prereq: Classics 2511. May be repeated. Maximum credit 8 hours. (Same as Religious Studies 2650.) A.

3010 Plato (3) A.

3020 Herodotus (3) A.

3030 Euripides (2) A.

4020 Aeschylus, Sophocles (0A)

4040 Aristophanes (3) A.

4050-60-70 Directed Readings in Greek (3,3,3) F, W, S.

Latin

UNDERGRADUATE

A B. A. major concentration in Latin consists of 39 hours distributed as follows: 30 hours of Latin language courses numbered above 2000, and including 6 hours of Classics 4220 (senior seminar) 9 hours chosen from Classics 2210-20-30, 3310, 3340, 3350, 4101 (maximum of 6 hours with approval of the department), History 3121. The student minoring in Classics is encouraged to take 3 hours of classics 4220 (senior seminar).

Placement Examination: Students who transfer to UTK from other colleges and students who enter with high school units in Latin should register for the courses in which they would normally be placed on the basis of such credits. 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 by the results.

Proficiency Examinations. Students who have acquired a knowledge of Latin through study or tutoring should request a proficiency test. A student who earns a grade of B or better in this examination is eligible for credit toward graduation. A student who omits any course in a sequence may receive credit for it by passing the appropriate proficiency examination.

Certification for Teaching Latin in Tennessee. Consult Certification Clerk, Room 212, Claxton Education Building.

1110-20-30 Beginning Latin (3,3,3) Must be taken in sequence. 1110-F, W; 1120-W, S; 1130-S.

2511 Intermediate Latin: Grammar Review and Prose Readings (3) For students who have had at least two years of high school Latin, or equivalent. F.

2515 Intermediate Latin: Prose Readings (3) Prereq: Classics 2511 or demonstration of proficiency at that level. W.

2521 Intermediate Latin: Vergil's Aeneid (3) Prereq: Three years of high school Latin (without Vergil) or Classics 2515 (or demonstration of proficiency at that level). S.

3140 Cicero (3) Prereq: 3 or 4 years of high school Latin. Coreq: 2521, F.

3150 Plautus and Terence (3) Prereq: 3 or 4 years of high school Latin or 2521, S.

3160 Catullus and Horace (3)

3440 Livy (3) A.

3460 Elegiac Poets (3) A.

4120 Horace, Satires and Epistles (3) A.

4140 Cicero and Techniques of Latin Prose Composition (4) Recommended for Latin majors and minors, especially those intending to teach or pursue graduate work. Works of Cicero studied as models for prose composition. A.

4310 Selected Readings from Latin Literature (3) A.

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

4340 Horace, Odes (3) A.

4350 Tacitus (3) A.

4360 Lucretius (3) A.

4370 Readings in Medieval Latin (3) A.

GRADUATE

Consult the Graduate Catalog for a listing of graduate level courses.

GENERAL COURSES

2210 Early Greek Mythology (3) Comprehensive study of Greek myths with an emphasis on how they reflect the ancient Greek vision of the universe and man's place in it. Origins and development of Greek myths and the concurrent rise of organized religion. The symbolic use in later cultures of Greek mythic figures and events will be a persistent emphasis. In time the course goes from Bronze Age to about 500 B.C.

2220 Greek Mythology in the Classical Period (3) The use of myth in religion, philosophy and art of Greece from about 600 B.C. to the death of Alexander the Great, with emphasis on new myths and new uses for old myths that reflect the proud confidence of the Classical Greeks.

2230 Roman Mythology (3) Myths created by the Romans; the gods of the state and the gods of the home. Contribution of myth and ritual to the Roman concept of man's relationship to divinity. Although the first century B.C. is its temporal focus, the course ranges from the Etruscans to the Oriental relations of the Empire, including early Christianity.

2320 Art and Archaeology of Ancient Greece (3) A survey of the development of Greek art with emphasis on architecture, sculpture, and painting with some attention to the minor arts and relationship of art and archaeology. Illustrated lectures.

2330 Art and Archaeology of Etruria and Rome (3) A survey of Etruscan and Roman art, with some attention to the minor arts and urban planning. Classics 2220 is recommended for background. Illustrated lectures.

2510-20 Greek and Roman Literature in English Translation (4,4) 2510-Greek Literature. A survey of the major literature of ancient Greece from Homer to Menander, with emphasis on the sixth and fifth centuries B.C. 2520-Roman Literature. A survey of major literary works of the Romans from Plautus to Tacitus. How the Romans borrowed from the Greeks and then achieved their own artistic identity by the time of Vergil's Aeneid.
Comparative Literature

See Cultural Studies.

Computer Science (266)

A student must have a Computer Science grade point average (as described above) of 2.50 or better to graduate with a major in Computer Science. If a student’s Computer Science average does not meet the above criteria, the student will not be allowed to graduate with a major in Computer Science.

A student who desires to be readmitted to the major after being withdrawn as described above must attain an average in computer science courses (computed as described above) of at least 2.7.

This policy applies to all computer science courses taken during or after Winter Quarter, 1992. This policy will be enforced by the Department of Computer Science. This policy will not change the present method of recording grades and grade point averages on the student’s permanent academic record maintained in the records office.

Introductory and Service Courses

1410 Introduction to Business Oriented Programming (3) Current and potential uses of computers as tools in the business environment with emphasis on -learning FORTRAN programming. For not Computer Science majors. Students may not receive credit for both 1410 and 1510.

1510 Introduction to Programming—FORTRAN (3) The computer as a tool of varied uses in modern world; emphasis on basic programming in FORTRAN; problem-solving process; organization and characteristics of digital computers. Survey of applications of computers in various disciplines. Students may not receive credit for both 1410 and 1510.


1620 Intermediate Structured Programming (3) Continuation of 1610. Problem solving and algorithm development, including brief introduction to data structures. Emphasis on developing good programming style.

2215 Discrete Structures (3) Introduction to discrete structures useful in computer science. Sets, set logic, Relations, functions, Proof techniques, induction, logic. Graphs, Elementary number theory, and groups. Prereq 1620 and Math 1850. (Same as Math 2215.)

2610 Programming Techniques (3) Problem formulation and solution. External devices and direct access input and output. For students who have programming background in a higher level language.

2710 Machine Organization (3) Elementary computer architecture. Introduction to machine and assembly language programming, representation of data, microprogramming. Prereq: one course in computer programming.

3010 Computers and Society (3) History of computing technology; capabilities of a computer; applications in artificial intelligence, humanities, social sciences, sciences and engineering; computing in foreign countries; computer-assisted instruction; future advances in computing; careers in computing. Prereq: Consent of instructor.

3150 Introduction to Numerical Algorithms and Programming (3) Roots of equations, systems of linear equations, least-squares data fitting, numerical integration, numerical methods for ordinary differential equations. Introduction to programming in FORTRAN. 1410 and 1510 may not receive credit; students with a knowledge of FORTRAN should take 3155. Prereq or coreq: Math 2860. (Same as Math 3155.)
3410 Computer Programming—COBOL (3) Computer programming in business-oriented language COBOL. Prereq: one course in computer programming.

3910 Commercial Computer Concepts and Control (3) Elements, operation and control of computers in a business environment. Topics include input, storage, data manipulation, output, flowcharting, and error control. Prereqs: 3410 and Accounting 3210.

4310 Statistical Data Processing (3) FORTRAN language for organization and analysis of scientific data. Solution of mathematical equations. Elementary statistical analyses such as frequency distributions, percentiles, data reduction correlation and regression, analysis of variance. Not for credit for computer science majors. Prereq: Statistics 2100 or equivalent.

4330 Independent Study in Computer Science (1-3) Special project in an area of student's primary interest. To be directed by computer science faculty, perhaps jointly with student's faculty advisor. Prereq: Consent of instructor. May be repeated. Maximum credit 9 hours.

Intermediate and Advanced Courses

3155 Introduction to Numerical Algorithms (3) Roots of equations, systems of linear equations, least-squares data fitting, numerical integration, numerical methods for ordinary differential equations. 3150 and 3160 may not both be taken for credit; students with no knowledge of FORTRAN should take 3150. Prereq: 1510 or 1510 or consent of instructor. Prereq or coreq: Math 2360. (Same as Math 3155.)

3180 Logic Design of Digital Systems (3) Introduction to Boolean algebra and design of combinational circuits. Presents gate and flipflop characteristics. Design of clocked sequential circuits and other systems containing memory. Introduction to microcomputer architecture and system components to include basic structure and function of arithmetic, storage, input/output, and control systems. Instruction on set capabilities and machine language programming. Prereq: EE 3010 or CS 3150, or CS 2710. 3 hours including laboratory. (EE 3180.)


4210 Introduction to Artificial Intelligence (3) Intelligent problem-solving techniques for a computer. Computer representation of knowledge, problem solving and search, game playing, automated deductive systems, natural language understanding, computer vision and learning. Computer implementation of AI problems. Prereq: 4510. (Same as Electrical Engineering 4510.)

4225 Numerical Solution to Equations and Numerical Approximations (3) (Same as Math 4225.)

4235 Numerical Methods for Ordinary Differential Equations (3) (Same as Math 4235.)

4245 Numerical Linear Algebra (3) (Same as Math 4245.)

4470 Programming Languages (4) Comparison and analysis of programming languages, design, features, and implementation. Processors, operations, security, control, data control, and storage management. Detailed discussion and programming experience in LISP, either SNOBOL, APL, or SIMULA. Prereq: 4510.

4510 Data Structures and Non-numerical Programming (3) Data structures and algorithms for their manipulation. Arrays and orthogonal lists; stacks, queues, rings, doubly-linked lists, trees, dynamic storage allocation; organization of files; programming languages for information structures. Prereq: 1620 and 2610.

4550 Systems Programming (3) Computer organization and programming for a machine language and design of computers, representation of information, microprogramming, software systems, input/output systems, interrupters, macro assemblers. Prereq: 3520 or equivalent.

4570 Introduction to Database Management Systems (3) Hierarchical, network, and relational models. Logical and physical views of data. Data definition and data manipulation languages. Data independence. Implementation and operational considerations such as performance, integrity, security, and reliability. Prereq: 4510 or equivalent.

4590 Advanced Systems Programming (3) Advanced topics in operating systems and computer memory management. File systems, virtual memory systems, and OS utilities. Prereqs: 4510 and 4550.

4610 Operating Systems—Concepts and Facilities (3) Detailed examination of a major operating system. Memory, processor, device, and data management. Introduction to machine-level I/O, loaders and relocation device characteristics, data set organizations, SPOOLing. Prereq: 4550 and 4510. Students may not receive credit for both 4620 and 4610.

4620 Operating Systems—Case Studies (3) Alternatives in operating system design, dynamic relocation, paging, segmentation, time sharing, time slicing, pro- tection, concurrency, real time systems. Examples from operating systems analyzing them as appropriate. Prereq: 4610 or equivalent or consent of instructor. Students may not receive credit for both 4620 and 4610.

4660 Principles of Compiler Design (3) Techniques of compiler design, scanning and parsing of languages described by regular and context-free grammars. Prereq: 4510 and 4710.

4710 Formal Languages and Automata (3) Grammars and languages in the Chomsky hierarchy. Properties of languages and machines. Emphasis on regular and context-free languages. Introduction to computability and enumerability. Prereq: 2215.


4750 Interactive Computer Graphics (3) Point plotting, vector generation, interactive graphical techniques, two- and three-dimensional transformation, perspective depth, hidden line elimination, shading, software and hardware system design. Discussion of use of these techniques in design, problem solving, mapping, architecture, and many other areas. Prereq: Senior standing in computer science, electrical engineering, or geography and a knowledge of computer programming, or consent of instructor. (Same as Elec. Engr. 4750 and Geography 4750.)

4820 Introduction to Pattern Recognition (3) (Same as Elec. Engr. 4820.)

4830 Digital Image Processing (3) (Same as Elec. Engr. 4830.)

4850 Small Computer Systems (3) (Same as Elec. Engr. 4850.)

4910 Analysis and Management of Computer Installations (3) Analysis and design of computer systems; implementation, justification, personnel in systems; perspective on systems. Prereq: 3520 or equivalent.

4980 Special Topics in Computer Science (1-4) Maximum credit 9 hours with consent of department. Prereq: recommendation of Comp. Sci. staff.

GRADUATE

Consult the Graduate Catalog for listing of graduate level courses.

Cultural Studies

Director: Dr. Charles O. Jackson

Basic Faculty:
M. Anderson, Ph.D. Special Programs; Donald M. Fien, Ph.D. Russian; C. Fleming, Ph.D. Special Programs; M. G. J. O. Jackson, Ph.D. History; R. W. Gwynee, Ph.D. Special Programs; M. H. Haneleman, Ph.D. Romance Languages; T. J. Heffernan, Ph.D. English; R. T. Heffernan, Ph.D. Special Programs; J. O. Hodges, Ph.D. Special Programs; W. L. Humphreys, Ph.D. Religious Studies; C. O. Jackson, Ph.D. History; H. Kratz, Ph.D. German; I. Leki, Ph.D. Special Programs; C. J. Maland, Ph.D. English; D. M. Morrow, M.A. Special Programs; M. L. Osborne, Ph.D. Philosophy; M. E. Peak, M.A. Special Programs; H. C. Rutledge, Ph.D. Classics; S. E. Wallace, Ph.D. Sociology.

The ideal curriculum encourages not only proficiency in a given field of knowledge but also the comprehension of similarity and complementarity between areas of intellectual endeavor. One answer to the need for fusion and integration of knowledge is the interdisciplinary program. The college has joined the resources of several departments to offer a cultural studies major with concentrations in Afro-American Studies, American studies, Ancient Mediterranean Civilizations, Asian studies, comparative literature, Latin American studies, linguistics, Medieval studies, Russian and East European studies, and urban studies. Minors are provided in Afro-American Studies, Asian studies, comparative literature, Latin American studies, linguistics, Medieval studies, urban studies, and women's studies.

Afro-American Studies (022)

The Afro-American Studies Program (AAS) offers both a concentration and a minor under the general Cultural Studies Program of which AAS is a part. Courses in the Program are located in several colleges and numerous departments as well as those offered by the AAS Program. The requirements are: Concentration: Afro-American Studies 2010-2020 plus 4310 and 4103 are required courses for B.A. majors. In addition to courses offered by AAS Program, courses from at least two other departments must be included in the 36 hours required for a major. At least 24 of which must represent upper-division hours.

Minor: Afro-American Studies 2010-2020 are required courses, with 16 additional hours at the upper-division level needed to complete the major. At least 24 of which must represent upper-division hours.

The 24 hours must be selected from the AAS Program and at least two other departments.

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

Afro-American Studies (022)

1510-20 Elementary Swahili (4,4) Taped language program. Must be taken in sequence.

2010-20 Introduction to Afro-American Studies (4,4)

2725 Black Art (4) (Same as Art 2725.)

2930 The Biology of Human Races (3) (Same as Anthropology 2930)

3140-50 Directed Readings in Afro-American Studies (1,1,1) Designed for students who are inter-
Anthropology 3530 Peoples and Cultures of Africa (3) (Same as Sociology 3530.)

3530 African Religions (4) (Same as Religious Studies and Anthropology 3490.)

3550 Peoples and Cultures of Africa (3) (Same as Anthropology 3530.)

3550 Religion and Racism in America (4) (Same as Religious Studies 3550.)

3555 Minority Group Politics in the United States (4) (Same as Political Science 3555.)

3560 Afro-American Religion in the United States (4) (Same as Religious Studies 3560.)

3575 Afro-American Anthropology (3) (Same as Anthropology 3575.)

3616-16 Black Africa: The Politics of Change and Stability (4,4) (Same as Political Science 3)

3640 Contemporary Issues in Afro-American Education (4) Issues in Afro-American Education from 1954 to the present. (Same as Educ. C&L 3640.)

3730 The Black Male in America (4) This course will look at the Black male with regards to historical images, myths and stereotypes; and the impact of Black feminism, violence, crime, masculinity, the family, the white male and female, homosexuality, nationalism, and athletics will be discussed.

3760 Studies in Afro-American Art (4) (Same as Art 3760.)

3830 Geography of Africa (4) (Same as Geography 3830.)

3950 African History to 1940 (3) (Same as History 3950.)

3951 African History Since 1940 (3) (Same as History 3951.)

4101 Foreign Study (1-16) See page 160.

4102 Off-Campus Study (1-16) See page 160.

4103 Independent Study (1-18) See page 160.


4220 History and Philosophy of Afro-American Education (4) Examines the attempts by Afro-Americans to secure an education for themselves and their children from the era of slavery to the Supreme Court decision of 1954. Focuses on Black perceptions of the importance of education and the special obstacles confronting blacks who tried to get an education. (Same as Educ. C&L 4220 and History 4220.)

4310 Research in Afro-American Studies (4) Deals with Black experience and research process.

4500 Current Issues and Topics in Afro-American Studies (3-4) Problems, topics, and issues in area of Black Studies. Consent and credit determined by instructor. May be repeated. Maximum credit 12 hours.

4610 African Prehistory (3) (Same as Anthropology 4610.)

4810 Afro-American Families (3) (Same as Child and Family Studies 4810.)

4830 Afro-American Women in American Society (4) Historical and contemporary socio-eco-political factors in American society as they relate to the Black woman. History 1950-60 recommended. Prerequisite: Consent of instructor. (Same as Women’s Studies 4830.)

4880 Afro-American Psychology (3) (Same as Psychology 4880.)

4950 The Afro-American Experience to 1865 (3) (Same as History 4950.)

4960 The Afro-American Experience Since 1865 (3) (Same as History 4951.)

Approved Area Courses

Anthropology 3530 Peoples and Cultures of Africa (3)

Anthropology 3530 Biology of the Races of Man (3)

Art 2725 Black Art (4)

CFS 4310 The Afro-American Family (3)

English 2540 The Literature of Black America (4)

English 4610-20-30 Black Literature (3,3,3)

Geography 3830 Geography of Africa (3)

History 1950-60 Afro-American History: An Introduction (4,4)

History 2950 Introduction to Afro-American History (3)

Music 3350 Introduction to Afro-American Music (4)

Music 4270 Evolution of Jazz (3)

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

Political Science 3555 Minority Group Politics in the U.S. (4)

Psychology 4880 Afro-American Psychology (4)

Religious Studies 3550 Religion and Racism in America (4)

Religious Studies 3560 Afro-American Psychology (4)

Sociology 3330 Race, Class, and Power (4)

Sociology 3340 Sociology of Poverty and Inequality (4)

Sociology 4820 American Minority Ethnic Groups (4)

Recommendations for the concentration and the minor:

(a) Those with a concentration in Afro-American Studies are encouraged to take a second major, with which an individually designed program in Afro-American Studies can be correlated.

(b) Students should seek academic advising from the Chairperson of Afro-American Studies program 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., Afro-American Families 4810 and/or Afro-American Studies 4102.

American Studies (109)

History 2510-20 (or equivalent honors courses) are prerequisite to a concentration in American studies which consists of 36 quarter hours: English 3010-20-30, American Studies 3010 and 4010, and 21 hours of upper-division electives dealing with the American experience. Nine hours of the elective group must be from one of the following disciplines: anthropology, economics, political science, or sociology. A list of acceptable elective courses is published annually by the American Studies Committee.

For further information consult the chairperson of the American Studies Committee, Dr. Charles Jackson.

3010 Introduction to American Culture (3) Explores dynamics and nature of contemporary American culture.

3233-34 Forms of Popular Literature and Culture (3,3) (Same as English 3233-34.)

3445 Film and American Culture (3) Examines American film as both works of art and social documents. By placing a range of films in their historical context and analyzing their implicit or explicit cultural values, students explore the interaction between the medium of film and American culture in the twentieth century. (Same as English 3445.)

4010 Topics in American Culture (3) Content varies. May be repeated once.

Asian Studies (145)

The Asian Studies concentration consists of 40 credit hours from the upper-division courses of Asian Studies and approved departmental offerings. 20 of the hours must be taken from courses listed within one of the four geographical-cultural areas (Islamic World; South Asia; China; Japan), and no more than 12 of those 20 hours can come from one sub-division. Sub-division A includes: Art, Asian Cultures, Literature, Music, Philosophy, and Religious Studies; Sub-division B includes: Anthropology, Economics, Geography, History, Political Science, and Sociology. Two of the Asian Studies culture courses (Asian Studies 3310-20-40) must be taken as part of the concentration. Prerequisite to the concentration is Asian Studies 2510-20. Corequisite to the concentration is competence in a major Asian language of the area of concentration (at the level attained by successful completion of the intermediate level sequence of that language or by demonstration of the equivalent competence.)

For further information consult the chairperson of the Asian Studies Committee, Dr. Yeh-Ping Hao.

2431-32-30 Elementary Modern Standard Arabic I, II, III (4,4,4) Must be taken in sequence. Three class meetings and two laboratory periods.

2510-20 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. 2510—Rise of classical civilizations. 2520—Traditional cultures and their modern developments.

2531-32-33 Elementary Chinese (4,4,4) Taped language program. Must be taken in sequence.

2631-33-33 Elementary Japanese (4,4,4) Must be taken in sequence.

2731-32-33 Elementary Persian (4,4,4) Taped language program. Must be taken in sequence.

2831-32-33 Elementary Modern Hebrew (4,4,4) Taped language program. Must be taken in sequence.

310 Indian Culture (4)

3320 Chinese Culture (4)

3330 Japanese Culture (4)

3340 Islamic Culture (4)

3431-32-33 Intermediate Modern Standard Arabic I, II, III (4,4,4)
5102 Off-Campus Study (1-12) See page 160.
5103 Independent Study (1-12) See page 160.

CHINESE (249)

Asian Studies 2531-32-33 Elementary Chinese I, II, III (4,4,4) Taped language program. Must be taken in sequence.


Asian Studies 4531-32-33 Advanced Chinese I, II, III (4,4,4) Taped language program. Prereq: 2531-32-33 or equivalent or consent of instructor. Must be taken in sequence.

Asian Studies 4531-32-33 Advanced Chinese I, II, III (4,4,4) Taped language program. Prereq: 2531-32-33 or equivalent or consent of instructor. Must be taken in sequence.

HEBREW (458)

Asian Studies 2831-32-33 Elementary Modern Hebrew I, II, III (4,4,4) Taped language program. Must be taken in sequence.

Asian Studies 3831-32-33 Intermediate Modern Hebrew I, II, III, IV (4,4,4,4) Taped language program. Prereq: 2531-32-33 or equivalent or consent of instructor. Must be taken in sequence.

PERSIAN (744)

Asian Studies 2751-32-33 Elementary Persian I, II, III (4,4,4) Taped language program. Must be taken in sequence.

Asian Studies 3531-32-33 Intermediate Persian I, II, III (4,4,4) Taped language program. Prereq: 2531-32-33 or equivalent or consent of instructor. Must be taken in sequence.

Asian Studies 4531-32-33 Advanced Persian I, II, III (4,4,4) Class will include conversation, drill, and composition practice with native speaker. Must be taken in sequence. Prereq: Asian Studies 3531-32-33 or equivalent.

APPROVED AREA COURSES

Art, Asian Cultures, Literature, and Music

Art 3775 Art of Indian Asia (4)
Art 3776 Chinese Art (4)
Art 3777 Japanese Art (4)

Asian Studies 3310 Indian Culture (4)

Asian Studies 3320 Chinese Culture (4)
Asian Studies 3330 Japanese Culture (4)

Asian Studies 3340 Islamic Culture (4)

Asian Studies 3610 The Literature of India in English Translation (4,4)

Asian Studies 3610 The Literature of India in English Translation (4,4)

Asian Studies 3670 Islamic Literature in English Translation (4)

Asian Studies 4010-20-30 Readings in Asian Literature (4,4,4)
Music 4260 Introduction to Ethnomusicology (3)

Approved Area Courses

(a) Economics, Geography, History, and Political Science

(b) Politics

Asian Language and Literature

ARABIC (127)

1431-32 Spoken Arabic I, II (4,4)

2431-32-33 Elementary Modern Standard Arabic (4,4,4)

3431-32-33 Intermediate Modern Standard Arabic (4,4,4)

3810 Islamic Literature in English Translation (4)

4101 Foreign Study (1-15) See page 160.

5101 Foreign Study (1-12) See page 160.

5103 Independent Study (1-12) See page 160.

Approved Area Courses

Art 3935 Film Design (4)
Broadcasting 3670 TV Film News (3)
Broadcasting 4030-40 Television Production (3,3)

Economics 4232 The Political Economy of Asian Development (3)

Geography 3870 Geography of Asia (4)

History 3780-90 History of the Middle East (3,3)

History 3790 Contemporary Middle East (4)

History 3800 North Africa since 1830 (3)

History 3810-20-30 History of East Asia (3,3,3)

History 4791 Modernization of the Middle East (3)

History 4792 Historical Writers in Islamic History (3)

History 4811-21 History of Japan (4,4)

History 4870 Cultural History of China (3)

History 4880 History of Modern China (3)

History 4890 History of Contemporary China (3)

Political Science 3621 Contemporary China and Japan (4,4)

Political Science 3795 Contemporary Middle East (4)

(c) Anthropology, Philosophy, Religious Studies, and Sociology

Philosophy 3650 Philosophy and Religion in India (4)

Philosophy 3660 Buddhist Philosophy and Religion (4)

Philosophy 3671 Religion and Philosophy in China (4)

Religious Studies 3650 Philosophy and Religion in India (4)

Religious Studies 3660 Buddhist Philosophy and Religion (4)

Religious Studies 3671 Religion and Philosophy in China (4)

Religious Studies 3672 Religion and Society in Japan (4)

Religious Studies 3680 Islam (4)

Religious Studies 3760 Eastern Religions and Western Thought (3)

Religious Studies 3770 Zen Buddhism (3)

Religious Studies 4670 Topics in Eastern Religions (4)

Religious Studies 4960 Tradition, Change and Modernity in Asia (4)

Sociology 3672 Religion and Society in Japan (4)

Cinema Studies

Minor: Consists of English 2690 and Art 2935 plus sixteen additional hours of approved area courses. It is strongly recommended that English 2690 and Art 2935 be taken before selection of electives provided for in the minor.

For further information consult the chairman of the Cinema Studies Committee, Dr. Charles Maland, English Department. Other related courses in such departments as history, philosophy and sociology may be approved through consultation with Dr. Maland and petition.

Approved Area Courses

Art 3935 Film Design (4)

Broadcasting 3670 TV Film News (3)

Broadcasting 4030-40 Television Production (3,3)
Comparative Literature (260)

A concentration in comparative literature consists of 39 hours including Comparative Literature 4010, 4012-22-32, 9 hours of literature in a foreign language in courses numbered 3000 and above, and Classics 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, German, 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 literature on the graduate level.

A minor in comparative literature consists of 24 hours including Comparative Literature 4010, two courses from Comparative Literature 4012-22-32, 6 hours of literature in a 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: Classics (4510), English, Germanic and Slavic Languages, Religious Studies, and Romance Languages (certain courses in Philosophy or Speech and Theatre may be substituted with the approval of the chairperson of the Comparative Literature Program). Minors in comparative literature are strongly encouraged to continue their study of a foreign language beyond the minimum requirement.

For further information, consult the chairman of the Comparative Literature Committee, Dr. Harry C. Rutledge.

2010 Introduction to Comparative Literature (4) Basic knowledge, techniques, and sources necessary to compare literatures of various cultures, ages, and nations.

3010 Computer Techniques for Literary Study (3) Introduces students to the growing field of computer research in literary study. Students will learn to write programs in BASIC which have literary research applications. Students will study the specific kinds of literary study for which a computer is a useful tool. Projects include the following: indexing and bibliography, concordances, syntactic analysis, content analysis, authorship attribution, textual editing, and stylistic analyses. No previous computer knowledge or background is assumed or required.

3236-37 Special Themes in Literature (3,3) (Same as English 3236-37)

4910 Methodology of Comparative Literature (3) Research and writing of comparative literary studies. Major project will be preparation of seminar paper in comparative literature. Prereq: 2010 and one course from 4012-22-32 or consent of instructor.

4912-22-32 Special Topics in Comparative Literature (3,3,3) Content varies; may be repeated for credit.

5912 Comparative Theories of Literature (3)

5922 Approaches in Comparative Literature (3)

5932 Studies in Comparative Literature (3)

Approved Area Courses

| Classics | 2210-20-30 Greek and Roman Mythology (3,3) |
| Classics | 4010 Greek Drama in English Translation (3) |
| Classics | 4510 Selected Reading in Latin Literature in Translation (3) |
| English | 3411-12-20-30 Modern Drama (3,3,3,3) |
| English | 3710 Literature of the English Bible (3) |
| English | 3910-20-30-40 Comparative Literature (3,3,3,3) |
| English | 4720 Folktale (3) |
| English | 4730 Popular Ballad (3) |
| English | 4950 Approaches to Literature (3) |
| English | 5860 Introduction to Literary Research (3) |
| German | 3210-20-30 Masterpieces of German Literature in English Translation (3,3,3) |
| German | 4030 German Drama in English Translation (3) |
| German | 4040 The Modern German Novel in English Translation (3) |
| German | 4050 The Faust Legend (3) |
| Russian | 3210-20-30 Survey of Russian Literature in English Translation (3,3,3) |
| Romance Languages | 4010 Masterpieces of French Literature in English Translation (3) |
| Romance Languages | 4020 Masterpieces of French Drama in English Translation (3) |
| Romance Languages | 4030 Masterpieces of Spanish Literature in English Translation (3) |
| Romance Languages | 4040 Masterpieces of Spanish Drama in English Translation (3) |
| Romance Languages | 4050-60-70 Dante and Medieval Culture (3,3,3) |

Ancient Mediterranean Civilizations

The concentration in Ancient Mediterranean Civilizations consists of Classics 3810, Classics 3820, Religious Studies 2611, and 28 additional hours from the following list, distributed in such a way that no more than 20 hours are in any one of the three divisions:

(a) Ancient Near Eastern Cultures: History 3751, 3752; Religious Studies 3110, 3120, 4210.
(b) Greek Culture: Classics 2210, 2220, 3310, 3220, 3340, 3350, 4010, 4220 (where applicable), 4230 (where applicable); History 3780; Philosophy 3111, 4410, 4420; Political Science 3801.
(c) Roman Culture: Classics 2230, 2330, 3340, 4220 (where applicable), 4510; History 3770; Religious Studies 3311-12, 3330, 4310, 4640.

Courses of variable content, topics courses, reading and research, off-campus, or foreign study in the Departments of Art, Classics, History, Philosophy, or Religious Studies can be applied to the three divisions as appropriate.

Students are encouraged to satisfy the Foreign Language requirement with Greek, Latin, or Hebrew.

For further information, consult Dr. H. C. Rutledge (Classics) or Dr. W. L. Humphreys (Religious Studies).

Latin American Studies (600)

Concentration consists of 36 hours including Spanish 3310-20-30 or Portuguese 3510-20, History 3870-80, Political Science 3825-26, and Geography 3800 or 3790 and 9-12 hours of acceptable elective courses in any of the participating departments or in the Latin American studies sequence 2510-20 (4,4) or Independent Research 4010, or Senior Seminar 4970.

Two years of Spanish or Portuguese or a practical working knowledge acquired independently are a prerequisite.

Minor: Consists of 24 quarter hours selected from Geography 3800 or 3790, History 3870-80-90, Political Science 3825-26, Spanish 3310-20-30 or Portuguese 3510-20 and the Latin American studies sequence 2510-20 or Independent Research 4010.

For further information, consult the chairman of the Latin American Studies Committee.

2510-20 Introduction to Latin American Studies (4,4) Introduction to societies of Latin America with special emphasis on dominant culture patterns, social changes, and impact of nationalism, 2510—Pre-Colonial and Colonial Latin America through the independence era; 2520—Latter 19th century and the Modern period.

2510-20-30 Spanish and Spanish American Literature in English Translation (3,4-3,4-3) 2910—Masterpieces of classical Spanish literature: Cervantes, realism and the 20th century novel, religious mystics, Golden Age Theatre, 2920—Masterpieces of 20th century Spanish literature: Almodovar, Lorca, Barja, Ortega, 2930—Contemporary Spanish American fiction: Marquez, Borges, Fuentes, Asturias. No change in credit hours after add deadline. Option of 4 hrs. credit must present an appropriate amount of extra work above that required for 3 hrs. (Same as Romance Languages 2510-20-30)

3310-30-30 Aspects of Spanish American Literature (3,3,3) (Same as Romance Languages 3310-20-30.) Review of the major historic periods of the literature; emphasis upon the genres (poetry, novel, drama) varies. May be taken in place of 3110-20-30 or 3610-20. Prereq: 2130, 2520 or equivalent (Same as Romance Languages 3310-20-30.)

3510-20 Aspects of Portuguese Literature (4,4) Prereq: 2520 or equivalent. Recommended for literature majors. (Same as Romance Languages 3510-20.)

3500 Peoples and Cultures of Mesoamerica (3) Ethnographic survey of aboriginal peoples and post-conquest changes in Indian culture. Emphasis upon analysis of small rural communities using modern village studies as source materials. Recommended prerequisite: 2530. (Same as Anthropology 3500.)

3625-26 Latin American Government and Politics (4,4) (Same as Political Science 3625-26.)

3790 Geography of Middle America (4) Covers Mexico, Central America, and the West Indies. Not open to students who have taken 3740, 3770, or 3780. (Same as Geography 3790.)

3800 Geography of South America (4) Not open to students who have taken 3730, 3750, or 3780. (Same as Geography 3800.)

3870-80 History of Latin America (3,3) 3870—Exploration, conquest, settlement, and colonial life to 1800. 3880—Major countries of South America, 1800—present. (Same as History 3870-80.)

4001 Cultural Plurality in Latin America (3) Introduction to value systems and behavioral patterns based on Spanish—Mediterranean, Luso—Mediterranean, indigenous, and African heritage existing today in Latin America.

4002 Institutional Changes in Latin America (3) Introduction to government, political parties, the role of the military, the Church, educational institutions, democracy and dictatorship, nationalism, and the family.
A 3000-level sequence or its equivalent (including historical, descriptive, and theoretical Indo-European languages offered in a

a. 3140-50-60 (Hebrew) ; other non-Asian Studies 2531-32 (Chinese, 2533 is Arabian) ; other non-Arabic 2431-32 (2433 is recommended); Linguistics 4120-30; (b) 8 hours of the following, selected in consultation with the Linguistics Committee:

Minor

• Minor in linguistics shall consist of 27 credit hours composed of 9 from section (b) of the major, selected in consultation with the Linguistics Committee, and 18 hours as follows: Audiology and Speech Pathology 3650; Linguistics 4120-30; English 3332; French, German, Russian, Spanish 4250-60.

Note: In addition to the above listed courses for the concentration and the minor there are occasional 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. Bethany Dumas, or the program advisor, Dr. Chauncey 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 psycholinguistics, sociolinguistics, speech pathology, and the like. It is designed to prepare a student for graduate work in linguistics or related areas, or to serve as a general survey of language and linguistics. It provides the additional possibility of specializing in the teaching of English as a second language for the student interested in employment at the B.A. level. The requirements of this concentration are:

Corequisites

(a) A 3000-level sequence or its equivalent of a foreign language. (The following languages offer sequences appropriate for this requirement: French, German, Italian, Portuguese, Russian, and Spanish.)

(b) Two quarters of a non-Indian-European language to be selected from the following:

Ancient 2431-32 (2433 is recommended); Asian Studies 2531-32 (Chinese, 2533 is recommended); Asian Studies 2631-32 (Japanese, 2633 is recommended); Religious Studies 3140-50-60 (Hebrew); other non-Indian-European languages offered in a sequence of at least four hour courses and approved by the Linguistics Committee.

Concentration

The concentration shall consist of 38 hours distributed as follows:

(a) 32 hours composed of Audiology and Speech Pathology 3505; English 3330, 3332, 4440; French, German, Russian, or Spanish 4250-60-70; Speech 4811; Linguistics 4120-30;

(b) 6 hours of the following, selected in consultation with the Linguistics Committee:

Anthropology 3240 Audiology and Speech Pathology 3200, 4650, 5651, 5790; Educational Curriculum and Instruction 3582-63; Special Education and Rehabilitation 5220, 5310-20-30; English 3331, 4450, 4455, 4450, 4461, 4471, 4481, 5150, 5170-30; French 4210-20-30, 5110-20-30; German 4310-20; 4810-20-30, 5170-20-30; Linguistics 4000; Philosophy 4830; Psychology 4650, 4660, 5860-70; Spanish 4210-20-30, 5110-20-30.

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

Minor

• A minor in linguistics shall consist of 27 credit hours composed of 9 from section (b) of the major, selected in consultation with the Linguistics Committee, and 18 hours as follows: Audiology and Speech Pathology 3650; Linguistics 4120-30; English 3332; French, German, Russian, Spanish 4250-60.

Note: In addition to the above listed courses for the concentration and the minor there are occasional 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. Bethany Dumas, or the program advisor, Dr. Chauncey Mellor.

2000 Language, Linguistics and Society (3) Introduction to linguistics with focus on language development and use of language by individuals and groups.

2300 Introduction to Study of English Language (4) (Same as English 3330)

2311 Cultural History of the English Language (3) (Same as English 3331)

2333 Modern English Grammar (3) (Same as English 3333)

3420 Linguistic Anthropology (3) (Same as Anthropology 3420)

4000 Topics in Linguistics (3) Content varies. May be repeated. Maximum credit 9 hours.

4120-30 Foundations of Linguistics Science, Development of Methodology, Contemporary Theory (3,3) Intellectual and methodological foundations of linguistics science. Changes in linguistic interest brought about by Saussure’s Course and the growing impact of other disciplines on linguistics science. (Same as English 4120-30)

4250 Introduction to Descriptive Linguistics (3) (Same as French, German, Russian, and Spanish 4250)

4260 Introduction to Historical and Comparative Linguistics (3) (Same as French, German, Russian, and Spanish 4260)

4270 Introduction to Romance Linguistics (3) (Same as French and Spanish 4270)

4271 Introduction to Slavic Linguistics (3) (Same as Russian 4271)

4440 Sociolinguistics (3) (Same as English 4440)

4460 Special Topics in English Linguistics (3) (Same as English 4460)

4461 Quantitative Analysis of Language (3) (Same as English 4461)

4781-82 English as a Second or Foreign Language (3,3) (Same as English 4471-81)

Medieval Studies (674)

A concentration in Medieval Studies focuses upon culture and society from the collapse of the Roman Empire to the 16th century. Such a concentration offers the opportunity to deepen one's self-awareness and broaden one's view of the range of human possibilities by studying a very different and remote culture—its conditions of life, social and political institutions, values and ideals, and modes of perception and expression.

A concentration in Medieval Studies consists of Medieval Studies 2010 and 4010 and 16 additional hours distributed among the categories listed above for the major. Each student's program, major or minor, must be approved in advance by the Medieval Studies Coordinating Committee, chairperson Dr. Thomas J. Heffernan.

Latin is the most appropriate language for students in the Medieval Studies concentration and is essential for those who plan to continue their studies in graduate school. In addition, students going on to graduate school are strongly advised to supplement their Medieval Studies concentration with extensive work in one of the traditional disciplines.

2010 Medieval Civilization (4) Introduction to basic themes in medieval experience, approached from interdisciplinary points of view and including philosophy and religion, art and architecture, language and literature, social and political history.

2601 Literature of the Dark Ages (5th-10th Centuries) (3-4) Critical analysis and interpretation of selected classical works from the medieval period. Focuses on texts representing the major genres of the early Middle Ages (e.g., historical, philosophical, biographical). Readings include St. Gregory's Life of St. Benedict, Augustine's Confessions, The Book of Charlemagne, etc. Students registering for four credit hours will be assigned additional work to satisfy the fourth credit hour.
Category #1 History, Philosophy, Political Science, and Religious Studies.

History 3060 History of Western Religious Thought and Institutions (4)

History 3411 Renaissance (3)

History 3710 History of Germany (3)

History 3780 History of Middle East (3)

History 4011 European History Colloquium (3) (when subject is part of medieval culture and society)

History 4500 History of Medieval England (3)

History 4710-20 Medieval History (3,3)

Philosophy 3121 Medieval Philosophy (4)

Political Science 3802 Studies in Political Thought (4)

Religious Studies 3070 History of Western Religious Thought and Institutions (4)

Religious Studies 3411 Renaissance and Reformation (4)

Religious Studies 4610 Topics in Western Religious Thought and Institutions (4) (when subject is part of medieval culture and society).

Category #2 Language and Literature

Classics 4310 Selected Reading from Latin Literature (3) (readings in Latin)

Classics 4370 Readings in Medieval Latin (3) (Same as Classics 4370).

Comparative Literature 4012-22-32 Special Topics in Comparative Literature (3,3,3) (when subject is part of medieval culture and society.)

Comparative Literature 4050-60-70 Dante and Medieval Culture (3,3,3)

English 3331 Cultural History of the English Language (3) (Same as English 3331.)

English 4410 Introduction to Study of English Language (3) (no language requirement)

English 4420 History of English Language (3) (no prerequisites)

English 4930-40 Chaucer (3,3) 4930—the Canterbury Tales. 4940—Troilus and Criseyde and early poems. (Same as English 4930-40.)

French 3210 French Literature in English Translation (3)

French 4350-60-70 Medieval French Literature (3,3,3) (readings in French)

French 4410 French Civilization (3) (readings in French)

German 3210 German Literature in English Translation (3-4)

German 4310 History of German Language (3) (readings in German)

Italian 4010 Italian Drama in English Translation (3) (or in Italian)

Italian 4050-60-70 Dante and Medieval Culture (3,3,3) (readings in English or Italian)

Italian 4330 History of Italian Language (3) (readings in Italian)

Category #3 The Arts

Architecture 4130 Seminar in Medieval Architecture (4)

Art 3704 History of Medieval Art (4)

Art 3705 Northern European Painting, 1350-1600 (4)

Art 3715 Early Italian Renaissance Art, 1300-1500 (4)

Music 4200 Independent Study in Music History and Literature (1-3) (when subject is part of medieval culture and society)

Music 4280 The Mass to 1600 (3)

Music 4290 Gregorian Chant (3)

Theatre 3252 History of the Theatre (4)

Russian and East European Studies (887)

Prerequisites to the major are the completion of Russian 2110-20-30 and Russian 3710-20. The major consists of 42 hours distributed as follows: Geography 3880; six hours from History 3470-80-90; Philosophy 3550; Political Science 3631 and four additional hours from Political Science 3632, 3736, 4815, and 5370; Russian 3110-20-30; Russian 4010 (Selected Topics in Russian and East European Studies); and any eight additional hours in courses numbered 3000 or above from the list: "Approved Area Courses" which can be obtained from the chairman of the Russian and East European Studies Committee, Dr. Donald Fienel.

4010 Selected Topics in Russian and East European Studies (3) An interdisciplinary seminar on a selected topic using a comparative approach.

Urban Studies (985)

A concentration in urban studies consists of 40 quarter hours, including Urban Studies 2500 and 3000, at least 4 hours of Urban Studies 4000, and 28 hours from the urban studies curriculum provided below. The urban studies minor consists of 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 E. Wallace.

2500 Interdisciplinary Urban Studies (4) Fundamental perspectives of various disciplines toward the city, urbanism as a way of life, and urbanization as an ongoing process. Stresses the multidimensional nature of urban studies.

3000 Selected Topics in Urban Studies (4) May be repeated with consent of the committee. Maximum credit 12 hours.

3750 The Urban Polity (4) (Same as Political Science 3750).

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 an academic year. Minimum of four credits required for a concentration in urban studies. May be repeated. Maximum credit 16 hours.

4100 Survey of Planning (3) (Same as Planning 4100).

4330 Urban Ecology (4) (Same as Sociology 4330).

4440 Urban Anthropology (3) (Same as Anthropology 4440.)

4670 Cities and Urbanization in American History (4) (Same as History 4670).

Urban Studies Curriculum:

For the concentration and minor, courses may be selected to fill the respective requirements from the following:

Anthropology:

3450 Community Studies in Complex Culture (3)

4440 Urban Anthropology (3)

Geography:

3000 Man, Location, and Behavior (4)

3430 Urban Geography (4)

History:

4670 Cities and Urbanization in American History (4)

4740 The City in Europe (3)

Planning:

4100 Survey of Planning (3)

Political Science:

3750 The Urban Polity (4)

3760 Urban Policy Process (4)

Real Estate and Urban Development:

3610 Principles of Real Estate and Urban Development (3)

4120 Urban Growth and Land Use (3)

4150 Problems of Urban Development (3)

Sociology:

3410 Urban Environment (4)

3420 Urban Problems (4)

4330 Urban Ecology (4)

4530 Community Organization (4)

Women's Studies (944)

Minor: Consists of Women's Studies 2010-20 and 16 hours of appropriate courses numbered 3000 or above. Courses approved for the Women's Studies minor are listed below. Students may petition the Women's Studies Committee for approval of courses other than those listed. For further information consult the chairperson of Women's Studies, Dr. Martha Lee Osborne, at the Women's Studies offices, 206 Alumni Hall, 974-2409, or in the Philosophy Department, 807 McClung Tower, 974-7212 or 974-3255.


2015 Images of Women in Literature: Fiction, Poetry, Drama (4) An introduction to the study of women through the roles and stereotypes portrayed in a variety of literary genres (fiction, poetry, and drama), including the works from diverse historical periods and cultures.

2020 Women in Society (4) An examination of the role played by women in various societies during different historical periods, a study of the factors which have limited women's participation in society, and an assessment of social scientists' assumptions about women.

2120 Sex Roles and Marriages (3) (Same as Child and Family Studies 2120.)

3010 Emergence of the Modern American Women
(3) An examination of the role of women in the development of American civilization and values. Major topics include women's legal and political status, the emergence and development of feminism, women and the creative arts, and women's roles in industry and post—industrial American society.

3098 Women in Music (3) (Same as Music 3095.)
3150 Gender in Society (4) (Same as Sociology 3150.)
3240 Women in French Culture (4) (Same as French 3242.)
3310 Women Writers in England and America (3) (Same as English 3310.)
3430 The Concept of Woman (4) (Same as Philosophy 3430.)
3435 Philosophy of Feminism (4) (Same as Philosophy 3435.)
3850 Women in the Greek and Roman World (3) (Same as Classics 3830.)
4000 Topics in Women's Studies (4) Content varies. May be repeated.
4110 Psychology of Sex Role Development (3) (Same as Psychology 4115 and Educational Counseling and Psychology 4110.)
4280 Women in European History (4) (Same as History 4280.)
4290 Women in American History (4) (Same as History 4290.)
4430 Women's Health (3) (Same as Health 4430.)
4560 Rhetoric of the Women's Rights Movement (4) (Same as Speech 4560.)
4830 Afro-American Women in American Society (4) (Same as Afro-American Studies 4830.)
4870 Contemporary Research in the Behavior of Women (4) (Same as Psychology 4870.)

Cultural Studies (270)
1000 Selected Topics (2-4) May be repeated. Maximum credit 8 hours.
4000 Selected Interdisciplinary Cultural Topics (1-12) Acceptable for credit in any cultural studies concentration or minor except Black studies. Registration by consent of director of cultural studies and the respective chairperson. May be repeated for credit up to maximum of 12 hours.
4101 Foreign Study (1-16) Acceptable for credit in any cultural studies concentration or minor except Black studies. Registration by consent of director of cultural studies and the respective chairperson. See pages 160 and 173.
4102 Off-Campus Study (1-16) Acceptable for credit in any cultural studies concentration or minor except Black studies. Registration by consent of director of cultural studies and the respective chairperson. See pages 160 and 173.
4103 Independent Study (1-16) Acceptable for credit in any cultural studies concentration or minor except Black studies. Registration by consent of director of cultural studies and the respective chairperson. See pages 160 and 173.

GRADUATE Consult the Graduate Catalog for listing of graduate level courses.

Ecology (278)
Dewey L. Bunting, Chairman
Basic Faculty:

The graduate program in ecology offers Master of Science and Doctor of Philosophy degrees. This interdepartmental program provides advanced courses in contemporary ecology for students from undergraduate programs in basic and applied biology, agriculture, social sciences, mathematics, and engineering. Research opportunities in both fundamental and applied ecology are intended for graduate students for careers as well as professional positions in industry or government. The Environmental Sciences Division of the Oak Ridge National Laboratory, the Tennessee Valley Authority, and the National Park Service provide advisors and research facilities. The Great Smoky Mountains, Cumberland Plateau, valley and ridge topography, TVA lakes, and wild rivers provide locally a spectrum of natural habitat and, with the biological diversity which is truly unique. In addition, faculty research programs provide opportunities for student research elsewhere on this continent and abroad.

ADMISSION
Requirements for admission to this program are: (1) admission to the Graduate School of the University of Tennessee; (2) at least 12 quarter hours of college chemistry, 9 quarter hours of college mathematics, 4 quarter hours of ecology at the upper-division level, and the Graduate Record Examination.

Application forms for admission should be obtained from the Graduate School. Inquiries concerning the admission and degree requirements should be addressed to the Chairman, Graduate Program in Ecology, University of Tennessee, Knoxville, Tennessee 37916.

GRADUATE Consult the Graduate Catalog for listing of graduate level courses.

Economics (283)
See faculty list, page 82.

GRADUATE
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 page 82 for description of the courses available.

Requirements for a B.A. major in economics consist of: (1) Economics 2510, 2520, or equivalent honors courses; and (2) a minimum of 33 additional hours in upper-division economics courses. Economics 3110 (or 3111 and 3120) and 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 2510, 2520; and (2) 15 additional hours in economics at the upper-division level. Minors are encouraged to include Economics 3110 and 3120.

In order to certify to teach economics in secondary schools is available. Students with such an interest should consult the Certification Clerk, Room 212, Claxton Education Building as early in their program as possible to determine the appropriate requirements.

GRADUATE
See page 81 in the College of Business Administration. The department offers the following degrees: M.A. and Ph.D. Also, the MBA degree with a concentration in economics is offered.

English (339)
Professors:
J. B. Trabren (Head), Ph.D. Princeton; P. G. Adams1 (Emeritus), Ph.D. Texas; J. M. Armistead, Ph.D. Duke; E. W. Bratton (Associate Head), Ph.D. Illinois; J. C. Barron (Emeritus), Ph.D. Yale; R. Y. Drake, Jr., Ph.D. Yale; J. H. Fishker, Ph.D. Pennsylvania; J. A. Hansen (Emeritus), Ph.D. Yale; R. M. Haufler, Ph.D. Duke; L. Sabatier (Emeritus), Ph.D. Yale; B. L. Leggett, Ph.D. Florida; F. D. Miller (Emeritus), Ph.D. Virginia; R. B. Miller, Ph.D. Brown; R. E. Parker (Emeritus), Ph.D. California (Berkeley); A. R. Penner, Ph.D. Colorado; J. E. Reese (Chancellor), Ph.D. Kentucky; N. J. Sanderson, Ph.D. Shakespeare Institute, Stratford-on-Avon; J. L. Schneider1, Ph.D. Northwestern; W. R. Shurr, Ph.D. North Carolina; P. L. Scorer (Emeritus), Ph.D. Cornell; B. T. Stewart (Emeritus), Ph.D. Northwestern; E. W. Stockton (Emeritus), Ph.D. Harvard; R. H. Walker, M.A. Texas; T. V. Wheeler, Ph.D. North Carolina; J. M. White1, M.A. Cambridge; N. Wright (Emerita), Ph.D. Yale.

Associate Professors:
L. S. Burghardt, Ph.D. Chicago; D. A. Carroll, Ph.D. North Carolina; D. R. Cox, Ph.D. Missouri; K. B. Dumas, Ph.D. Arkansas; J. E. Gill, Ph.D. North Carolina; D. F. Goslee, Ph.D. Yale; N. M. Goslee, Ph.D. Yale; T. J. A. Hefner, Ph.D. Cambridge; M. Kallet, Ph.D. Rutgers; F. K. Robinson, Ph.D. Texas.

Assistant Professors:
K. H. Adams, Ph.D. Florida; D. L. Denntson, Ph.D. Brown; P. G. Hammontree, M.A. Tennessee; G. B.
UNDERGRADUATE

General Prerequisites and Corequisites: English 1010 or 1011; 1020; 1031 or 32 or 33 or the equivalents are prerequisites to all sophomore and upper-division courses in English. Two courses in English at the 2000 level are prerequisite to any of the three English concentrations. The equivalent of the second year (2000 level) of a foreign language is a corequisite for any of the three English concentrations.

English for Non-Majors: The department welcomes non-majors both in its sophomore introductions to literature (2510-2560) and also in its 3000-4000 level courses in language, literature, and creative writing. Of particular interest to students in other fields are Special Themes in Literature (3236-37), Forms of Popular Literature and Culture (3233-34), Literature and Other Fields (3230-31), and Technical Writing (4140-50).

For prerequisites and other advice, consult specific course descriptions below and department instructors.

B.A. Majors: A minimum of 36 quarter hours is required in 3000-4000 level courses as indicated for the concentration below.

Concentration in Literature: Thirteen English courses at the 3000-4000 level including:

(1) English 3340;
(2) at least five courses in periods or major figures before 1900, including at least one at the 3000 level;
(3) at least two courses concerned with approaches other than literary history, such as literary forms or modes, theories of criticism, or other unifying approaches of the department;
(4) a total of three courses in writing or the English language may be counted towards the literature concentration but may not be substituted for requirements 1, 2, or 3 above.

Concentration in Creative Writing: Thirteen English courses at the 3000-4000 level including:

(1) a two-course sequence in expository, creative, or technical writing;
(2) four other courses in creative writing at the 3000 or 4000 level;
(3) four courses in literature;
(4) three additional English courses selected in consultation with the advisor.

Concentration in the English Language: Twelve English courses at the 3000-4000 level including:

(1) English 3330, English 3331;
(2) four courses in linguistics and the English language selected from among those offered by the English department and, with English advisor approval, one of the following: Anthropology 3420, Psycholinguistics 4860, or Linguistics 4000;
(3) two additional courses in language literature, writing, and practice of research writing; individual conferences are arranged with the advisor.

(4) four courses in literature.

Individualized Program: The Director of Undergraduate Studies is empowered to approve individualized programs developed by students with the English advisors. These programs need not necessarily fulfill all of 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 based on the MA Reading List. 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 advisors or the Director of Undergraduate Studies.

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

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

Departmental Course Information: In the English Office, 316 McClung Tower, students can obtain a booklet describing current English courses in detail and listing the courses to be offered each quarter throughout the academic year. The booklet is available in advance of University timetables.

1010 English Composition (3) Expository writing recommended for students with ACT English scores at or above cutoff point (currently 13) set by the English Department. Emphasis on invention, organization, style, revision, and effective use of materials in finding and expressing ideas; conferences on individual writing problems. A, B, C, I, NC, W grading.

1011 English Composition (4) Expository writing recommended for students who lack the ACT English scores needed to pass that course. Includes the material of 1010 with two additional class hours of individual and group instruction in grammar, mechanics, sentence patterns, reading comprehension, summary writing, and paragraph development. A, B, C, I, NC, W grading. Students may not receive credit for both 1010 and 1111. F, W, S.

1019 Writing Workshop (1) Self-paced laboratory course only for students remediated to it at the beginning of the quarter by their English Composition teachers. Individual instruction in grammar, mechanics, sentence patterns, and paragraph development. To receive credit, a student must participate at least two hours per week and must also pass the composition class in which he/she is currently enrolled. May be repeated for credit; may not be taken for credit concurrently with 1111. F, W, S. Grading: S/NC, F, W, S.

1020 English Composition (3) Expository writing based on study of great themes in literature; practice in documentation; individual conferences. Prereq: 1010. A student who completes 1010 and 1020 will complete a year's work in English composition with any 3000-level writing course. A, B, C, I, NC, W grading. F, W, S.

1031-32-33 English Composition (3,3,3) A course in writing skills to areas of special interest. Study and practice of research writing; individual conference.

1018-28-38 Honors Composition (3,3,3) Open only to those students selected on the basis of placement scores and high school record. Grading scale and word load the same as 1020. Prereq: Expository writing based on study of non-fiction prose. Introduction to research writing. F, W. Grading: S, NC. F, W.

1212 Written and Oral English for Foreign Students (3) Emphasis on the more advanced structures of English grammar and on paragraph writing. Required during the first quarter of residence of foreign students who on the English Proficiency Examination (1018) demonstrate need for work in English structure, but not at the intermediate level. F for undergraduate foreign students. Students receiving a grade below B in 1018 will complete a year's work in English composition by taking 1020 and one course on the 1030 level; students receiving a grade of B or A also receive credit and a grade of A or B. A, B, C, i, W grading. Students registered for this course are permitted to register for only two other courses.

1261 English Pronunciation for Foreign Students (3) Sounds and intonation patterns of American English and relation of spelling to sound. Designed to improve student's ability to speak and understand English. May be repeated. Maximum credit 6 hours. S/NC. (Same as Audiology and Speech Pathology 1261.)

1431 English Composition for Foreign Students (3) Composition and remediation for students whose native language is not English. Emphasis on paragraph and composition organization with attention to grammar and mechanics. English 1431 is recommended for foreign students who complete 1010 for undergraduate foreign students. Prereq: 1221 or recommendation based on English Proficiency Examination. A, B, C, I, NC, W grading. F, W, S.


2410 Creative Writing: Fiction and Poetry (4) Practice in writing poetry and fiction combined with study of models and techniques.

2510-20 English Masterpieces (4,4) 2510—To the mid-18th century. 2520—Since the mid-18th century. F, W.

2531-32-33 American Masterpieces (4,4,4) Focusing on major authors. 2531 covers the American literature from the beginnings to 1890; 2532 covers the literature from 1890 to the present; 2533 covers literature and American literature exclusively, as a distinct literary movement.

2560-70-80 Literature of the Western World (4,4,4) 2560—Ancient and medieval. 2570—Renaissance and early modern. 2580—Through the 18th century. 2590—20th centuries. 2560-F, W, S; 2570-W, S; 2580-S.
2660 Introduction to Drama (4) Study of selected plays to provide critical techniques necessary for understanding of drama. F, W, S.

2870 Introduction to Poetry (4) Study of selected poems to provide critical techniques necessary for reading of different types of poetry. F, W, S.

2880 Introduction to the Novel (4) Study of selected novels to provide critical tools necessary for judging longer works of fiction. F, W, S.

2890 Introduction to Film Studies (4) Selected world cinema feature films are studied to provide critical techniques necessary for understanding and analysis of narrative cinema. Emphasizes basic elements of film expression and contours of film history. Writing assignments.

3042 Colloquium in Literature (3) Introduction to methods and objectives of literary study; conferences to plan student's program in major.

3045 Introduction to Literary Criticism (3)

3050-51 English Culture (3,3) English literature in the context of parallel developments in art, architecture, music, and social and intellectual history. 3050—Beginnings to 1660. 3051—From 1660 to present.

3070 Modern British Poetry (3) From Housman to Thomas and more recent poets.

3080 Modern American Poetry (3) From Robinson to Stevens and more recent poets.


3135 Tennyson and His Successors (3) Includes such poetry as that by Prefraphasitites, humorists, and Decadents.

3136 Browning, Arnold, and Hopkins (3)

3150 Melville (3)

3160 The Short Story (3) British and Continental European, with emphasis on 20th century.

3170 The American Short Story (3) From 19th century beginnings to present; emphasis on 20th century.

3172 Colonial, Federal and Early National American Literature (3) American literature: beginnings through Irving.

3173 American Romanticism and Transcendentalism (3) Cooper through early Whitman.

3174 American Realism and Naturalism (3) Later Whitman through World War I.

3175 Modern American Literature (3) World War I to the present.

3210-20 English Literature and Culture of the Nineteenth Century (3,3) Survey of literature dealing with leading movements in politics, science, religion, and the arts. 3210—1800 to 1835. 3220—1835 to 1890.

3230 Literature and Other Fields (3) Content varies. Focus on religious, philosophical, psychological, historical, or other pertinent aspects of literature. May be repeated with consent of department. Maximum 6 hours.

3233-34 Forms of Popular Literature and Culture (3,3) Content varies. Detective fiction, science fiction, film, or other topics. May be repeated with consent of department. Maximum credit 6 hours each. (Same as American Studies 3233-34.)

3236-37 Special Themes in Literature (3,3) Content varies. The city, the frontier, the sea, the American woman, or other topics. May be repeated with consent of department. Maximum credit 6 hours each. (Same as Comparative Literature 3236-37.)

3310 Women Writers in England and America (3) Emphasis upon the literary consciousness of women in the 19th and 20th centuries. (Same as Women's Studies 3310.)

3311 Women in American Literature (3) Analysis of women as writers and as subjects in American literature from its beginnings to the present.

3320 Regional Identities in American Literature (3) Literature featuring region as an element of plot, characterization, style, language, or point of view. Supplementary readings in the nature and history of the regions chosen.

3330 Introduction to Study of English Language (4) (Same as Linguistics 3330.)

3331 Cultural History of the English Language (3) Emphasizes influence of social and political forces in development of English pronunciation, vocabulary, syntax and semantic history. (Same as Linguistics 3331.)

3332 Modern English Grammar (3) Traditional, prescriptive approaches to English grammar, followed by intensive study of descriptive approaches of American structuralism and introduction to generative transformational theory. (Same as Linguistics 3332.)

3360 Old and Middle English Literature in Translation (3) Major texts and genres of English literature from beginnings to 1500.

3411-12-20-30 Modern Drama (3,3,3,3) 3144—Continenta! to 1930. 3412—Continental since 1930. 3420—British. 3430—American.

3440 Literature and Film (4) Aesthetic relationships, emphasis upon media comparison.

3445 Film and American Culture (3) Examines American film as both works of art and social documents. By placing a range of films in their historical context and analyzing their implicit or explicit cultural values, students explore the relationship between the medium of film and films and American culture in the twenty century. (Same as American Studies 3445.)

3450 Writing Fiction (3) Introduction to writing novels and short stories.

3470 Writing Poetry (3) Introduction to writing poetry.

3480 Writing Drama (3) Introduction to writing both one-act and full length plays.

3510 Sixteenth-Century Prose and Poetry (3) More and Wyatt to Spenser.

3520 Elizabethan Drama (3) Marlowe, Jonson, and others.

3610 Restoration and Eighteenth-Century Poetry (3) Emphasis upon Dryden and Pope.

3620 Restoration and Eighteenth-Century Drama (3) Dryden through Sheridan.

3630 Restoration and Eighteenth-Century Prose (3) Defoe, Addison, Steele, Swift, and others.

3670 Age of Johnson (3)

3710 Literature of English Bible (3) Types of Old Testament literature, excluding Wisdom literature. (Same as Religious Studies 3710.)

3711 Literature of the English Bible (3) Old Testament Wisdom Literature and types of New Testament literature. (Same as Religious Studies 3711.)

3721 Introduction to Folklore (3) Essential terms and concepts in modern folkloric-folk-life studies. Emphasis on North American materials: folklore, folktale, folksong, myth, legend, proverbs, riddles, superstitions, dance, games, and architecture.

3840 Advanced Writing (3) Strategies of writing on personal and academic subjects. Discussion of student and professional writing. Conferences on individual student's specific problems. Open to sophomores with instructor's consent. F, W, S.

3850 Persuasive Writing (3) Exploration of persuasive techniques through essays written by students and professional. Examination of strategic rhetorical stances and effective logical and emotional appeals. Conferences on individual students' goals and problems. Open to sophomores with consent of instructor.

3860 Special Topics in Writing (3) Original writing
4250 Advanced Fiction-Writing (3) Further development of skills acquired in basic writing fiction course. Prereq: 3450 and consent of instructor.

4254 Writing the Detective and Mystery Story (3) Further development of skills acquired in basic poetry writing course. Prereq: English 3470 or consent of instructor.


4400 Sociolinguistics (3) The study of language in relation to society. Empirical and theoretical study. Emphasis both on individuals and on large-scale social units such as tribes, nations, and social classes. Prereq: 3330 or Linguistics 2000 or consent of instructor. (Same as Linguistics 4440.)

4450 Dialectology (3) Theories and methodologies of dialect research, fieldwork, and analysis. Prereq: 3340 or consent of instructor. (Same as Linguistics 4450.)

4455 American Dialects (3) Characteristics of the major dialects of American English. Their origins and functions. Implications for cultural pluralism. Prereq: 3330 or Linguistics 2000 or consent of instructor. (Same as Linguistics 4455.)

4460 Special Topics in English Linguistics (3) May be repeated for credit with consent of department. (Same as Linguistics 4460.)

4461 Quantitative Analysis of Language (3) Introduction to techniques of the study of variation in language both in spoken language and in written texts, including literature. Emphasis on identifying questions, collecting, analyzing, and interpreting data. Implications for linguistic and/or literary theory. Prereq: English/Linguistics 3330 or Linguistics 2000 or consent of instructor. (Same as Linguistics 4461.)

4471-81 English as a Second or Foreign Language (3,3) 4471—Applied linguistics in teaching and learning of English as second or foreign language. Phonological and grammatical structure of present-day English. Analysis of differences (phonological, grammatical) between English and another language. Prereq: Second year of a foreign language. 4471—Materials and methods of language teaching, with emphasis on preparation of materials and structured teaching situations. Theory of testing language competence and performance, with emphasis on construction of tests. Team taught with an experienced member of the staff. Prereq: 4471. (Same as Linguistics 4471-81.)

4610-20 Black Literature (3,3) Trends and developments.

4640 Black American Literature and Aesthetics (3) Evaluation of major texts in Black American Literature and Aesthetics since 1820. Emphasis on the more recent works.

4651 Southern Literature through the Nineteenth Century (4) Southern writing from colonial period to end of 19th century, including frontier humorists and local color writers.

4652 Southern Literature in the Twentieth Century (3) Modern Southern literary renaissance, Fugitives and other avant-garde writers, recent writers such as Welty, O'Connor, and Porter.

4660 Emerson and Thoreau (3)

4680 American Humor through Mark Twain (3)

4721-31-41 Ballad and Folktales (3,3,3) 4721—Study of traditional oral and written songs, tales, and dramatic performances. 4731 Study of Native American ballad and folktales. 4741—The folk narrative: functions, categories, and patterns of storytelling.

4850 Milton (3) Emphasis on major poems.

4860 Seventeenth-Century Prose and Poetry (3) Bacon and Donne; Milton, Marlowe, Spenser, Jonson, Dryden.

4930-40 Chaucer (3,3) 4930—The Canterbury Tales. 4940—Troilus and Criseyde and early poems.

GRADUATE Consult the Graduate Catalog for listing of graduate level courses.

French See Romance Languages.

Geography (415)

Professors: S. R. Jumper (Head), Ph.D. Tennessee; C. S. Alkin, Ph.D. Georgia; T. L. Bell (Assistant Dean for Research), Ph.D. Iowa; E. H. Hammond, Ph.D. California (Berkeley); R. G. Long (Emeritus), Ph.D. Northwestern; C. W. Minkel (Dean for Graduate Studies), Ph.D. Syracuse; C. T. Peauid, Ph.D. Colorado; T. H. Schumde, Ph.D. Wiwonis; T. J. Wilbanks (Adjunct), Ph.D. Syracuse.

Associate Professors: T. J. Blasing (Adjunct), Ph.D. Wisconsin; R. A. Foresta, Ph.D. Rutgers; L. M. Pulipher, Ph.D. Southern Illinois.

UNDERGRADUATE

B.A. Major: A minimum of eight hours at the 1000 or 2000 level is required as an introduction to a major. Geography 3700, 4100, 4210, and 4990 are also required, along with an additional 28 hours selected from courses at the 3000 and 4000 levels. At least one course must be selected from each of groups A, B, C, D, and E below:

a. Physical Geography: 3510, 3520, 3530, 4550;
b. Economic Geography: 3410, 3430, 3490, 4075;
c. Cultural Geography: 3000, 3450, 3600, 3610, 3660, 4240;
d. Regional Geography of the United States: 3810, 3920, 3930, 3940;
e. Regional Geography of Foreign Areas: 3790, 3800, 3830, 3840, 3870, 3880.

Students in the 3/2 program are encouraged to take 12 of their 28 upper-division credit hours from group B.

For those pursuing a program leading to professional employment or graduate study in geography, 4210 and/or a senior project under 4103 are strongly recommended.

Minor: Eight hours in courses numbered at the 1000 or 2000 levels are recommended as an introduction to the minor which consists of 24 hours selected from courses at the 3000 and 4000 levels. Students wishing to major or minor in geography are strongly urged to consult with a departmental undergraduate advisor.

Through choices available within the structure of the major and by appropriate selection of electives outside the department, each student may develop a coherent program in accordance with specific interests and needs. Such programs might emphasize particular aspects of geography itself or might develop interdisciplinary themes such as natural environment and resources, urban and regional planning, or the culture, history, or economy of a particular area. A useful technical or vocational specialty program is available which emphasizes cartography and remote sensing.

1610-20 Introduction to Geography (4,4) Selected problems or situations of contemporary interest are studied in depth, illustrating geographical points of view and techniques. Need not be taken in sequence. 1610-E; 1620-W, S.

1610-20 Geography of the Natural Environment (4,4) Characteristics and processes of earth's surface and lower atmosphere; their interaction to produce world pattern of distinctive environments significant to man. Must be taken in sequence. 3 hr. lecture and 2 hrs. of lab per week. 1810-F; 1820-W, S.

1910 Introductory Cultural Geography (4) Basic concepts of culture. Patterns and distributions of cultural phenomena including geography of languages, religions, cultural regions, population, settlements, and forms of economy.

2110-20-30 Economic Geography (4,4,4) The significance of location, pattern, and environment in economic activities. Emphasizes: 2110—agriculture; 2120—energy, mining, and manufacturing; 2130—transportation and trade. Not be taken in sequence. 2110-E; 2120-30-W, S.

3000 Man, Location, and Behavior (4) Types of human spatial behavior, such as shopping patterns, commuting, residential mobility, trade, and regional consciousness, as they relate to distance, natural environment, and culture. Order and regularity in patterns of human use of earth's surface.


3430 Urban Geography (4) Concepts and theories concerning development and significance of systems of cities and internal morphology of cities.

3450 Rural Geography (4) Geographical appraisal of rural areas of the United States, including small towns and urban fringes. Problems and potentials of rural America.

3490 Geography of Resources (4) Study of factors related to the variations in resource availability from time to time and from place to place, with particular emphasis upon energy and metallic resources.

3510 Meteorology (4) Introduction to dynamic aspects of weather and climate, weather patterns. Nature of individual weather elements, their measurement, and analysis over time and space.

3520 Climatology (4) Overview of general circulation system leading to world pattern of climates. Climatic change and modification, and interrelationship of climate and human activity.

3530 The Land-Surface System and Man (4) Nature and regional variations in relationships among surface form, water, vegetation, and surface materials. Man as evaluator and agent of change.

3600 Geography of Population (4) World population patterns; regional socio-economic characteristics and demographic trends; relationship to resource base.

3610 Political Geography (4) Importance of geographic factors for understanding political relationships within and between nations; geopolitical implications of political decision-making processes; geography of administrative units.

3680 Cultural Geography (4) Basic concepts of culture; methods and techniques in cultural geography; world patterns of cultural phenomena.

3790 Maps and Aerial Photographs (4) Introduction to scales, sources, uses, design, and production of maps, aerial photos, and other forms of spatial images.
Geology Courses 4024. 1010 General Geology I (4) Introduction to materials of the earth; processes active within the earth and changes they produce. 3 hrs. and one 2 hr. lab or field period. 1020 General Geology II (4) The surface of the earth, including physical processes which shape it; the development of the oceans and sedimentary rocks; fossils and their relationship to geologic time. Prereq. 1010. 3 hrs. and one 2 hr. lab or field period. 1030 General Geology III (4) Reconstructing the history of the earth using both physical, geologic and fossil evidence; a review of important stages in earth history. Prereq. 1020. 3 hrs. and one 2 hr. lab or field period. 2210 History of Life on Earth (4) Chronological account of life on earth, its environment, and societal patterns. Not intended for geology majors. 3 hrs. and 1 lab or field period. 2310 Resources Courses—Minerals and Energy (4) Evaluation and estimation of reserves and resources. Distinctive features, present status, and future trends of minerals industry. Appraisal of conventional and alternate energy resources. Resource crisis and possible choices. National policies on minerals and energy. Not for geology majors. May be taken by geology majors, but credits will not count toward major requirements. 2410 Geology of National Parks (4) Important geological features of the national parks. Prereq. 1420. Not intended for geology majors. 2510 Geochemical Cycles and the Global Environment (4) Introduction to the use of geochemical cycles for identifying pollution and environmental problems on a global scale. High school chemistry recommended. 3 hrs. and 1 problem session. 2610 Introduction to Geology for Engineers (3) Materials and structures of the earth. For College of Engineering students only. 2 lectures and 1 lab or field period.

### Undergraduate

#### B.S. Major: Prerequisites
Geology 1010, 1020, 1030. Students who have less than one year of high school biology must take Biology 1210, 1220; it is recommended that a student who has had one or more years of high school biology should take any two of the following courses: Biology 1230; Botany 1110, 1120; Zoology 1118, 1128; Biology 4730. Advanced Cartography (4) Map production from design through color proofs. Prereq. 3700, 4710, and 4720 or consent of instructor. 4740 Remote Sensing: Types and Applications (4) Basic principles of aerial photography, certain remote sensing techniques, and other remote sensing techniques. Emphasis upon value of various types of imagery for geographic interpretation and simple mapping. Prereq. Consent of instructor. 4750 Interactive Computer Graphics (3) As Computer Science 4750 and Electrical Engineering 4750. 4799 Practicum in Cartography/Remote Sensing (2-6) Supervised practice in design and production of maps and other graphic materials in Department of Geography's Cartographic Services Laboratory or a similar organization. Prereq. Written consent of instructor prior to registration. 4990 Seminar in Geography (4) Overview of major themes in geography, especially trends over past 20 years. Designed for undergraduate minors and majors; not open to graduate students. Prereq. Completion of at least 12 hours of major or minor requirements for geography. GRADUATE The general requirements for the master's and doctoral degrees as well as course descriptions are in the Graduate Catalog. **Geological Sciences**


Associate Professors: D. W. Byerly, Ph.D. Tennessee; T. W. Broadhead, Ph.D. Iowa; M. Clark, Ph.D. Pennsylvania State; H. Y. McGeen, Ph.D. Harvard.


The Department of Geological Sciences provides training for (1) those who plan careers as professional geologists in industry, federal agencies, education, or other fields which utilize earth scientists; and (2) those who seek a general knowledge of geology and its relationship to the other sciences, engineering, business, law, and other disciplines.

The requirements set forth below are designed to provide geology majors with a broad base from which qualified students may proceed into advanced study in one or more of the branches of geology or related minor fields. Because a wide range of elective courses is available, it is essential that each student be guided in planning the program by a departmental advisor. A list of advisors is available in the departmental office.

**UNDERGRADUATE**

**B.S. Major:**

**Prerequisites:** Geology 1010, 1020, 1030. Students who have less than one year of high school biology must take Biology 1210, 1220; it is recommended that a student who has had one or more years of high school biology should take any two of the following courses: Biology 1230; Botany 1110, 1120; Zoology 1118, 1128; Biology 3110. Chemistry 1110-20; Physics 1310-20 or 2210-20. In addition, one of the following must be taken: Chemistry 1130 or the third quarter of the physics sequence already taken by a student, Math 1840-50 or 1840-52, and one of the following: Math 1860, 1862 or 3000.

**Geology Courses**

The core: Geology 3180, 3190, 3260, 3310, 3320, 3370 (21 hours). For breadth: 12 hours chosen from the following: Geology 4110, 4115, 4230, 4320, 4510, 4550, and 4610. In addition, all senior majors must take at least one quarter of 5350.

**Student's Choice:** 12 additional hours in any geology courses numbered 3000 or above.

Geology 4440 (field camp), or an equivalent field camp elsewhere, is strongly recommended for students planning a career in geology. Those students unable to take a field camp should take Geology 4310. A student majoring in another subject may take the major for both Geology 4310 and 4440.

**Minor:** Geology 1010, 1020, 1030 are prerequisites to a minor which consists of at least 24 hours in courses numbered 2000 or above.

**Geography (424)**

1 Math 1840-50 has prerequisites of 2 years high school algebra and one semester of trigonometry or equivalent. Students who are deficient in these subjects may need to take Math 1910 and/or 1500 prior to enrolling in Math 1840-50. Consult mathematics section of this catalog or the Department of Mathematics for details.

College of Liberal Arts 193
4240 Paleobotany (4) Survey of fossil record of plants and particular emphasis on (1) comparative morphology and evolutionary trends in major plant groups and (2) chronological succession and geographic distribution of past plant groups on earth. Prereq: 1420 or 2210; Botany 3010-20 or consent of instructor. 3 hours and 1 lab or field period. (Same as Botany 4240.)

4250 Evolution of Higher Taxa (4) Discussion of current evolutionary trends, with emphasis on phylogenetic patterns of evolution in fossil organisms at family level or higher. Prereq: 3260. 3210-20 also recommended. 2 lectures, one 2-hour seminar.

4260 Biostatistics (3) Principles of application of paleontologic methods to stratigraphic study, codification of stratigraphic nomenclature, and recommended practice. Prereq: 3260 and 3360. 1 lecture plus one 2-hour seminar.

4270 Micropaleontology (4) A survey of geologically important microfossil groups and their bio- logical association if known. Special emphasis is given to fossil monerans, proteists, and palynomorphs. Prereq: 3260 or consent of instructor.


4310 Geologic Mapping (4) Interpretation of maps and field methods of geologic mapping. 3 lectures and 1 lab or field period. Prereq: 12 upper-division hours of geology and consent of instructor.

4311 Introductory Petrology (4) Introduction to classification and properties of igneous and metamorphic rocks, processes which produce them, and tectonic environments in which they form. Prereq: 3180. 3 lectures and 1 lab. Coreq: 3180.

4320 Introductory Environmental Geology (4) Applications of the geological sciences toward a comprehensive understanding of the effects of geological processes on humans and the effects of human activities on the earth environments. Prereq: 1010-20-30. 3 lectures and one 2 hr. lab or field period.

4330 Regional Geology of the United States (3) Evolution of various geologic provinces within the U.S. with emphasis on the integration of several types of geologic data. Prereq: completion of 21 upper-division requirements for the major. 3 lectures.

4331 Quaternary Geology of North America (4) Quaternary geologic processes, stratigraphy, sediments, geologic data. Prereq: completion of 21 upper-division requirements for the major. 3 lectures and one 2 hr. lab or field period.

4332 Quaternary Paleoecology (4) Study of pollen and plant-macrofossil of characterizing vegetation and climate change during Quaternary. Prereq: Consent of Instructor. Two 2-hour lectures.

4333 Quaternary Field and Lab Techniques (4) Techniques for Quaternary stratigraphic characterization and reconstitutions, including pollen and plant macrofossil identification, description of site stratigraphy, and sedimentology. Prereq: 1410 or consent of instructor. Two 2-hour lectures.

4370 Tectonic Styles (4) The tectonic evolution of structures and their associations with metamorphism, plate motions, and stratigraphic assemblages as determined through case study examination of different volcanic erbs. 3 lectures and 1 seminar or lab. Prereq: 3370 or consent of instructor.

4440 Field Geology (5) Five weeks' field course, first term summer quarter. Advanced undergraduates or first-year graduates in geology. Employes entire time of students. Field techniques are demonstrated, practiced and applied to the solution of geologic problems. Prereq: 12 upper-division hours of geology and consent of instructor.

4460 Geologic Photography, Photogrammetry and Remote Sensing (4) Principles of terrestrial, air-borne, and satellite geologic remote sensing, including principles and practice, geometry of terrestrial and aerial photography, and principles of nonphotographic remote sensing systems.

4510 Principles of Geomorphology (4) Gravitational processes and formation of landforms. Prereq: 4210 or consent of instructor. 3260 or consent of instructor. 3 hours and 1 lab.

4520 Process Geomorphology (4) Gradational processes operating on and near the earth's surface, applied geomorphology, and field work in geomorphology. Prereq: 1430 and 4510. 3 hours and 1 lab or field period.

4550 Optical Mineralogy (4) Identification of minerals and determination of crystal-chemical parameters using petrographic microscope.

4610 Principles of Geochemistry (4) Application of chemical principles to geologic problems. Emphasis on crystal chemistry and relation between basic atomic structure and distribution and behavior of elements in earth's crust. Prereq: Chemistry 1110-20 or equivalent required. Recommend 3310.

4650 Mineral Phase Equilibria (3) Principles of phase chemistry and application of phase equilibria studies in rock-forming mineral systems as aid to understanding conditions of formation and modification of rocks. Prereq: 4610 or consent of instructor.


4710 Petrophysics (3) Fluid, heat, electric current, and ionic flow through rock masses in a potential field. Stress-strain behavior of rock as a function of temperature and pressure. 3 lectures per week. Prereq: 3310, Math 1830, Physics 1330. Recommended Math 2610 and 2820.

4810 Special Problems in Geology (1-4) Prereq: Consent of instructor. May be repeated. Maximum credit 4 hours.

GRADUATE

The general requirements for master's and doctoral degree as well as course descriptions are given in the Graduate Catalog.

Germanic and Slavic Languages

Professors:
H. Kratz (Head), Ph.D. Ohio State; J. E. Falen, Ph.D. Pennsylvania; H. W. Fuller (Emeritus), Ph.D. Wisconsin; R. L. Hiller (Emeritus), Ph.D. Cornell; J. C. Osborne, Ph.D. Northwestern; M. P. Rice, Ph.D. Vanderbilt.

Associate Professors:
D. M. Flane, Ph.D. Indiana; N. A. Lauckner, Ph.D. Wisconsin; D. E. Lee, Ph.D. Stanford; C. J. Mellor, Ph.D. Chicago; U. C. Ritenhoff, Ph.D. Connecticut.

Assistant Professor:
C. Hodges, Ph.D. Chicago; J. Kolodziej, Ph.D. Indiana.

Instructor:
M. H. Harris, M.A. Illinois.

UNDERGRADUATE

Placement Examination: Students who have had previous work in German or Russian either in high school or in another college 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 through private study, tutoring, residence in foreign countries, or the like, should request a proficiency test. A student earning a grade of C or better on such a test will receive credit for a limited number of courses. Superior students are encouraged to proceed as rapidly as their
achievement permits. Students who omit any course in a sequence may receive credit for it by passing a proficiency examination.

Foreign Study: Students are encouraged to study abroad. The department is prepared to recommend summer study or a year abroad programs for students who are interested in foreign study. Credits from recognized foreign study programs can readily be transferred to UTK. For qualified students, the department also offers a 4110 Foreign Study and Russian and East European Studies. See page 160. Students should consult the department before registering for the foreign study course.

German

B.A. Major: Majors or minors in German should carefully prepare their programs in consultation with a departmental faculty advisor. German 2110-20-30 or the equivalent is a prerequisite to the major. The major shall consist of at least 24 hours of German courses numbered above 3000, (excluding courses in English translation), and usually including German 3110-20-30. It is recommended that German majors also take History 1510-20 or 3710-20-30 and 8 hours of sophomore English. Majors are also strongly urged to consider a minor in some other area of the humanities.

German 2110-20-30 or its equivalent is a prerequisite to the minor. The minor shall consist of at least 24 hours of German courses numbered above 3000, which normally include German 3110-20-30 (or 3410-20-30), and 15 additional hours of courses numbered above 3000, excluding German 30-20-30 and courses in English translation.

Russian

B.A. Major: Russian majors should carefully prepare their programs in consultation with a departmental faculty advisor. The major in Russian shall consist of at least 45 hours of Russian courses, including Russian 3110-20-30, 3010-20-30, 9 hours from Russian 2110-20-30 or 3710-20-30, and 15 additional hours of courses numbered above 3000, excluding 3010-20-30, and courses in English translation.

4101 Foreign Study (1-16) See page 160.
4102 Off-Campus Study (1-16) See page 160.
4103 Independent Study (1-16) See page 160.

4110-20-30 Studies in Classical and Modern Writers (3,3,3) Content varies. May be repeated for credit with consent of department. Prereq: 9 hours of 3000 courses (exclusive of 3010-20-30, or courses in English translation) or equivalent.

4140-30 Selected Topics in German Literature from 1750 to the Present (3,3,3) Prereq: 9 hours of 3000 courses (exclusive of 3010-20-30, or courses in English translation) or equivalent.

4170 Theatrical German (1-3) Performance in one or more German plays. May be repeated for credit with consent of department. Prereq: 2130 or equivalent or consent of instructor.

4210-30 Special Topics in German Culture (3,3,3)
art, music, history, geography, and social problems of Russia. No knowledge of Russian required. A writing emphasis course. Fullfills upper level distribution requirement for Foreign Culture.

Greek
See Classics.

Hebrew
See Religious Studies.

History (462)

Professors:
J. H. Morrow, Jr. (Head), Ph.D. Pennsylvania; P. H. Bergeron, Ph.D. Vanderbilt; E. V. Chmielowski Ph.D. Harvard; R. E. Duncan, Ph.D. California (Berkeley); L. P. Graf, Ph.D. Harvard; Y. P. Hao, Ph.D. Harvard; A. G. Hasas, Ph.D. Chicago; R. W. Haskins Emeritus), Ph.D. California (Berkeley); C. O. Jackson (Associate Dean, Liberal Arts College), Ph.D. Emory; M. M. Klein²3, Ph.D. Columbia; R. G. Landen (Dean, Liberal Arts College), Ph.D. Princeton.

Associate Professors:

Assistant Professors:

Instructor:
D. B. Morrow, M.A. Tennessee.

¹Berwood Distinguished Professor.
²Alumni Distinguished Service Professor.
³Lindsay Young Professor.

UNDERGRADUATE

History is a rewarding subject for students seeking a general education. History majors traditionally have done well in a number of careers, such as law, business, journalism, public service, teaching and research, library and archival fields, and ministry. Many students majoring in other subjects take history courses: to develop their skills in thinking, writing, reading, and speaking; to assist them in their search for personal identity; and to help them in their lifelong effort to understand change, continuity, and the links between past, present, and future.

B.A. Major: Majors in history should prepare their programs in consultation with a department faculty advisor. History 1510-20 (or their honors equivalents), or 1610-20, are prerequisites to a major which consists of 41 hours, including 24 hours of history courses numbered 3000 or above, including at least: (1) 8 hours in United States history; and (2) 12 upper-division hours.

History for Non-Majors: The department welcomes non-majors in its courses. Few history courses have prerequisites. Honors Program: The Department of History offers honors sections of the Western Civilization and United States history survey course. Some entering freshmen are invited to participate; other interested students may apply. These survey courses are open to non-majors. An honors major requires successful completion of three special courses at the junior level (3008, 3038, 3048) and a senior thesis (4018-4028). The honors major consists of 50 hours, including 41 hours as outlined above, plus 3008-38-48. All rising juniors who are declared history majors with an overall GPA of at least 3.0 are invited to join the Junior-Senior Honors Program. Students interested in honors work should consult the department's honors coordinator.

Graduate Course Information: Students can obtain additional information about the content and availability of history courses in the departmental office, 1101 McClung Tower, or from any member of the history department. The department also prepares a course description brochure for each quarter.


1510-20 Development of Western Civilization (4,4)
1510—Ancient World to 1715. 1520—1715 to present. E.

1518-28 Honors: Development of Western Civilization (4,4) Consent of department required. 1518—F; 1528—W.

1610-20 A History of World Civilization since 1450 (4,4) Interaction of Western World and non-Western peoples since the 14th century. 1510—Ancient World to 1800. 1620—present. 1610—1800 to present. 1610—F; 1620—W.

1650-60 Afro-American History: An Introduction (4,4) Survey of the African-American experience from 1890. Traditional African societies from which Afro-Americans emerged; evolution of prejudice and racism in America; the institution of slavery; free Negroes; Civil War and Reconstruction. 1650—present. Afro-American experience from 1800. The Afro-American struggle for political, civil, and social equality; leaders of the struggle; their philosophies and programs, responses of Black community institutions to the challenges of the 20th Century; the rise of the urban ghetto; the Civil Rights and Black Power movements.

2020 The City in Europe, ca. 1200-1900 (3) Survey of European urban growth, with comparative analysis of major periods of urbanization of 13th and 19th centuries. Emphasis on relationship between demographic and economic foundations of cities and political and cultural development.

2015 Historical Issues (3) Introduction to broad, thematic issues in historical perspective. A lecture-discussion course in which the content will change from semester to semester. Especially suitable for non-majors: also open to majors. May be repeated. Maximum credit 9 hours.

2350 U.S. and World Crisis, 1839 to Present (4) Prereq.
international crises confronting the United States today in historical perspective. Emphasis varies to reflect recent developments in world affairs. Intended for non-majors who have not yet met Tennessee Legislature requirements in American history, or for transfers who enter liberal arts with credits, but fewer than enough to meet the core curriculum requirement. Prereq: Consent of department; prereg or coreg: 2510 or 2518. May be taken more than once with the consent of department. Will not be offered during summer sessions. F, W, S.

2515-25 United States History for International Students (4-5) 2515-Settlement to 1865. 2525-1865 to present. F, W.

2518-28 Honors: History of the United States (4,4) Consent of department required. 2518—F; 2528—W.

3008 Honors: Introduction to Historical Analysis and Institutions (3) Required of students working for honors in history.

3038 Honors: Philosophy and Methods (3) Principles and techniques of research and study of critical and sensitive issues in Western history. Required of students working for honors in history. Admission with consent of department.

3048 Honors: Readings (3) Required of and open only to students working for honors in history.

3050 The West and the Third World Since 1870 (3) Examination of the relationships between the West and the Third World throughout the 20th century. Prereq: Consent of department; prereg or coreg: 3050 or 2515. Will not be offered during summer sessions. F.

3051 Revolutions in Historical Perspective (3) Comparative study of major revolutions which transformed political, social, and economic structures and values, such as those in France, Russia, China, Mexico, and Iran. Contrasts and common patterns in their causes, phases, and outcomes. Relationships between leaders and masses. Major theories of revolution.

3060-70-80 History of Western Religious Thought and Institutions (3,3,3) (Same as Religious Studies 3060-70-80.)

3121 Ancient History to 500 A.D. (3) The cultural foundation of western civilization. Considers cultural topics as the rise of the Greek poles, classical Greek culture and philosophy, Alexander the Great and the Hellenistic era, the rise and fall of the Roman Empire, the origins of Judaism and Christianity.

3122 Medieval Europe, 500-1450 (3) The emergence of a distinctive western European civilization from classical, Christian, and Germanic roots. Considers such topics as the barbarian migrations, feudalism, state-making in England and France, the social and spiritual power of the church, the rise of cities, the Black Death and early Renaissance.

3123 Early Modern Europe, 1450-1750 (3) The transition from medieval toward modern society. Considers such topics as the Renaissance, Reformation, religious wars and civil wars, peasant rebellions, the spread of European contacts with the non-European world, population fluctuation, preindustrial economic growth, the rise of modern states, the Scientific Revolution, witchcraft.

3124 Modern Europe, 1750,1900 (3) The political, industrial and intellectual revolutions against traditions. Considers such topics as the modern population explosion, urbanization, the political emergence of the middle class and the masses, nationalism, imperialism, rationalism and Romanticism in social thought and politics.

3125 Contemporary Europe, 1900-Present (3) The transformation from industrial to post-industrial society and the decline of the European nation-state. Considers such topics as war and depression and consequent political and social instability; the Russian Revolution, Nazism, decolonization; the impact of Freud and Einstein; welfare states; European reunification. 3140-50-60 History of England (3,3,3) 3140—To 1660. 3150—1660 through Reform Bill of 1832. 3160—1832 to present. Medieval state, church, and society; origins of Anglo-American law, the monarchy and Parliament, 14th-16th centuries; 17th century periods of ferment for conflicting economic, social and political forces; the Glorious Revolution, the Jacobite Risings, the successes of the Industrial Revolution, the American Revolution, the French Revolution, the rise of democracy in Europe. 3201 American Issues: Individualism and Community (3) Examination of the ways in which Americans have organized their lives so as to retain the benefits of both spectator and participatory sports in 20th century. 3240 Law in American History (3) The law and economic development, law and slavery, law and civil liberties, the role of law in the Revolution and the Civil War, and the rise and development of the legal profession. Not for graduate credit.

3270 History of Sports in United States (3) Analysis of development of sports and their significance in American life from colonial period to present. Emphasis on sports, culture, social, economic, and political impact of both spectator and participatory sports in 20th century.

3311-21 History of Tennessee (3,3) 3311-18th century to Civil War Era. 3321—1865 to present. 3411 The Renaissance (3) (Same as Religious Studies 3411.)

3412 The Reformation (3) The Reformation, Counter Reformation, and Wars of Religion. (Same as Religious Studies 3412.)

3421-22 Early Modern Europe (3,3) 3421—17th century Europe. 3422—18th century Europe.

3431-32 Nineteenth Century Europe (3,3) 3431—French and industrial revolution to 1848. The milieu of ferment for conflicting economic, social and political ideas, culminating in a massive revolutionary upheaval. 3432—Maturity and Challenge (1848-1890) Industrialization and nationalism as the awesome national prosperity, triumph of the bourgeoisie, the intellectual climate of realism, scientism, and materialism.

3445-46 History of France (4,4) 3445—Emergence of Modern France (1715-1875). Social, intellectual and economic pressures in the acien regime; era of experimentation as revolutionary and traditional France confront one another. 3446—Since 1871.

3470-80-90 History of Russia (3,3,3) 3470—To 1801. 3480—19th century. 3490—20th century.

3510-20 The American Colonies and the American Revolution (3,3) Emphasis is on major themes rather than chronological coverage of the years 1607-1783. Changing historical interpretations of European colonization; colonial society, economy, religion, culture and politics, the causes, character, and conse-quences of the American Revolution; and the nature of the Federal Constitution of 1787.


3680 Indian-White Relations in United States History (4) White man's relationship with the Indian since Colonial times. Emphasis on dilemma of two cultures existing side by side; background and formulation of official Indian policy; undermining of policy by frontier circumstances; Indian wars and campaigns; and present-day relationships. Not for graduate credit.


3751 Ancient Near Eastern Civilization (3) Bronze Age and Iron Age.

3760-70 The Ancient World (3,3) 3760-Greece. 3770-Rome.

3780-90 History of the Middle East (3,3) 3780—Rise and spread of Islamic civilization to the 16th century. 3790—The impact on the West of the Middle East from the 16th century to World War I.

3785 Contemporary Middle East (4) Background of current problems. From 16th century to World War I to present. (Same as Political Science 3785.)

3800 North Africa since 1830 (3) Morocco, Algeria, Tunisia, and Libya in the 19th and 20th centuries.

3810-20 History of East Asia (3,3) 3810—East Asia: History and Culture to 1600. Introductory survey. Chiefly China and Japan; Korea and Vietnam also included. Confucianism, Buddhism, social structure, political tradition, and Japanese feudalism. Comparison and contrast with Western history and culture. 3820—Modern East Asia since 1600. Introductory survey. China, Japan, Korea and Vietnam. Comparative analysis of development over centuries in terms of cultural transformation, communist movement, and Japan's militarism and post-war economic success.


3921 The United States, 1914-1945 (4) American experience during World War I, the Great Depression, the New Deal, and World War II. Emphasizes domestic history but includes military and foreign policy.

3931 The United States History, 1945 to the Present (3) Demobilization and Cold War after World War II followed by wars in Korea and Vietnam; attempts to find labor peace, national prosperity, and full equality for minorities. From Truman's administration to the present.

3950 African History to 1940 (3) Focuses on the ethnic groups of the western and southern regions of sub-Saharan Africa and South Africa and the relationships of these groups with those from the era of the slave trade through the period of European colonial rule. (Same as African American Studies 3950.)

3951 African History Since 1940 (3) Examines the G iny to the Cold War: the achievement
of independence by west African nations and the failure of Africaners in the south to achieve that goal. It also includes issues of urbanization, industrialization, and the formation of a national identity within the twentieth century African context. (Same as Afro-American Studies 6351)

4000 Reflections on History (3) Comprehensive approach to the study of history, focusing on the impact of history. Emphasis is upon such topics as values in history, the interaction of historians and their times, the grand models of history, and the relationships between the study of history and patterns of modern thought and behavior. Recommended for seniors. History 3008-3038 (Junior Honors) may substitude for History 4000 to fulfill the Civilian Experience requirement. Recommended but not required that History 4000 and 4010 be taken in sequence.

4010 Colloquium in History (3) Examination of a historical theme or problem; emphasis on questions and skills, with special reference to historical writing, including critical analysis of both primary and secondary sources. Recommended for seniors. But not required that History 4000 and 4010 be taken in sequence.

4015 Studies in History [3-4] Variable content course aiming to offer subject matter not covered in an existing course. May be repeated for credit.

4018-28 Honors: Senior Paper (0-6) Required of students working for honors in history.

4040 History Behind the News (4) The contemporary analysis and the historical background of selected newsworthy events in North and South America, Europe, and the non-Western world are studied to acquire a fuller understanding of their significance. May satisfy history major requirements (except those of geographical distribution). Non-majors may repeat once for credit.

4001 Foreign Study (1-16) See page 150.

4002 Off-Campus Study (1-18) See page 160.

4013 Independent Study (1-18) See page 160.

4130 History of Colonialism and Imperialism (3) 19th century to the present.

4250-60-70 European Intellectual and Cultural History (3,3,3) 4250—From Reformation to Scientific Revolution (1500-1700). 4260—From Enlightenment to Age of Realism (1700-1870). 4270—From Subjectivism to Relativism (1870-present).

4260 Women in European History (4) Comparative analysis of role and image of women in medieval, Renaissance, and Victorian periods. Emphasis given to women's roles in church and family as well as relationship between Western culture and women's protest movements. (Same as Women's Studies 4260.)

4290 Women in American History (4) Approaches of 4250-60-70 to American society. (Same as Women's Studies 4290.)

4292 History and Philosophy of Afro-American Education (4) (Same as Afro-American Studies 4292 and Edu. C&I 4292.)


4320 The American Experience in World War II (4) A team-taught course. Diplomacy and warfare in Europe and Asia and the impact of the war on American society.


4350 American Military-Civilian Relationships in the Modern Western World (3) Civilian-military affairs from about 1950 to 1980 in Western Europe, Russia, and America; emphasis on Western Europe; e.g. Dreyfus Affair, Army in Nazi Germany, and Truman-MacArthur controversy.

4410-20-30 Europe in the Twentieth Century (3,3,3) 4410—1919 to 1919. 4420—1919 to 1939. 4430—1939 to present.

4470 Poland and Its Neighbors (3) A survey of Polish history from its beginnings to the present with some emphasis on the Polish question within context of modern international affairs.

4480 Russian Intellectual History (3) Russian intellectual history from 18th century to present, emphasizing problems of modernization, nationalism, and revolutionary tradition.

4490 Soviet Foreign Policy (3)

4500 History of Medieval England (3) A survey from the Anglo-Saxons to the coming of the Tudors with emphasis upon the relationship between legal and constitutional developments and the structure of society.

4510-20 Tudor-Stuart England (3,3) 4510—Emphasis on such topics as the Renaissance and Reformation in England and on such figures as Thomas More, Elizabeth I, and Mary, Queen of Scots. 4520—Emphasis on such topics as Puritanism, the English Civil War, the Restoration, the Glorious Revolution and the Stuarts. Other such figures as the Stuart kings, Oliver Cromwell, Milton, Hobbes, and Locke.

4551 Great Britain from Burke to Bright (1780-1848) (3)

4570 Twentieth-Century Britain (3) The emergence of the Welfare State, the postwar impact of the movement, World War and Depression, chronic economic crisis, the persistence of class.

4610-20-30 The American Frontier and Westward Movement I, II, III (3,3,3) Settlers and development of the "West" through the American experience. 4610—From the Atlantic to the Mississippi. 4620-30—The Trans-Mississippi West.

4641-51 America: Mind, Mood and Society (3,3) Surveys social and cultural history and thought from mythology behind colonization to the major beliefs and values which form the foundation of present-day life in the United States. 4641—Colonial period to 1855. 4651—1855 to present.

4661 Studies in American Social and Cultural History and Thought (3) An intensive examination of specific themes, problems, or ideas.

4670 Cities and Urbanization in American History (4) Origins, growth, and influence of American cities, urban civilization in northern and central Italy in medieval and post-Renaissance periods. Emphasis upon the relationship between legal, social, and cultural implications of slavery before and during the Civil War, and the political, social, and cultural conflicts over issues connected with change and modernization.

4710-20 Medieval History (3,3) 4710—Age of Heroes, 500-1000. The pattern of early medieval heroism, its social and intellectual assumptions, the individuals who exemplify it, and the continuing harsh environment of the early Middle Ages. 4720—Age of Chivalry: 1000-1300. The emergence of chivalry—from the heroes of the feudal epics of the 11th century to the questing knights of the 13th century romances.

4741 Italian City-States, 1250-1500 (3) Evolution of the first cities in Italy through the development of the nation, from colonial era to present. (Same as Urban Studies 4670.)

4860 History of Knoxville (3) Knoxville, Tennessee as a historical case study to analyze the interplay of tradition and change in urban America in general and urban South in particular. Economic growth and development, population changes, and political, social, and cultural conflicts over issues connected with change and modernization.

4840 History of Mexico (3) (Same as Latin American Studies 4840.)

4860 History of Mexico (3) (Same as Latin American Studies 4860.)

4870-80-90 History of China (3,3,3) 4870—Cultural History of China. Chinese high culture from Confucius to Mao-Tse-tung. Traditional religion, philosophy, fine arts, and literature (including a novel); cultural legacy under communism; similarities and differences between Chinese and Western cultures. 4880—To 1850. Emphasis upon uniqueness of Chinese experience, its influence on Japan and the West, and its relevance in today's world. 4890—Modern China since 1850. The Chinese Revolution in context: Imperialism, war, nationalism, communist movement, Mao-Tse-tung, and China in today's world. No previous knowledge of China required.

4910-20-30 History of the South (3,3,3) 4910—1607-1861. 4920—1861-1890. 4930—Since 1870.

4940 Local and Regional History (3) Investigates the history of a specific region, the impact of capitalism, nationalism, and revolution, and an analysis of study of United States regional models. May not be taken for graduate credit. May not receive credit for both 4940 and 5940.

4970 The Afro-American Experience to 1865 (3) Examines the acculturation of blacks in early America, the legal, social, and cultural implications of slavery before the Civil War, and the plight of black people in the context of the slave trade, the American Revolution, westward migration, and the genesis of sectionalism. (Same as Afro-American Studies 4950.)

4980 The Afro-American Experience Since 1865 (3) Black attempts to realize the freedom and equality promised to them at the end of the Civil War are examined in the context of Reconstruction, the Harlem Renaissance, the Great Depression, two world wars, and the Civil Rights Movement. (Same as Afro-American Studies 4960.)

GRADUATE

A student who enrolls in the Graduate School with intention of obtaining an advanced degree in history shall have completed an undergraduate major in history or its equivalent.

General requirements for the Master of Arts and doctoral degrees as well as course descriptions are found in the Graduate Catalog.

Non-Departmental

Director: Dr. Harry Jacobson

The following courses are restricted to students who have been selected to participate. 1118-28-38 are for first-year students invited on the basis of test scores, high school averages, and where appropriate, on University performance. Participation in the 2000-, 3000-, and 4000-level courses is based on cumulative averages. At present students are admitted with an average of 3.25 or greater are eligible.

Honors (509)

1118-28-38 Honors: First Year—Inquiry and Modes of Thought (2-4, 2-4, 2-4) 1118—The Humanities; 1128—The Natural Sciences; 1138—The Social Sciences. May be repeated.

2118-28-38 Honors: Sophomore—Special Problems Seminar (2-4, 2-4, 2-4) 2118—The Humanities; 2128—The Natural Sciences; 2138—The Social Sciences.
three seminars focus on selected problems in the respective disciplines. Specific topics vary from year to year. May be repeated.

3018-29-30 College Scholars Seminar (1,1,1) Sequence (in any order) limited to and required of all College Scholars each year. 3018—humanities, 3028—science and mathematics, 3038—history and society. May be repeated. Maximum 12 hrs. S/NC grading only.

3118-28-30 Honors: Junior-Colloquium (2-4,3,4,2) Small group studies of selected topics. May be repeated.

4101 Honors: Foreign Study (1-16) See page 159 and Director of Special Programs. Primarily for College Scholar Students.

4102 Honors: Off-Campus Study (1-16) See page 159 and Director of Special Programs. Primarily for College Scholar Students.

4103 Honors: Independent Study (1-16) See page 159 and Director of Special Programs. Primarily for College Scholar Students.

4118-28-30 Honors: Senior-Colloquium (2-4,3,4,2) Small group studies of selected topics. May be repeated.

4998 Honors: College Scholars Studies (2-16) Designed for College Scholars working on their senior thesis, project, or performance. May be repeated for a total of 24 credit hours.

Human Services

Professor: R. F. Kronick (Head), Ph.D. Tennessee.
Associate Professor: P. A. McClam, Ph.D. South Carolina; M. R. Woodside, Ed.D. VPI & S.U.
Assistant Professors: T. McClam, Ph.D. South Carolina; J. D. McLean, Ph.D. Chicago.

Human Services (532)
The Program in Human Services was established in 1971 for the purpose of providing education, training, and experience in the roles and function of social services; to provide helping skills and to become exposed and involved in the roles and functions of social services; to provide some direct services in a supervised learning situation. For majors only. Must be taken for 8 hours Winter and Summer Quarters. S/NC. Prereq: 4220, 4221, 4406. W, SU.

Italian

See Romance Languages.

Japanese

See Cultural Studies (Asian Studies).

Latin

See Classics.

Latin American Studies

See Cultural Studies.

Linguistics

See Cultural Studies.

Mathematics (461)

Professors: J. S. Bradley (Head), Ph.D. Iowa; G. Albert (Emeritus), Ph.D. Wisconsin; J. H. Garruth, Ph.D. Louisiana State; C. E. Clark, Ph.D. Louisiana; R. E. Oline, Ph.D. Purdue; R. J. Davenport, Ph.D. Wisconsin; D. J. Dessart, Ph.D. Maryland; D. E. Dobbs, Ph.D. Cornell; E. D. Eaves (Emeritus), Ph.D. Texas; H. Fransen, Ph.D. Illinois; R. I. Gregory (Emeritus), Ph.D. Illinois; T. G. Hallam, Ph.D. Missouri; D. B. Hinton, Ph.D. Tennessee; A. S. Householder (Emeritus), Ph.D. Chicago; L. S. Husch, Ph.D. Florida State; G. S. Jordan, Ph.D. Wisconsin; H. T. Mathews, Ph.D. Tulane; R. M. McCrannel, Ph.D. Duke; D. D. Miller (Emeritus), Ph.D. Michigan; B. S. Rajput, Ph.D. Illinois; K. C. Reddy, Ph.D. Indian Institute of Technology; P. W. Schaefer, Ph.D. Maryland; S. M. Serbin, Ph.D. Cornell; K. Soni, Ph.D. Oregon State; F. W. Stallmann, Ph.D. Giessen (Germany); E. Wachspach, Ph.D. Rensselaer Polytechnic Institute; W. R. Wades, Ph.D. California (Riverside); C. G. Wagner, Ph.D. Duke; J. W. Walsh, Ph.D. SUNY (Binghamton).

Associate Professors: V. Alexides, Ph.D. Delaware; N. Allikakos, Ph.D. Brown; D. F. Anderson, Ph.D. Chicago; V. A. Douglas, Ph.D. Harvard; J. Dydek, Ph.D. Warsaw (Poland); S. I. Hanharan', Ph.D. Carnegie-Mellon; K. K. Kmbila', Ph.D. Ohio State; T. Kuo, Ph.D. Cincinnati; B. A. Kuperschmidt', Ph.D. Massachusetts Institute of Technology; W. H. Row', Ph.D. Wisconsin; R. J. Rowlett, Ph.D. Virginia; J. Smith, Ph.D. California (Berkeley); G. S. Sod', Ph.D. California (Berkeley); R. P. Soni, Ph.D. Oregon State; H. Simpson, Ph.D. California Institute of Technology; K. R. Stephenson, Ph.D. Wisconsin; C. Sundberg, Ph.D. Wisconsin.


Instructors: C. G. Doss, M.A. Tennessee.

4401 Human Services Field Work II (8) Practical field experiences in appropriately organized and directed human services settings. Designed to offer the student the opportunity to learn and develop specific helping skills and to become exposed to and involved in the roles and functions of social services; to provide some direct services in a supervised learning situation. For majors only. Must be taken for 8 hours Fall and Spring Quarters. S/NC. Prereq: 4220, 4221, F, S.
UNIVERSITATE Removal of Entrance Deficiencies: Entrance deficiencies in mathematics can be removed by taking courses in the evening, or by correspondence. Additional fees are required. For details, contact the Evening School or, for correspondence courses, The Center for Extended Learning. The appropriate courses are as follows:

Deficiency

<table>
<thead>
<tr>
<th>Evening Correspondence Courses</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra I</td>
<td>Math 100</td>
</tr>
<tr>
<td>Math 1H 2H</td>
<td></td>
</tr>
<tr>
<td>Algebra II</td>
<td>Math 010-20</td>
</tr>
<tr>
<td>Math 3H-4H</td>
<td></td>
</tr>
<tr>
<td>Geometry</td>
<td>Math 0130-40</td>
</tr>
<tr>
<td>Math 5H-6H</td>
<td></td>
</tr>
<tr>
<td>Trigonometry</td>
<td>Math 0150</td>
</tr>
</tbody>
</table>

Placement Information for Freshmen: In selecting their first mathematics courses, students should bear the following points in mind:

1. Entrance deficiencies must be removed before the student can register for college credit. It is acceptable to take Math 1540 at the same time a 1700 or 1840, but it is preferable to take trigonometry in high school.

2. The department reserves the right to exclude or remove from its courses students who do not meet the prerequisites listed.

3. Fewer than half of the students presenting mathematics ACT scores below 16 are able to complete Math 1540 successfully. Such students should take Math 0120 (in the Evening School) before attempting 1540. Fewer than half of the students presenting mathematics ACT scores below 22 are able to complete Math 1700 successfully. Such students should complete 1540 before attempting 1700.

4. Students in curricula requiring mathematics ACT scores below 26 are able to complete Math 1840 successfully. Such students should take Math 1700 before attempting 1840.

5. Math 1550-60 does not substitute for 1840-50-60 in curricula requiring the latter, nor is 1550 an appropriate preparation for 1840. Students who need to take a course preparatory to 1840 should take Math 1700 (preceded by 1540 if necessary).

Placement of Well-Prepared Students: Students in curricula requiring 1450-60-70 should skip 1540 and begin with 1550 if they have a mathematics ACT score of 24 or above and grades of A or B in high school Algebra II.

Students in curricula requiring 1450-60-70 are urged to consider taking the Honors sequence 1848-58-68 if they have mathematics ACT scores of 32 or higher, and a high school average of 3.5 or above.

Students who took calculus in high school may qualify for advanced placement in the 1840 sequence, and should consult an advisor in the Mathematics Department. Basic Skill Requirement for Liberal Arts Students: Many students are exempt from this requirement; see page 148 of this catalog for a complete description. Either 1140 or 1700 can be taken to satisfy the requirement. Students who plan to take 1840 (or 1841 or 1842), and who must satisfy the requirement, need to take 1700, not 1140. Note that 1540 does not satisfy the requirement. Credit Restrictions: No student who has earned a grade of C or better in any course numbered 1550 or higher may subsequently receive credit for 1140. No student who has earned a grade of C or better in 1840 may subsequently receive credit for 1540. No student who had earned a grade of C or better in 1850 may subsequently receive credit for 1550.

Honors Courses: The current practice of the department is to offer honors versions (1848-58-68 and 2848-58-68) of 1840-50-60 and 2840-50-60 in sequence, fall-winter-spring, each year. In addition to these regularly offered honors courses, an honors version of any course in the department whose number has zero as the last digit may be offered in any quarter. In this case, the last digit will be changed to eight and the title will be preceded by the word "Honors," both in the Timetable and on the student's transcript. These honors courses may be offered upon the initiative of interested faculty in the department head (in all cases subject to the approval of the department head).

Proficiency Examinations: Students who have taken calculus in high school are encouraged to register for the Mathematics Office, Ayres 121, about the possibility of taking a proficiency examination or CLEP examination for one or more courses from the calculus sequence 1840-50-60. If a satisfactory grade is made on the examination(s), credit will be awarded for the appropriate course(s).

Advanced Mathematics Courses: Include 3090 and all courses numbered 3140 or above, except 3220, 3510, and 3861.

B.S. Major: Before beginning a mathematics major, a B.S. candidate must complete 1840-50-60 (or honors versions) and have program approval. At the start of the quarter, the major requirements are:

1. 1840-50-60 (or honors versions) and 3155.
2. 3550-60. Students who complete 2848-58-68 may substitute six hours of advanced mathematics courses as defined above for this requirement.
4. Fifteen additional hours of advanced mathematics courses as defined above. In satisfying this requirement a student may substitute not more than six hours of courses from the following list, for advanced mathematics courses as defined above:
   - Computer Science 4510, 4710; Educational Curriculum 3751, 3752; Physics 3210-20, 4110-20. Statistics 3460.
5. 4910 and 4920 (These two courses constitute a capstone experience for mathematics majors.)

Honors Program:

Mathematics majors who fulfill the preceding five requirements may qualify for an honors degree if their program includes at least 27 hours of 4000-level mathematics courses (except 4710), at least 6 hours of which are honors courses (course numbers with final digit is 6). The grade point aver-

age, computed on the aforementioned 27 hours, will determine the honors category as follows: G.P.A. at least 3.4—Honors; G.P.A. at least 3.6—High Honors; G.P.A. at least 3.8—Highest Honors. Honors in Mathematics, respectively.

In exceptional cases, other courses of similar level may replace the six hours of honors courses.

Candidates for an honors degree must apply to the Chair of the Departmental Honors Committee the quarter before they expect to graduate (in the spring, if graduation is in December). Their applications should list the courses that will complete the required 27 hours, including the required honors courses, or proposed substitutes. Students with credit for more than 27 hours of qualifying courses may select 27 hours to be used in computing the G.P.A. which determines the honors category for which they qualify. A note of successful completion of honors program will be entered on the transcript.

Minor: Consists of 2840-50-60 (or 2848-58-68) and at least 12 hours of advanced mathematics courses, as defined under the heading, Advanced Mathematics Courses.

Program Planning for Majors:

Mathematics majors have considerable freedom in determining how they will meet the requirements of the major. This is necessary, since mathematics majors may select from a variety of possible careers. In order to meet their degree needs, the mathematics faculty has designed a variety of sample programs which majors may wish to follow. Programs are available to prepare students:

a. For employment in business or industry, whether in numerical mathematics and computer science, operations research, probability and statistics, business and applied statistics, or actuarial science;

b. For graduate work, in pure mathematics, applied mathematics, computer science, operations research, or statistics;

c. For teaching, at the school or college level;

d. For careers in business, law, medicine, or any other areas requiring training in mathematics.

These programs, along with other useful information for majors, are published in a Program Planning Guide, which is available on request at the department office, room 121, Ayres Hall. Prospective students are invited to write for copies.

0150 Trigonometry (0) Plane trigonometry with empha-

sis on identities and other analytic aspects used in calculus. For students who enter with deficiency in high school trigonometry. 3 hours per week. No college credit.

1140 Basic Mathematical Skills (4) Sets, elementary
deductive logic, problem solving, elementary proba-

bility and statistics. Satisfies the Basic Skills Requirement in Mathematics for B.A./B.S. candi-
dates in the College of Liberal Arts. No student who enters the University with a grade of C or better in any Mathematics course numbered 1550 or higher, may receive credit for 1140. Association require-
ments in mathematics must be removed before taking 1140.

1540 College Algebra (4) Sets, real and complex number systems, exponents and radicals, fundamen-

tal algebraic operations, theory of equations, polynomial inequalities, relations, functions, graphs. No student who has earned a grade of C or better in either 1540 or 1840 may subsequently receive credit for Math
1540. Prereq: Two years of high school algebra or one year of algebra and one year of geometry.

1550-60 Introductory Calculus—General Mathematics

(4,4) 1550—Equations of straight lines, conics, directional derivatives, applications of derivatives, maxima and minima, related rates, antidervatives, integration of algebraic functions, applications of integrals, summation, sequences and series, introduction to calculus, introductory limits, derivative, elementary number theory, and rational and irrational numbers. Euclidean geometry. Must be taken in sequence. Prereq: 1 year of high school algebra and at least one year of high school geometry or the equivalent of one-half year of trigonometry or taking Mathematics 0150 concurrently.

1840-50-60 Single Variable Calculus (4,4,4) Functions, graphs, slope of a curve, definition of a derivative, limits and continuity, differentiation of algebraic functions, implicit differentiation, chain rule, differentials, continuity, applications of derivatives, maxima and minima. Indefinite integrals and applications, techniques of integration, plane analytic geometry, polar coordinates. Must be taken in sequence. Note: No student who has received credit for Math 1840 with a grade of C or better may subsequently receive credit for Math 1840.

2110-20-30 Structure of the Number System (3,3,3) 2110—Set theory, whole numbers, integers. 2120—Rational and irrational numbers. 2130—Elementary number theory, rational and irrational numbers. Euclidean geometry. Must be taken in sequence. Prereq: 1 year of high school algebra and at least one year of high school geometry or the equivalent of one-half year of trigonometry or taking Mathematics 0150 concurrently.}

3100 Logic and Sets (3) Elements of mathematical logic; elementary algebra of sets. Primarily for students in the College of Liberal Arts. It does not satisfy the requirements of a major or minor in mathematics.

3110 Real Number System (3) Laws of arithmetic; rational and irrational numbers; fields. Primarily for students in the College of Education. Does not satisfy the requirements of a major or minor in mathematics.

3150 Introduction to Numerical Algorithms and Programming (3) (Same as Computer Science 3150.)

3155 Introduction to Numerical Algorithms (3) (Same as Computer Science 3155.)

3215 Discrete Structures II (3) (Same as Computer Science 3215.)

3220 History of Mathematics (3) Survey of development of mathematics, from ancient to modern times. Not acceptable for satisfying requirements for a major or minor in mathematics. Prereq: Math 1850 or 2550 or equivalent.

3310 Advanced Euclidean Geometry (3) Triangles and circles, constructions, modern concepts. Prereq: 1 year of college mathematics.

3320 Non-Euclidean Geometry (3) Foundations of geometry, Elliptic and hyperbolic plane geometry. Prereq: 1 year of college mathematics.

3330 Transformational Geometry (3) Fundamental transformations and their properties, groups, the classification of isometries and similarities; symmetries of a polygon: inversions. Prereq: One year of college mathematics.

3510 Intermediate Analysis for Teachers (3) Primarily for students in secondary mathematics education. Course covers elementary calculus from an advanced viewpoint with emphasis on proofs. Prereq: Math 2840. Multivariable calculus. Topics covered include limits of sequences and functions, continuous functions, derivatives, definite integrals, and fundamental theorems of calculus. Does not satisfy the requirements for a major or minor in mathematics.

3550-50 Intermediate Analysis (3,3) Real number system, functions, sequences, limits, continuity, uniform continuity, differentiation and Riemann integration. Must be taken in sequence. Prereq: 2840-50-60.


3780-90 Introduction to Combinatorial Theory (3,3) Introduction to problems of arrangement and selection within discrete systems. Enumerations by recurrence relations and generating functions, graph theory, finite geometries and finite fields, partitions, block designs. Prereq: Math 2860 or consent of instructor.

3910 How to Prove It (3) Course is designed to improve understanding of standard top-down and bottom-up mathematical proofs by means of practice and participation in seminar settings. Writing proofs will include certain standard top-down and bottom-up styles, set theory, relations and functions, and mathematical induction. Coreq: 2850 or 2860.

3861 Mathematical Models in the Life Sciences (3) Introduction to differential and difference equations. Mathematical modeling techniques applied to biological phenomena. Prereq: Math 1841-51 or consent of instructor. Does not satisfy the requirements of a major or minor in mathematics.

3920-30 Topology of Euclidean Spaces (3,3) Topics will include topology of line and plane, separation properties, compactness, connectedness, completeness, fixed points, continuous functions, homeomorphisms, and topological invariants. Must be taken in sequence. Prereq: 3810 or 3860 or consent of instructor.

3990 Studies in Mathematics (1-4) Credit determined at registration. May be repeated for credit with consent of department.
consent of department; maximum credit 9 hours. Prereq: 4050-
4050. (Same as Computer Science 4225.)

4510-20-30 Introduction to Mathematical Statistics (3,3,3) Introduction to probability; discrete and con-

4980 Readings in Mathematics (1-3) Open to superior

4990 Studies in Mathematics (1-4) Credit deter-

4640-60-70 Introduction to Mathematical Statistics (3,3,3) Introduction to probability; discrete and con-

4610-20-30 Differential Equations (3,3,3) 4610—

4540 Infinite Series and Functions of Several Vari-

4530 Mathematical Modeling (3) Survey of construc-

4810 Elementary Number Theory (3) Divisibility; con-

4650-60-70 Introduction to Mathematical Statistics

4620-30-Sturm-Liouville boundary value problems, power series solutions and Legendre polynomials. Regular singular

4450-20-30 Introduction to Analysis (3,3,3) Interpolation by polynomials and piece-

4250-00 Introductory Statistics (3) 4250—

4520-00 Introductory Statistics (3) 4520—

4426 Numerical Solution to Equations and Numeri-

4210 Linear Algebra (3) Abstract vector spaces, linear

4102 Off-Campus Study (1-16) See page 160.

4120 Linear Algebra (3) Abstract vector spaces, linear

4150-60 Abstract Algebra (3,3) Equivalence rela-

4424 Numerical Linear Algebra (3) Review of vec-

4425 Numerical Methods for Ordinary Differential

4422 Numerical Solution to Equations and Numeri-

4440 Calculus of Finite Differences (3) Real difference

4610 Vector Analysis (3) Fundamental operations, basis

4260 Conformal Mapping, Integral Equations, and Fourier

4530 Numerical Methods for Ordinary Differential

4235 Numerical Methods for Ordinary Differential

4225 Numerical Solution to Equations and Numeri-

4224 Numerical Solution to Equations and Numeri-

4220 Linear Algebra (3) Abstract vector spaces, linear

4190 Studies in Mathematics (1-3) Open to superior

4180 Senior Topics (3) Topics vary. Assignments will include literature research and oral and written reports. May be repeated once for credit. Prereq: 3550-60, senior standing, and consent of instructor.

4170 Vector Analysis (3) Fundamental operations, basis

4160-20-30 Differential Equations (3,3,3) 4160—

4150-60 Abstract Algebra (3,3) Equivalence rela-

4140 Introduction to Linear Algebra (3) 4140—

4130 Elementary Number Theory (3) Divisibility; con-

4120 Linear Algebra (3) Abstract vector spaces, linear

4110-20-30 Introduction to Analysis (3,3,3) Real number

4100 College of Liberal Arts

Microbiology

192 College of Liberal Arts

Medieval Studies

See Cultural Studies.

Microbiology

Professors: A. Brown (Head), Ph.D. Chicago; R. W. Beck, Ph.D. Wisconsin; J. M. Becker, Ph.D. Cincinnati; R. J. C. Blake, Ph.D., M.D.; T. C. Moline, Ph.D.; J. M. Woodward (Emeritus), Ph.D. Kansas; C. J. Wust, Ph.D. Indiana.

Associate Professors: A. Benis, Ph.D. Cornell; D. A. Brian, Ph.D., D.V.M., Ph.D. Michigan State; G. S. Sayler, Ph.D. Idaho.

Assistant Professors: R. N. Moore, Ph.D. Texas-Austin; K. M. Sirotkin, Ph.D. Michigan State; G. Stacey, Ph.D. Texas-Austin.

UNDERGRADUATE

B.A. Major: Consists of Biology 3110, 3120, Biochemistry 4110, 4120, Microbiology 3200, 3519, 3700, and 16 hours of upper-division courses in biology of which 4 hours must be labora-

tories. Prerequisites to the major are Biology 1210-20-30 and Chemistry 1110-20-30. Corequisites are Chemistry 3211-21, 3219-29-39; and Mathematics 1110-31 or 1540-50-60. Students intending to do post-graduate work should take a cal-

culus sequence and Physics 2210-20-30.

Microbiology (684)

2110 Microbiology for Student Nurses (4) Introductory course offered only to student nurses in diploma pro-

gram of hospitals affiliated with The University of Tennessee. Microbiological principles as they apply to nursing care of the patient, epidemiology of infec-

tion, and principles of immunity and allergy. 3 hours and 1 lab.

2110 General Microbiology (3) General properties of bacteria, viruses, and fungi including study of path-

ogenesis, immunity, and applied bacteriology. The combination of 2910-2911 or 2910-2919 meets the needs of programs that require a one-quarter course in microbiology. Coreq: 2911 or 2919.

2111 Microbes in Action (1) Discussions, demon-

strations, and films relating to the subject matter of 2910. Students do not receive credit for 2911 if 2911 has been taken. Prereq or coreq: 2910.

2119 Laboratory in General Microbiology (2) Labo-

yratory exercises designed to accompany 2910. Open only to students in the College of Nursing, prevet-

erinary medicine, food technology, food science, nutrition, or food systems administration. Others by consent of instructor. Students do not receive credit for 2919 if 2911 has been taken. Prereq or coreq: 2910.

2200 Medical Microbiology (3) Disease producing microorganisms including bacteria, viruses, and fungi; basic principles and mechanisms involved in resist-

ance to infectious disease. Prereq: Chemistry 1110-

20-30, Biology 3120; coreq: 3519, Biology 3110.

3519 Introductory Microbiology Laboratory (2) Basic techniques for examination, cultivation, and identification of microorganisms. Coreq: 3200 or 3700.

3700 Biology of Microorganisms (3) Structure and behavior of prokaryotic microorganisms. Physiology and genetics of bacteria. Fundamentals of viral struc-

ture, growth, and replication. Effects of antibiotics of microorganisms in environment. Prereq: Chemistry

1110-20-30, Biology 3120; coreq: 3519, Biology 3110.

3610 Food Bacteriology (3) Standard methods for
examination, cultivation, and identification of bacteria associated with food fermentation and food spoilage. Prereq: 2910 or 3700 and Chemistry 2230 or 3211. 2 hours and 2 labs.

4319 Medical Microbiology Laboratory (2) Laboratory methods for examination, cultivation, and identification of bacteria associated with food fermentation and food spoilage. Prereq: 2919 or 3519; coreq: 3519.

4320 Molecular Virology (3) Molecular aspects of the replication, assembly, and expression of viruses, with emphasis on bacteriophage. Prereq: 3700.

4430 Medical Virology (3) General virology with emphasis on medical aspects. Prereq: 3700.

4439 Medical Virology Laboratory (2) Laboratory procedures for isolation, handling and culturing of animal viruses. Prereq: 3519; coreq: 4430.

4909 Laboratory Problems in Microbiology (3-6) Involvement in research program of a faculty member through independent study projects. Consent of individual faculty member required. Not more than 3 hours may be used towards a major in microbiology. May be repeated. Maximum credit 12 hrs.

4910 Seminar in Microbiology (1) May not be applied towards a major in microbiology. Prereq: Senior standing; consent of instructor. S/NCG.

GRADUATE
Consult the Graduate Catalog for listing of graduate level courses.

Medical Technology (669)
Courses in this major are open only to qualified students who have completed the first three years of the Medical Technology Curriculum, described on page 152, and who have been approved by the Pre-Medical Advisory Committee.

4011-12 Microbiology (6,6) Laboratory work in bacteriology, mycology, and parasitology. Emphasis on pathogenic bacteria and fungi, their sources, methods of culture, techniques of identification, and evaluation of antibiotic sensitivity. Gross and qualitative chemical examination of body fluids and methods of identification of protozoa and helminth parasites of man.

4021-22 Clinical Chemistry (6,6) Clinical aspects of biochemistry, including overview of principles and instrumentation with emphasis on practical laboratory application of analytical procedures, specimen collection and handling, significance of results, and quality assurance. Includes blood gas analysis, including radimmunocassay, and analysis of blood and other body fluids for enzymes, hormones, and other constituents of clinical interest, utilizing both automated and manual techniques.

4031-32 Hematology and Clinical Microscopy (6,6) Principles, theories, and instrumentation related to the qualitative and quantitative evaluation of cellular elements of blood and other body fluids; factors of hemostasis, quantitative chemical analysis of urine, and renal function studies. Emphasis is placed on microscopic identification and correlation of laboratory data.


4043 Clinical Serology and Immunology (3) Performance and interpretation of broad range of clinical serological and immunological procedures with emphasis on principles and clinical correlation. Formal lecture series included.


4060 Histology (1) Overview of techniques of preparation of tissue for microscopic evaluation and role of histopathology in clinical diagnosis.

4071 Orientation and Basic Techniques (1) Designed to facilitate transfer of students from campus to hospital clinical and diagnostic laboratory. Introduction to medical terminology, ethics, and health team concept. Orientation to basic techniques of methods of study include procedures for collection and handling of specimens, principles of operation of many laboratory instruments, review of laboratory math, and introduction to quality control procedures. Portions of course extend over entire clinical year.

4072 Principles of Supervision and Education in Medical Technology (1) Seminars in basic principles of management, supervision, and education techniques and methodologies. Comprehensive examination covers entire course.

Music (698)

Professors:
J. J. Meacham (Head), M.M. Northwestern; J. P. Brock, M.M. Alabama; W. J. Carter (Emeritus), M.M. Florida; H. M. Eastman; N. M. Houston; F. P. Combs, M.A. Missouri; G. F. DeVine, Diploma, Schurz (Chicago); W. J. Dorn, M.A. Columbia; H. W. Fred, Ph.D. North Carolina; A. G. Holford (Emeritus), M.M. Northwestern; C. R. Huber, Ph.D. North Carolina; D. M. Pederson, Ph.D. Iowa; W. J. Starr (Emeritus), M.M. Eastman, D. Van Vactor (Emeritus), M.M. Northwestern.

Associate Professors:

Assistant Professors:

Instructors:
C. F. Leach, M.M. New Mexico.

The Department of Music offers curricula leading to the Bachelor of Music degree, which is designed to prepare students for graduate study and for professional positions, and the Bachelor of Arts degree with a major and minor in Music, designed for those students who have a strong interest in music, but desire a comprehensive liberal studies program. Information regarding requirements for the B.M. degree may be found on page 155.

B.A. Degree/Music Requirements:
Prerequisites: Hours
Music Theory 1111-21-31 9
Music Ear Training 1133-23-33 9
Applied Study (1000 level) 15
Courses toward the major:
Music Theory 2111-21-31 9
Music History 2300-20-30-40 9
Applied Study (2000 and above, maximum 2 hrs. per quarter) 9-12
Ensemble 3
Courses selected from Aesthetics of Music 5400; Recital 3000; Independent Study 4110; 4200; Lecture recital 5054 6-15
Solo Class (required when taking 2 lessons per week) 6-15
Prerequisites 0
Total Hours: 60-66

Minor:
(a) Concentration in Applied Music—consists of 24 hours in courses interested in music, but desire a comprehensive liberal studies program. Information regarding requirements for the B.M. degree may be found on page 155.

Graduate Study for Music:

College of Liberal Arts 193
lent and three quarters of applied music study at the 1500-1599 levels.

(b) Concentration in Music History and Literature—consists of 24 hours in courses numbered 2000 and above, distributed as follows: Music 2300, 12 hours in Music History and Literature courses and 9 hours in music electives. Prerequisites are Music 1000 or equivalent and three quarters of applied music study at the 1500-1599 levels. The Bachelor of Science in Music Education, designed for preparation for institutional teaching, is administered by the Department of Music Education. See page 98 for requirements.

GENERAL

1000 Fundamentals of Music Theory (3) Theory and practice of basic elements of music.
1010-20-30 Class Piano (1,1,1) For music and music education majors only. Must be taken in sequence. Course may be waived by successful completion of Piano Competency Examination. Waived courses must be substituted with an equivalent number of quarters of study in Music 1580 or above.
1015 Class Voice (1) Development of basic vocal skills. May be repeated for credit.
1025 Class Voice (1) Prereq: Consent of instructor. May be repeated for credit.
1080 Studio Guitar Styles (2) Introductory survey of guitar styles in jazz, rock, country, and blues idioms. Prereq: consent of instructor.
1085-95 Class Guitar (1,1) Must be taken in sequence. Prereq: Consent of instructor.
1416 Music Performance (3) An individualized course of study combining participation in a University musical ensemble with collateral study of an instrument or voice. One hour of applied study (Music 1500-1599) and ensemble rehearsals as scheduled, (Music 3600-3699). May be repeated once for credit. Requires payment of Applied Music fee. For non-majors only. Prereq: Performing ability on an instrument or voice.
2000 Solo Class (0)
2010 Introduction to Musical Theatre Technology (3) Stage technology unique to lyric stage.
2020 Vocal Techniques in Popular Music (1) Development of performance techniques in Broadway and other contemporary music styles. Prereq: Consent of instructor. May be repeated for credit.
2040-50-60 Class Piano (1,1,1) Must be taken in sequence. Music and Music Education students may waive courses by successful completion of piano competency examination, but waived courses must be substituted with an equivalent number of quarters of study in Music 1580 or above.
2055-65-75 Dictation for Singers (2,2,2) Sounds by phonic symbols. Opera and art songs used for examples. Performance practice.
2071-81-91 Church Service Playing I (1,1,1) Prac- tical skills applicable to the use of the organ in church services, including keyboard harmony, improvisation, hymn playing, and accompanying on the organ. Prereq: 1015 and 120 hours in organ.
2199 Techniques of Sound Recording (3) Theory and applications of tape recording. Topics include room acoustics, microphones, processing, noise reduction, mixing, editing, dubbing, and recorder maintenance.
2810-30-30 Jazz Piano (1,1,1) Harmonic language of jazz in relation to chord symbols, formulae for voicing chords, chord progressions, and fundamental melody-playing and improvisation for right hand. Must be taken in sequence. Prereq: 1010-20.
3000 Junior Recital (0)
3012-23-32 Song Literature (2,2,2) Study of literature from 1750 to present with emphasis on performance practices. 3012—Classical and Romantic German art song; 3022—French and Russian songs; 3032—Late German and contemporary songs. Prereq: 2075 and consent of instructor.
3014-24 Woodwind Literature (2,2) Prereq: Consent of instructor.
3015 Percussion Literature (1) Prereq: Consent of instructor.
3016 String Literature (2) May be repeated. Maximum credit 6 hrs. Prereq: Consent of instructor.
3018 Introduction to Styles in Jazz Drumming (2) Examination of major composers and performers who have contributed significantly to creation of principal styles of jazz drumming.
3052-53 Jazz Improvisation (3,3) Study and application of principles of improvisation, including nomenclature, chord progressions, chord scales, patterns, melodic development, and free form devices. Prereq: 1141.
3044-54 Brass Literature (2,2) Prereq: Consent of instructor.
3070 Opera Production (1-3) Supervised work on opera productions. May be repeated for credit. Prereq: Consent of instructor.
3071-81-91 Church Service Playing II (1,1,1) Continuation of Music 2071-81-91, which is prereq.
3096 Women in Music (3) The history of women in music from the Middle Ages to present as composers, performers, educators and patrons. (Same as Women’s Studies 3096).
4000 Senior Recital (0)
4002 Suzuki Piano Method (2) Study of the psychol- ogy, procedures, and literature of the Suzuki piano method. Prereq: Consent of instructor.
4009-19-29 Talent Education Program of S. Suzuki (2,2,2) May be repeated. Maximum credit 12 hours. Prereq: Consent of instructor.
4010-20-30 Piano Techniques (1,1,1) Problems of piano playing; development of piano technique; style and interpretation; program building. Prereq: Consent of instructor.
4022-32-42 Principles of Vocal Pedagogy (1,1,1) Examination and evaluation of concepts and approaches to teaching singing (past and present) and related teaching materials. Collateral laboratory experiences accompany the study. Prereq: Consent of instructor.
4036-37-38 Advanced Piano Literature (2,2,2) Piano music from preclassical period to present. Prereq: Consent of instructor.
4041 Styles in Opera Acting (3) Study and practice of styles in opera acting based on historical and national characteristics. Prereq: 3015 or consent of instructor.
4045 Projects in Opera Theatre (1-3) May be repeated for credit. Consent of instructor.
4050 Advanced Instrumental Conducting (3) Development of knowledge and skills in instrumental conducting. Technical mastery of composers and relationship of different styles to the conductor’s art; musical analysis and practice in conducting. Prereq: Music Ed. 4430 or equivalent.
4056-57-58 Elementary and Intermediate Piano Ped- agogy (2,2,2) Examination and study of piano methods and materials designed for teaching precollege level students. Prereq: Consent of instructor.
4060 Advanced Choral Conducting I (3) Develop- ment of refinement of conducting techniques; including chant and changing meters. Prereq: Music Ed. 4510 or equivalent.
4074 Music in Christian Worship (3) History and phi- losophy of church music; liturgies and liturgical music; music in non-liturgical worship. Prereq: Consent of instructor.
4084 Church Music Methods and Administration (3) Prereq: Consent of instructor.
4085 Harpsichord Techniques (1) Technique, litera- ture, performance practice, continuo playing, and basic tuning and maintenance. Requires a thorough key- board background. Maximum credit 3 hrs. Prereq: Consent of instructor.
4091 Special Topics in Performance (1-3) Prereq: Consent of department head. May be repeated. Max- imum credit 6 hours.
4174 Hymnology (3) A survey of Christian hymns from Biblical times to the present.
4400 Jazz Directing (1) Rehearsal techniques of jazz ensembles; special conducting techniques, repertoire, library systems, programming, and supervised laboratory experience in rehearsing university jazz ensembles. Prereq: Enrollment in applied music with jazz emphasis or consent of instructor.
4402 Church Music Methods (1) Methods and materials relati- ng to teaching of jazz as an aspect of church music. Prereq: Enrollment in applied music with jazz emphasis or consent of instructor.
4405 Advanced Improvisation (2) Emphasis on further development of individual skills and solving individual problems in jazz improvisation. Prereq: Music 3052-53.
MUSIC THEORY AND COMPOSITION

1111-21-31 Theory (3,3,3) Materials of music with emphasis on literature of Baroque, Classic, and Roman- tic periods. Exercises in writing and analysis. Must be taken in sequence.
1113-23-33 Sight Singing and Ear Training (1,1,1) Should be taken concurrently with 1111-21-31. Must be taken in sequence. 2 hours per week.
1141 Jazz Theory (2) Fundamentals of the jazz lan- guage, including terminology, chord symbols, chord/ scales, and chord progressions. Prereq: 1111 or con- sent of instructor.
1199 Fundamentals of Music Composition (3) Melodic invention in simple forms. May be repeated. Maxi- mum credit 4 hours. Prereq: Consent of instructor.
1400 Analysis of Jazz Styles (2) Individual improvisatory styles through analysis of their transcribed solos. Training and function of ear in music. Transcription of solos from recordings and preparation of analy- ses. Prereq: Music 1141.
2111-21-31 Theory II (3,3,3) Materials of music with emphasis on literature of Romantic and contempo- rary periods. Exercises in writing and analysis. Must be taken in sequence. Prereq: 1113 or 1138 or con- sent of instructor.
2113-23-33 Advanced Ear Training (1,1,1) Should be taken concurrently with 2111-21-31. Must be taken in sequence. 2 hours per week.
3041 Keyboard Harmony (1) Melody harmonization, figured bass realization, and improvisation. Prereq: 1131-33 and keyboard proficiency at the 2000 level.
3092-33-34 Sight Reading at the Piano (1,1,1) Prereq: Consent of instructor.
3111 Modal Counterpoint (3) Counterpoint tech- niques of 15th century with emphasis on the style of Palestrina. Prereq: 2131.
3112 Instrumentation (3) Basic techniques in scoring for voices; brass, woodwind, and string choirs; and percussion. Prereq: 2131.
3113 Analysis I (3) Study and practice in analysis of
structures of music from smallest structural units to large compound forms. Emphasis on macroanalytic techniques. Prereq: 2131.

3121 Tonal Counterpoint (3) Contrapuntal techniques of 16th century with emphasis on works of J. S. Bach. Prereq: 2131.

3122 Orchestration (3) Advanced techniques in instrumental writing with emphasis on scoring for the concert orchestra. Prereq: 3112 or consent of instructor.

3123 Analysis I (3) Continuation of Analysis I with emphasis on micro and linear analytic techniques. Prereq: 3113.

3131 Fugue (3) Contrapuntal techniques of 18th century with emphasis on the fugal works of J. S. Bach. Prereq: 3121.

4100 Independent Study in Music Theory (1-3) May be repeated for credit. Prereq: Consent of department head.

4101 Foreign Study (1-16) See page 160.

4113 Pedagogy of Music Theory (3) Techniques, methods and materials involved in college-level theory programs. Prereq: Consent of instructor.

4117 Choral Arranging (3) Analysis of scores and writing of arrangements for men's, women's and mixed choirs. Prereq: 3112 or consent of instructor.

4124 Marching Band Arranging (3) Study and application of techniques employed in scoring for marching band. Prereq: 3112 or equivalent.

4134 Concert Band Arranging (3) Study and application of techniques employed in scoring for concert band. Prereq: 3112 or equivalent.

4150 Survey of Music Theory (3) Theory of music and its relation to the music of other periods and cultures. Prereq: 1100-1120.

4850 Jazz Composition (2) Prereq: Music 4870-75.

4870-75 Stage Band Arranging (2,3) Analysis of scores and scoring for the stage band. Prereq: 3112 and consent of instructor. Must be taken in sequence.

4875 Music History and Literature (1-3) May be repeated for credit. Prereq: Consent of instructor.

4900 Independent Study in Music History and Literature (1-3) May be repeated for credit. Prereq: Consent of department head.

4205 Survey of Music History (3) History of music with emphasis on genres, style changes, and cultural forces. Covers the Western European tradition from 600 to 1900. Recommended as a review course for graduate students. Prereq: Consent of instructor.

4211 Music of the United States (3) U.S. music from colonial times to present. Emphasis on 20th century. Includes both folk and art music traditions. Recommended: Music 1210.


4250 Orchestration (3) Advanced techniques in instrumental music. Prereq: 3112 or equivalent.

3950 Evolution of Jazz (3) Study of origin, development, and styles of jazz music and its exponents.


3950 Evolution of Jazz (3) Study of origin, development, and styles of jazz music and its exponents.

1900-1960. Recommended as a review course for graduate students. Prereq: Consent of instructor.

4035 Keyboard Literature Before 1750 (2) A survey of music for harpsichord and other keyboard instruments from the Elizabethan period through J. S. Bach.

4100 Independent Study in Music Theory (1-3) May be repeated for credit. Prereq: Consent of department head.

4205 Survey of Music History (3) History of music with emphasis on genres, style changes, and cultural forces. Covers the Western European tradition from 600 to 1900. Recommended as a review course for graduate students. Prereq: Consent of instructor.

4241 Music of the United States (3) U.S. music from colonial times to present. Emphasis on 20th century. Includes both folk and art music traditions. Recommended: Music 1210.


4280 The Mass to 1600 (3) Brief consideration of Catholic liturgy from the late Middle Ages through Renaissance. Special consideration of liturgical reform in the 16th century.

4290 Gregorian Chant (3) Chants of Latin rite. Masses and Offices examined as functional music as well as by type.


4370-80-90 Baroque Composers (2,2,2) May be repeated for credit. Prereq: Consent of instructor.

4380-90-100 18th Century (2,2,2) May be repeated for credit. Prereq: Consent of instructor.

4390-100-110-120 19th Century (2,2,2,2) May be repeated for credit. Prereq: Consent of instructor.

4400-100-110-120 20th Century (2,2,2,2) May be repeated for credit. Prereq: Consent of instructor.

4420-30 Works of Chopin (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4430-40 Works of Mozart (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4450-60 Works of Beethoven (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4470-80 Works of Wagner (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4490-10 Works of Mahler (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4500-10 Works of Stravinsky (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4520-30 Works of Ravel (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4540-50 Works ofRespighi (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4560-70 Works of Prokofiev (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4580-90 Works of Schoenberg (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4600-10 Works of Shostakovich (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4620-30 Works of Bartok (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4640-50 Works of Milhaud (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4660-70 Works of Hindemith (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4680-90 Works of Stravinsky (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4700-10 Works of Schoenberg (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4720-30 Works of Shostakovich (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4740-50 Works of Milhaud (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4760-70 Works of Hindemith (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4780-90 Works of Stravinsky (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4800-10 Works of Shostakovich (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4820-30 Works of Milhaud (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4840-50 Works of Hindemith (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4860-70 Works of Stravinsky (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4880-90 Works of Schubert (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.

4900-10 Works of Brahms (3,3) Detailed examination of operas, oratorios, cantatas, and symphonies.
ENSEMBLES

Ensemble participation during each quarter of residence is required of all students studying applied music. String, woodwind, brass, and percussion students must meet the following ensemble requirements: (1) string students must participate in orchestra each quarter; (2) woodwind, brass, and percussion students must acquire a minimum of six credits in any of the following ensembles: marching band, concert band, campus band, symphony orchestra, jazz ensemble; (3) voice students must acquire a minimum of six credits in any of the following ensembles: Concert Choir, Chamber Singers, University Chorus, Women’s Chorus.

A student’s preference for musical organization will be honored whenever possible, but factors considered in making the assignment will include playing ability, specific needs of various organizations, and previous performance experience at the University.

3600-5600 Chamber Music Ensemble (1,1) May be repeated for credit. Maximum 12 credit hours.
3601-6601 Woodwind Choir (1,1) May be repeated for credit.
3602-6602 Brass Choir (1,1) May be repeated for credit.
3603-6603 Small Jazz Ensembles (1,1) May be repeated for credit. Maximum 12 credit hours.
3604-6604 Jazz Ensemble (1,1) May be repeated for credit.
3605 Studio Orchestra (1) May be repeated. Maximum 12 credit hours.
3606-6606 Trombone Choir (1) May be repeated for credit.
3607 Tuba Ensemble (1) May be repeated for credit.
3610-6610 Percussion Ensemble (1,1) May be repeated for credit.
3611-6611 Marimba Choir (1) May be repeated for credit.
3612-6612 Baroque Ensemble (1,1) May be repeated for credit.
3620-6620 UT Singers (1,1) May be repeated for credit.
3630-6630 Chamber Singers (1,1) May be repeated for credit.
3632-6632 Collegium (1,1) May be repeated for credit.
3634-6634 Saxophone Choir (1,1) May be repeated for credit.
3640-6640 Opera Theatre (1) May be repeated for credit.
3642-6642 Opera Workshop (1,1) May be repeated for credit.
3650-6650 Concert Band (1,1) May be repeated for credit.
3652-6652 Campus Band (1,1) May be repeated for credit.
3654-6654 Varsity Band (1,1) May be repeated for credit.
3656-5656 Laboratory Band (1,1) May be repeated for credit.
3657-5657 Marching Band (1,1) May be repeated for credit.
3670-5670 Symphony Orchestra (1,1) May be repeated for credit.
3680-5680 Concert Choir (1,1) May be repeated for credit.
3682-5682 University Chorus (1,1) May be repeated for credit.
3687-5687 Women’s Chorus (1,1) May be repeated for credit.
3699-5699 Accompanying (1,1) May be repeated for credit.

GRADUATE

The Department of Music offers the Master of Music degree in performance, composition, music theory, choral conducting, instrumental conducting, string pedagogy, and the Master of Arts degree in musicology and music theory. See the Graduate Catalog for admission and degree requirements, and for graduate course listings.

Organizational Psychology Program

See Graduate School.

Philosophy (745)

Professors:
J. W. Davis (Head), Ph.D. Emory; R. E. Aquila, Ph.D. Northwestern; G. G. Brekert, Ph.D. D. L. B. Cedik, Ph.D. Nebraska; R. B. Edwards, Ph.D. Emory; G. C. Graber, Ph.D. Michigan; B. C. Postow, Ph.D. Yale; D. Van de Vate, Ph.D. Yale.

Associate Professors:
J. O. Bennett, Ph.D. Tulane; S. M. Cohen, Ph.D. Northwestern; G. G. Brenkert, Ph.D. L. B. J. W. Davis (Head), Ph.D. Emory; R. E. Aquila, Ph.D. Emory; G. C. Graber, Ph.D. Michigan; B. C. Postow, Ph.D. Yale; D. Van de Vate, Ph.D. Yale.

Assistant Professors:
H. P. Hamlin, Ph.D. Georgia; E. R. Jones III, Ph.D. Chicago; M. Lavin, Ph.D. Stanford.

Philosophy seeks to understand humans, the world, their relations. It involves (1) use of logical and scientific methods, (2) appreciation of all values, (3) history of ideas, (4) philosophical systems.

Philosophy is an appropriate major for students wishing a broad education and for those students preparing for careers as writers (whether journalistic or literary), lawyers, ministers, or teachers, or for positions in various types of political and government service or for non-technical positions in business or industry.

A major in philosophy implies a balanced program in the humanities, natural and social sciences. Graduate students should read French or German, preferably both; other ancient or modern languages are useful and necessary for some advanced work.

UNDERGRADUATE

B.A. Major: Majors’ programs must include: 1. at least one prerequisite course in logic, normally 1710 or 1810; 2. at least one course in ethical theory, either 2310 or 4510; 3. at least three courses in the history of philosophy, including at least one course in ancient philosophy, normally 3111, and at least one course in modern philosophy, normally 3131. Majors’ programs must include 36 hours in courses numbered 2000 and above. Majors should discuss their programs with a member of the Philosophy faculty.

Minor: 24 hours in courses numbered 2000 and above. It is suggested that minors discuss their programs with a member of the Philosophy faculty.

1510 Introduction to Philosophy: Human Nature and Values (4) E.
1511 The Human Condition: Value and Reality (4) E.
1520 Introduction to Philosophy: Consciousness and Reality (4) May be taken before 1510. E.
1600 Topics in Philosophy (4) May be repeated once for credit.
1611 Foundations of Western Thought: Antiquity through 1500 (4) Plato, Late Antiquity and the Medieval period.
1621 Foundations of Western Thought: Early Twentieth Century (4) Development of Rationalist and Empiricist thought, Nineteenth Century and early Twentieth Century philosophy. May be taken before 1611.
1710 Informal Reasoning (4) Arguments, informal fallacies, uses of language, definitions.
1810 Introduction to Symbolic Logic (4) Formal deductive reasoning: propositions, arguments in natural language, symbolization, truth and validity, propositional logic, predicate logic.
2310 Elementary Ethics (4) Theories of ethical values. E.
2410 Art and Experiences (4) Introduction to various understandings of art.
2510 Elementary Logic (4) Introduction to deductive logic, including truth tables and elementary formal proofs. E.
2520 Elementary Logic (4) Inductive reasoning, elements of scientific method, and statistical inference.
3000 Special Topics (4) May be repeated for credit one time.
3100 Socrates (4) An attempt to delineate the philosophical tenets of the historical Socrates on the basis of the views of the character Socrates depicted in Plato’s dialogues, in Xenophon’s Socratic works, and in Aristophanes’ ‘The Clouds.
3111 Ancient Western Philosophy (4) E.
3121 Medieval Philosophy (4)
3131 Seventeenth- and Eighteenth-Century Philosophy (4)
3141 Nineteenth-Century Philosophy (4)
3151 Contemporary Philosophy (4) Survey of recent movements in philosophy.
3270 Russian Philosophical and Theological Thought (4) Same as Russian 3270 and Religious Studies 3270.
3311-12 American Philosophy (4,4) 3311—Colonial to late 19th century; 3312—Late 19th century to present.
3320 Philosophy of Law (4) Nature, sources, function of law.
The Concept of Woman (4) An inquiry into the nature of woman as it has been conceived by major western philosophers from Plato to Simone de Beauvoir. (Same as Women’s Studies 3430.)

3453 Philosophy of Feminism (4) An examination of various feminist theories and their application to social issues of concern to women today. (Same as Women’s Studies 3453.)


3510 Existentialism (4)

3550 Marxism as Philosophy (4)

3570 Philosophical Foundations of Democratic Society (4) Philosophical problems relating to nature and justification of the central values, principles, and concepts of democratic society.

3590 Business Ethics (4) Ethical problems as they confront both business as a social institution and individuals in business.

3605-06 Professional Responsibility (4,4) Critical analysis of selected classic texts from philosophy, religious studies, and social sciences dealing with the nature of responsibility, the nature of professionalism, and the application of concepts of responsibility to professional activity. Illustrations will be drawn from a variety of professional fields of practice. 3605—Application of the theoretical principles of an analytic skill developed in 3605 to selected case studies and other detailed descriptions of professional practice from the following professional fields: Engineering/Architecture; Business/Accounting; and at least one of (a) Law/Politics (b) Helping Professions (c) Human Services, Religious Ministry; (c) Teaching. (Same as Religious Studies 3605-06.)

3611 Medical Ethics (4) Explores ethical issues in medicine such as abortion, euthanasia, human experimentation, fairness in health care delivery and the doctor-patient relationship. (Same as Religious Studies 3611.)

3650 Philosophy and Religion in India (4) (Same as Religious Studies 3650.)

3660 Buddhist Philosophy and Religion (4) (Same as Religious Studies 3660.)

3671 Religion and Philosophy in China (4) (Same as Religious Studies 3671.)

3690 Philosophy of Religion (4) Analysis of basic issues of religion. (Same as Religious Studies 3690.)


3740-50 Conceptual History of Science (4,4) 3740—The Scientific Revolution: historical evolution of thought in astronomy, mechanics, and philosophy of nature up to Newton. 3750—The development and decline of Newtonian science: historical evolution of thought on the nature of matter and of light, and on that of life. Prereq: 8 hours of physical science or consent of instructor.

3770 Introduction to Philosophy of Science (4) Standard topics in philosophy of science: scientific method, nature of laws and theories, problem of induction, explanation, measurement. No background in logic is presupposed.

3810 Introductory Symbolic Logic (4) Techniques for formal analysis of deductive reasoning propositional logic and quantification theory.

3910 Contemporary Aesthetics (4) Philosophical discussion of contemporary art.

4000 Special Topics (4) A student- or instructor-initiated course offered at convenience of department. Subject matter to be determined by mutual consent of students and instructor with approval of department. Prerequisites to be determined by department. May be repeated for credit.

4010 Foreign Study (1-16) See page 160.

4020 Off-Campus Study (1-16) See page 160.

4103 Independent Study (1-16) See page 160.

4111-21 Modern Religious Philosophies (4,4) (Same as Religious Studies 4111-21.)

4200 Classical Indian Systems of Philosophy: The Moksha Tradition (4) (Same as Religious Studies 4200.)

4210 Intermediate Ethics (4) Topics in meta-ethics or ethics.

4370 Theoretical Issues in Medical Ethics (4) 4370—Prereq: 2310 or 3611 or consent of instructor. (Same as Religious Studies 4370.)

4410 Plato (4) Prereq: 8 hours of philosophy or consent of instructor.

4420 Aristotle (4) Prereq: 8 hours of philosophy or consent of instructor.

4450 Continental Rationalism (4) Prereq: 8 hours of philosophy or consent of instructor.

4480 British Empiricism (4) Prereq: 8 hours of philosophy or consent of instructor.

4470 Kant (4) Prereq: 8 hours of philosophy or consent of instructor.

4480 Advanced Topics in Existentialism and Phenomenology (4) Prereq: 8 hours of philosophy or consent of instructor.

4511 Advanced Topics in Logic (4) Prereq: Consent of instructor. May be repeated for credit.

4620 Philosophy of Mind (4) Problems of mind and body in relation to consciousness and personal identity. Prereq: 8 hours of philosophy or consent of instructor.

4630 Philosophy of Language (4) Prereq: 8 hours of philosophy or consent of instructor.

4710 Philosophy of Natural Science (4) Consideration of standard topics pertinent to natural science including reduction of theories and teleological explanation. Familiarity with symbolic logic is recommended. Prereq: 3770 or two years of natural science.

4720 Philosophy of Social Science (4) Examination of methods of inquiry and modes of explanation of social sciences. Prereq: 3770 or two years of social science.

4810 Metaphysics (4) Prereq: 8 hours of philosophy or consent of instructor.

GRADUATE
Consult the Graduate Catalog for listing of graduate level courses.

Physical Sciences

Major: None offered.

Minor: Consists of the following courses: Physics 2210-20-30, Chemistry 2140-49, 3211-21-31, 3219-29-39, and six hours chosen from Biochemistry 4210-20-30, Chemistry 3410-20-30, 4140-50, 4910-20-30, or Physics 3410-20-30, 3610-20-30. Prerequisites to this minor are Mathematics 1840-50 and Chemistry 1110-20-30. The physical sciences minor is designed particularly for students majoring in one of the biological sciences and/or preparing for graduate studies in a biological science or medicine.

Math 2840 is a prerequisite for these courses.

Physics and Astronomy

Professors:
W. M. Bugg (Head), Ph.D. Tennessee; G. F. Bercht1, Ph.D. Princeton; C. R. Bingham, Ph.D. Tennessee; W. E. Blass, Ph.D. Michigan State; M. A. Breazeale, Ph.D. Michigan State; T. A. Callcott, Ph.D. Purdue; L. G. Christophorou, Ph.D. Manchester (England); G. T. Condo, Ph.D. Illinois; C. J. Craven (Emeritus), Ph.D. North Carolina; W. E. Deeds, Ph.D. Ohio State; J. B. Dicks, Jr., Ph.D. Vanderbilt; K. Fox, Ph.D. Michigan; N. M. Gailar (Emeritus), Ph.D. Ohio State; S. Georgiou, Ph.D. Manchester (England); E. G. Harris1, Ph.D. Tennessee; E. L. Hart, Ph.D. Cornell; P. G. Huray, Ph.D. Tennessee; H. C. Leinbach1, Ph.D. Bristol (England); R. J. Lovell, Ph.D. Vanderbilt; G. D. Mahan2, Ph.D. University of California (Berkley); A. A. Mascon3, Ph.D. Tennessee; A. H. Nielsen (Emeritus), Ph.D. Michigan; F. E. Obershain, Jr., Ph.D. Pittsburgh; L. R. Painter, Ph.D. Tennessee; D. J. Pegg, Ph.D. New Hampshire; M. W. Peters (Emeritus), M. A. Tennessee; R. D. Present (Emeritus), Ph.D. Harvard; L. L. Riedinger, Ph.D. Vanderbilt; R. H. Ritchie, Ph.D. Tennessee; W. R. Rusk (Emeritus) M. S. Tennessee; H. C. Schweiker, Ph.D. Massachusetts Institute of Technology; L. A. Selin1, Ph.D. Chicago; C. C. Shih, Ph.D. Cornell; P. H. Stelson, Ph.D. Massachusetts Institute of Technology; J. R. Thompson, Ph.D. Duke; J. Q. Thomson, Ph.D. Illinois; T. A. Welton, Ph.D. Illinois; J. W. White (Emeritus), Ph.D. North Carolina.

Associate Professors:
J. E. Bray, Ph.D. Massachusetts Institute of Technology; R. W. Childers, Ph.D. Vanderbilt; J. R. Connel1, Ph.D. Colorado State; H. W. Crater2, Ph.D. Yale; K. E. Deemer, Ph.D. Rhode Island; C. P. Dunn1, Ph.D. Florida; S. B. Elston, Ph.D. Massachusetts; W. M. Farmer2, Ph.D. Tennessee; M. G. Guidy, Ph.D. Tennessee; T. H. Hand2, Ph.D. Rutgers; D. R. Keefe2, Ph.D. Florida; R. H. Kohl2, Ph.D. Ohio State; R. W. Lide, Ph.D. Michigan; S. Y. Sheeh, Ph.D. Maryland.

Assistant Professors:
M. J. Beling, Ph.D. Oregon; J. Burgdorfer, Ph.D. Freie Universitat Berlin; S. J. Daunt, Ph.D. Queens; R. DeSieno, Ph.D. Chicago; T. Ferrill, Ph.D. Clemson.

Research Associate Professors:
D. L. McConkie, Ph.D. Tennessee; S. E. Nave, Ph.D. Tennessee; J. H. Reynolds, Ph.D. Massachusetts Institute of Technology.

Research Assistant Professors:
S. Hunter, Ph.D. Finders (Australia); C. S., Ph.D. New York University; J. A. Vrba, Ph.D. Tennessee; R. J. Warmack, Ph.D. Tennessee.

Lecturers:
R. L. Becker, Ph.D. Yale; M. H. Garrabrant.

1 Alumni Distinctive Services Professor.
2 Honorary Institute, Tulafoma.
3 Distinguished Scientist, Science Alliance Center of Excellence.
4 Chancellor’s Research Scholar.

Astronomy (150)

1510-20-30 Introductory Astronomy (4,4,4) Introduces surveys of components of the universe. Members and components of solar system are introduced and discussed, incorporating results from interplanetary exploration. Stellar evolution is treated as a chain of events. Characteristics of galaxies are examined and evolution of universe is reviewed in light of modern cosmology. Students may be taken in sequence unless instructor consents otherwise. 4 hrs: lecture-demonstration. Only one of three sequences of Astronomy 1510-20-30, 1610-20-30, 2118-23-38 may be taken for credit.
1610-20-30 Introductory Astronomy with Laboratory (4,4,4) Sequence. Introduction to the study of the universe, surveying composition, structure and dynamics of universe. Members and components of solar system are introduced. Emphasis on development from interplanetary exploration. Stellar evolution is treated as a chain of events. Characteristics of galaxies and evolution of the universe are examined. Principles by which one interprets astronomical observations are reinforced by lab experience. Must be taken in sequence. 3 hrs. lecture, 2 hrs. lab. Only one of three courses Astronomy 1510-20-30, 1610-20-30, 2118-28-38 may be taken for credit.

2118-28-38 Hours: Honors: Introductory Astronomy (4,4,4) Introduction to astronomy and astrophysics. Concepts of interstellar medium formed from interstellar gas and dust; stellar evolution and properties of stars are studied. Galactic structure is examined and models of our galaxy are discussed. Observational technique and interpretation of underlying laws of physics are emphasized in accompanying labs. 3 hrs. lecture, 2 hrs. lab. Coreq: Math 1840 or 1550 or equivalent. Only one of three courses of Astronomy 1510-20-30, 1610-20-30, 2118-28-38 may be taken for credit.

410-20-30 Astrophysics (3,3,3) Physics of stars and interstellar matter, planets and interplanetary matter: atmospheres, interiors, and evolution; nebulae, quasars, pulsars, etc. Observational data and their development are studied. Prerequisites will be interdisciplinary. Acceptable for major credit in physics. Prereq: Physics 2330 and consent of instructor.

Physics (773) UNDERGRADUATE B.S. Major: The B.S. major in physics is designed to give the student a broad background in the fundamental principles of classical and modern physics and in the applications of these principles to the physical world. It is also preparation for graduate study in the research fields of modern physics. Basic physical principles with emphasis on architecture and engineering are developed. Course topics include statics, equilibrium, linear and angular motion, momentum, energy, force, work, and energy. 3 hrs. lecture, 2 hrs. lab. Coreq: Math 1840-50-60. Hours of lecture, 2 hours of lab.

1410-20-30 Nature of the Physical World (4,4,4) Introductory course in concepts and principles of physics which enables a student to establish a unified picture of the physical universe. In the first two terms the principles of mechanics, electricity, and wave motion are developed and applied to such varied fields as solar systems, atomic and molecular behavior, radiation, dynamics and forces of nature, and the earth's crust, and to stellar and galactic phenomena. In the third term these principles are applied in more detail to such diverse areas as electromagnetic, atmospheric and oceanic phenomena, drifting continents, and science and society. May be taken out of sequence only with consent of instructor. 4 hours including demonstration lab.

1450 Physics of Athletic Activity (4) Principles of physics, particularly mechanics and heat, are introduced. Discussion of these ideas will emphasize their role in physical activities, particularly sports-related. Course topics include statics, equilibrium, linear and angular motion, momentum, force, work, and energy. 3 hrs. lecture, 2 hrs. lab. Coreq: Math 1550 or Math 2860. 3 hrs. lecture, 2 hrs. lab. Coreq: Math 1840-50-60. Hours of lecture, 2 hours of lab.

2210-20-30 Elements of Physics (4,4,4) Mechanics, properties of fluids, heat, electricity and magnetism, sound waves. 2230—Optics, atomic and nuclear physics, radiation protection. Basic physical principles and applications required in pre-medical, pre-dental, pre-pharmacy, and pre-veterinary programs. Must be taken in sequence. Prereq: Math 1318-20 or 1318-28. 3 hrs. lecture, 2 hrs. lab. Coreq: Math 1550 or Math 1840-50 (or equivalent honors math sequence). 3 hrs. lecture and 3 hours of lab.

2240-50-60 Elements of Physics for Architects (4,4,4) Basic physical principles with emphasis on architectural applications. 2240—Statics, dynamics, principles of mechanics; coreq: Math 1550 or 1560, 2240—illumination and color, electricity and magnetism, alternative energy topics. Should be taken in sequence. 3 hrs. lecture, 3 hrs. lab.

2310-20-30 Fundamentals of Physics: Electricity, Waves and Optics, Modern Physics (3,3,3) Required of all engineering students. 2310—Electricity, 2320—Waves and Optics, 2330—Modern Physics. Must be taken in sequence. Prereq: 1310-20 or Basic Engineering 1310-20-30, or Physics 2510; coreq: Math 2840-50. 3 hrs. lecture, 2 hrs. laboratory and recitation per week.


2510 Mechanics (5) Statics, kinematics, Newton's laws, momentum, energy, rotational. 4 hours of lecture-discussion, 3 hours of laboratory-problem sessions. Prereq: Math 1840-50-60 or equivalent. 2510 satisfies prerequisite for Physics 2540-50. Physic majors should also take Physics 1330 as a prerequisite to the major.


3310-20 Electricity and Magnetism (3,3) 3310—Electrostatics in vacuum and material medium. 3320—Magnetic fields, geometrical magnetism, Maxwell's equations, electromagnetic waves. Must be taken in sequence. Prereq: 2320 and Math 2860.

3540 Electronics (3) Electronic components and circuits of interest to physicists. Prereq: 2310-20-30 or 2219-29-30 and calculus, 3 labs.

3630 Nuclear Electronics Laboratory (3) Elementary circuits of interest in nuclear instrumentation are designed and built, and their characteristics are tested as a function of various parameters. Prereq: 3610-20.

3710-20-30 Introduction to Atomic and Nuclear Physics (3,3,3) 3710—Special relativity and early quantum theory; 3720—Atomic and molecular physics; 3730—Nuclear physics; 3740—Nuclear Electronics Laboratory; Physics 2320 for 3710, 2338 or 3710 for 3720-30.

3900 Junior Seminar (1-3) Topic of current interest. May be repeated for credit with consent of department.

4010 Background of Physics (3) Survey of historical development and philosophical foundations of natural science. Classical theories of gravitation, electromagnetism, and relativity. Unifying mathematical principles underlying physical applications. Assignments will include readings from original papers, thought—provoking questions and problems of—magnitude calculations combining different fields of classical physics, and written report on some independent study. Prereq: Senior standing in physics.

4020 Forefront of Physics (3) Survey of modern developments in physics, including various forms of quantum mechanics, quantum electrodynamics, and recent theories of particles, fields and their interactions. Discussions of unsolved questions in physics, experiments of current interest, readings in recent literature, and applications in other fields, with final oral report and term paper. Prereq: 4010.

4050 Foundations of Physics (3) Selected topics from history and philosophy of classical and modern physics. Must be taken in sequence. Prereq: Math 1840-50 or equivalent. Coreq. for 4050: Math 3120. 4 hrs. recitation, 4 hrs. lab.


4140 Elementary Nuclear Physics (2) General properties of nuclei, two-nucleus systems, nuclear forces, nuclear models, nuclear reactions, nuclear distinguishability and beta-decay, nuclear spin and magnetism. Prereq: 3730 or 4120.

4160 Physical Acoustics (4) Considerations fundamental to the design, fabrication and measurement of any branch of acoustics; propagation of acoustic waves in the infrasonic, the audible, the ultrasonic, and the hypersonic frequency ranges. 3 hours and 1 lab. Prereq: 3110-30, 3220.

4230 Modern Optics (4,4) 4230-Geometrical optics: mathematical principles of reflection and refraction; laser light. 4240-Physical optics: mathematical principles of reflection and refraction; polarization; thick lenses, lens systems, ray tracing; interference and diffraction. 4270—Applications of modern optics. Prereq: 4140 or 4160 or 4230-40. 4 hrs. lecture-discussion and 3 hrs. lab.

4410 General Relativity (3) General properties of space-time. Emphasis on four-dimensional space-time and its description by the metric tensor. 4 hrs. lecture and 3 hrs. recitation. Prereq: Math 4550.

4710-30-40 General Relativity Theory (3,3,3) 4710-General theory of relativity: history, development and philosophical foundations of natural science. 4720—Special relativity and early quantum theory; 4730—Atomic and molecular physics; 4740—Nuclear physics; 4750—Nuclear Electronics Laboratory; Physics 2320 for 4710, 2338 or 3710 for 4720-30.

4990 Seminar (1-3) Topic of current interest. May be repeated for credit with consent of department.
matics of wave motion, superposition of waves; interfer-
tence. Electro- and Ferromagnetic effects; electrodynamics; conduction of electricity through gases; atomic and molecular spectroscopy, X-ray. Prereq or coreq: 3710-20-30. 3 labs.

4510-20-30 Atomic Physics Laboratory (3,3,3) Experiments in fundamental particle properties, photoelectric, conduction of electricity through gases; atomic and molecular spectroscopy, X-ray. Prereq or coreq: 3710-20-30. 3 labs.

4540-50 Experimental Nuclear and Radiation Physics (4,4,4) Interaction of charged particles and electromagnetic radiation with matter; theory and characteristics of various detectors; statistics of counting, nuclear properties. Experiments illustrate recent techniques for investigating the nucleus and nuclear radiation. 1 hours of lecture, 6 hours of lab. Prereq: 2330.

4580 Principles of Non-Destructive Testing (3) Detection and characterization of discontinuities in materials by non-destructive physical measurements. Ultrasonic, electromagnetic, holographic, and penetrating radiation techniques. Prereq: 2310-20-30 or consent of instructor. (Same as Engineering Science and Mechanics 4560.)

4590 Magnetic Induction Phenomena (3) Theory and application of magnetic induction phenomena. Includes non-destructive testing with eddy currents, induction heating, magnetic levitation, forming, pumping, and flow measurement. Includes lab. Prereq: 3230 or equivalent.

4600 Kinetic Theory (3) Emphasis is placed on transport properties. Includes discussion of scattering theory and the classical distribution functions. Prereq: 3230 or equivalent

4650 Statistical Mechanics (3) Elementary methods of statistical mechanics are applied to model systems to derive the thermodynamic relations. Classical and quantum distribution functions are discussed. It is recommended that 4640 and 4650 be taken in sequence. Prereq: 3230.

4680-70 Solid State Physics (3,3,3) 4680—Symmetry and crystal structure, lattice dynamic specific heat, 4670—Electron band theory, transport properties, optical properties. Must be taken in sequence. Prereq: 3230 or equivalent.

4710-20-30 Introduction to Health Physics (3,3,3) Radioactivity, interaction of electromagnetic radiation with matter, radiation quantities and units, point kernel and extended sources, X-rays and gamma rays, neutron activation, interaction of charged particles with matter, stopping power, range-energy relations, counting statistics, shielding, dosimetry, waste disposal, radiation protection, radiation biology, and ecology. Prereq: 3730.

4818-28-38 48 58-78 86-89 Honors: Research and Independent Study (1 hour each) Designed for excellent undergraduate majors. Provides opportunity for research and independent study with faculty guidance. Special consent of department required. Maximum credit 9 hours.

4900 Senior Seminar (1-3) Topic of current interest. May be repeated for credit with consent of department.

GRADUATE
General requirements for the master’s degree and doctoral program as well as course descriptions are found in the Graduat Catalog.

Political Science (801)

Professors: T. D. Unger (Head), Ph.D. Iowa; R. S. Avery (Emeritus), Ph.D. Northwestern; D. H. Carlisle, Ph.D. North Carolina; L. S. Greene (Emeritus), Ph.D. Wisconsin; A. H. Hopkins, Ph.D. Syracuse; V. R. Iredell, Ph.D. Chicago; W. Lyons, Ph.D. Oklahoma; R. D. Vanderbil, H. Phiaa, Ph.D. Utah; N. M. Robinson, Ph.D. Syracuse; T. A. Smith, Ph.D. Ohio State; O. H. Stephens, Jr., Ph.D. Johns Hopkins; D. M. Welborn, Ph.D. Texas.

Associate Professors: R. B. Cunningham, Ph.D. Indiana; J. W. Dodd, Ph.D. Tulane; G. C. Evans, Ph.D. Columbia; M. R. Fitzgerald, Ph.D. Oklahoma; P. K. Freeman, Ph.D. Wisconsin; R. D. Vanderbil, Ph.D. New York; L. L. Peterson, Ph.D. Yale; T. M. Simpson, III, Ph.D. Johns Hopkins.


+ Alumni Distinguished Service Professor.

BUREAU OF PUBLIC ADMINISTRATION
Professor: T. D. Unger (Director), Ph.D. Iowa.

Associate Professors: M. R. Fitzgerald, Ph.D. Oklahoma; P. K. Freeman, Ph.D. Wisconsin.

Assistant Professor: D. F. Olshfski, Ph.D. Temple.

Research Associate: S. Rechichar, M.P.A. Tennessee.

UNDERGRADUATE

A B.A. major consists of 40 hours that must be distributed as follows:

1. Eight hours at the 2000 level in political science.
2. Thirty-two hours in political science courses numbered 3000 and above. These 32 hours must include at least one course in each of four areas of the discipline: United States Government and Politics/Public Administration; Comparative Government and Politics; International Relations; and Political Theory and Methodology.

A minor consists of 24 hours that must be distributed as follows:

1. Eight hours at the 2000-level in political science or in political science courses not used for divisional distribution credit but included on the Social Science list.
2. Sixteen hours in political science courses numbered 3000 and above. Upper-division courses on the distribution list may be included.

Honors Course in Political Science: The Honors concentration encourages highly motivated students to obtain a superior liberal education and more rigorous preparation in the discipline. Admission is selective. The Honors concentration is usually a two-year program and consists of 56 hours, including:

1. Eight hours at the 2000 level in political science.
2. Forty-eight additional hours in political science courses including: (a) Political Science 3918-28-38 (b) Political Science 4918-28-38 (c) 24 additional hours numbered 3000 and above. These 48 hours must include at least one course in each of four areas of the discipline: United States Government and Politics/Public Administration; Comparative Government and Politics; International Relations; and Political Theory and Methodology.

To graduate with Honors in Political Science, the student must have a GPA of at least 3.3 in Political Science, and a cumulative GPA of at least 3.0.

Public Administration. See page 78 and page 159.

American Studies. See Cultural Studies.
Asian Studies. See Cultural Studies.
Latin American Studies. See Cultural Studies.
Russian and East European Studies. See Cultural Studies.

2020 Introduction to Political Science (4) A variety of the basic substantive concepts and concerns of political science.

2510-20 United States Government and Politics (4,4) 2510—Foundations: the Constitution, federalism, separation of powers, campaigns and elections, parties, interest groups, the media, public opinion. 2520—Institutions: executive, legislative, judiciary, and bureaucracy at national, state, and local levels.

2518-28 Honors: United States Government and Politics (4,4) Honors course designed for students of superior ability and interest. Entrance into 2518 requires a B average; selected entering freshmen will be accepted on the basis of placement scores and high school record. A grade of B in 2518 is necessary for entrance into 2528.

2530 Tennessee Government and Politics (4)

2550 Governments in Knox County (4) Analysis of political institutions and processes in Knox County.

United States Government and Politics/Public Administration

3110 Political Community (4) The course examines a variety of value systems and social and political structures related to political community.

3130 Popular Culture and American Politics (4) Popular culture as it relates to American politics and government focusing on the role of film, television, fiction, music, drama, art and sports.

3415 Law in American Society (4) Law as a process through which social problems are addressed in the United States. Examples are drawn from case law, legislation, and administrative regulation.

3545 United States Constitutional Law: Sources of Power and Restraint (4) Analysis of judicial review, constitutional powers of President and Congress, federalism, sources of regulatory authority, and constitutional protection of political rights. 2510-20 desirable as preceding courses.

3546 U.S. Constitutional Law: Civil Rights and Liberties (4) Emphasis on judicial interpretation of 14th Amendment, the equal protection clause of the 14th amendment and the right of privacy.

3547 U.S. Constitutional Law: The Criminal Process (4) The rights of the accused, convicted and incarcerated: search and seizure, right to counsel, self-incrimination, trial by jury, right to appeal, prisoners' rights, etc.

3555 Minority Group Politics in the United States (4) Content varies from quarter to quarter. May be repeated for credit with consent of department. (Same as Afro-American Studies 3555.)

3566 Introduction to Public Administration Organization and Management (4) Organization and decision-making theory, line and staff, policy processes, and public administration. 2510-20 desirable as preceding courses.


3720 State Government and Policy Making (4) Nature
and functions of the institutions of state government. State government's role in formulating, enacting, and implementing state policy.

3750 The Urban Policy (4) Analysis of political institutions and processes in metropolitan areas. (Same as Urban Studies 3750.)

3760 Urban Policy Process (4) Analysis of urban problems and policies in metropolitan areas.

3880 American Political Thought (4) Examination of role of selected political ideas, doctrines, and themes in America, emphasizing their development and relationships to diverse political interests.

4110 Law and the Administrative Process (4) Power of procedures of controls over administrators.

4553-36 Political Attitudes, Opinions, and Communication (4,4) Nature, development, formation, and distribution of politically relevant attitudes and opinions; role of leadership, persuasion, and communication in opinion-policy process.


4545 The Judicial Process (4) The study of courts as components of political systems, and public policy formulation through judicial decision making. 2510-20 desirable as preceding courses.

4550 Congress (4) Nature, functions, and processes of the U.S. Congress.

4575 Special Topics in United States Government and Politics (4) May be repeated to a maximum credit of 8 hours with consent of department.

4610 Budgetary Process (4) Fiscal planning, budget and expenditure processes in government, their policy and administrative implications.

4620 Public Personnel Administration (4) Development of the merit system in government, career systems, and administrative implications.

4740 Political Parties and Elections (4) Analysis of party systems and electoral process.

4750 Political Campaigns (4) Coverage includes all aspects of campaign process.

Comparative Government and Politics

3390 Contemporary Issues in American Public Policy (4) Examination of selected public policy issues confronting the nation, including the background, nature, and effects of present policies, and options for the future.

3805 Political Change in Developing Areas (4) Characteristics and problems of political changes with primary focus on developing areas.

3615-18 Dynamics of Black African Politics (4,4) (Same as Afro-American Studies 3615-16.)

3821 Government and Politics of the People's Republic of China (4) Examination of the Chinese political setting, political structures, participation and selected policy areas.

3825-26 Latin American Government and Politics (4,4) (Same as Latin American Studies 3825-26.)

3631-32 Government and Politics of the Soviet Union (4,4)

3635-36 Politics in Western Democracies (4,4) Political culture, patterns, and institutions of Western democratic systems.

3641 Government and Politics of Middle East and North Africa (4)

3795 Contemporary Middle East (4) (Same as History 3795.)

4000 Revolution (4) Examination of characteristics, theories, and consequences of revolution, with particular focus on left-wing revolutions and movements.

4065-56 Policy Making in Democracies (4,4) Comparative approach to theory and process of making public policies.

4875 Special Topics in Comparative Government and Politics (4) May be repeated for a maximum credit of 8 hours with consent of department.

International Relations

3701-02 Introduction to International Relations (4,4)

3701—Basic elements of international politics: major conflicts; problems of peace and security. 3702—Impact of population, resources and economic problems on international politics. International law and organizations particularly the U.N.

3712-22 U.S. Foreign Policy Process (4,4) Processes whereby U.S. foreign policies are made and implemented, focusing on interaction within federal bureaucracy and roles of the President, Congress, the press, and public opinion.

3790 Contemporary Diplomatic and Military Problems (4) Analysis of current international events.

3796 Contemporary Problems of Soviet Foreign Policy (4)

4711 International Law (4)

4727 Politics of Inter-American Relations (4) Analysis of selected theoretical and policy issues concerning international relations in the Americas with emphasis upon imperialism, intervention, and the Cuban revolution, nationalism, foreign assistance, trade, and economic integration. (Same as Latin American Studies 4727.)

Political Theory and Methodology

3900 Introduction to Political Analysis (4) Introduction to nature, character, and functions of research design, data collection, and statistical techniques used in study of politics.

3801 Studies in Ancient Political Thought (4) Classical Greek and Roman political thought.

3802 Studies in Medieval Political Thought (4) From Augustine to Luther: Emphasis on problems and theories of religion and politics.

3803 Studies in Early Modern Political Thought (4) Machiavelli through the Enlightenment.

3804 Studies in 19th- and 20th-Century Political Thought (4) Political theories of industrial and technological societies; 19th and 20th century.

4831-32 The Systematic Study of Politics (4,4) Scope, methods, and procedures of analysis in political science; intended primarily for seniors intending to pursue work in the scientific, professional, and college-level teaching areas of psychology. Prerequisites to the major include Psychology 1818, 1828, or 1838 and 1848; and two courses from 2520, 2528, or 2538. E are prerequisite to a major consisting of Psychology 3150, at least 4 hours of laboratory, field, or practicum courses, and 32 or more hours of upper-division psychology courses. (Concentration in Academic Psychology) Designed to prepare students for advanced work in the scientific, professional, and college-level teaching areas of psychology. Prerequisites to the major include Psychology 2500 and 2520, or 2528. E are prerequisite to a major consisting of Psychology 3150, at least 4 hours of laboratory, field, or practicum courses, and 32 or more hours of upper-division courses of which 12 hours must be in courses at the 4000 level. Minor: A minor in psychology shall consist of Psychology 2500 and 20 additional hours from 3000- and 4000-level courses.

2500 General Psychology (4) An introduction to psychology, with emphasis on the development, methods, and contributions of the major movements and ideas which define contemporary psychology.

2518-28 Honors General Psychology (3,3) First quarter an enriched survey of general psychology. Second quarter participation is psychological research, either individually or group arranged. Prereq for 251B: Minimum ACT Composite 25; GPA 3.2. Prereq for 2528: Admission by consent of department. 251B; 2528-W.

2520 Biological Foundations of Behavior (3) Survey of the biological foundations of behavior. Psychology 2500 recommended.

2530 Psychology as a Social Science (3) Introduction to individual behavior and experience in a social context. Psychology 2500 recommended.