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

The curriculum of the College of Liberal Arts reflects this widening concern with the life of the mind. It emphasizes the breadth of human knowledge, perceived not only in terms of the traditional categories of the humanities and the natural and social sciences, but also in broader perspectives which extend across academic fields and reach beyond the boundaries of a college of liberal arts. It also stresses depth of learning, thereby seeking to acquaint the student with the ritches of the intellectual process. Through a study of the liberal arts one thus learns to participate in an intellectual tradition which is independent of particular teachers and which guides one in the choice of subjects for investigation and in the interpretation of those subjects. With time the individual begins to apprehend the great outlines of knowledge, the principles upon which they rest, the scale of their parts, and their lights and shadows.

The central purposes of a liberal education include the encouragement of intellectual tolerance, a dedication to the quest for knowledge as a worthwhile goal in and of itself, and the cultivation of a responsible, creative individual mind. These qualities should enable one to develop through life an ability by reason and to express oneself clearly, an incentive to absorb emerging knowledge, and a competence to confront the uncertainties of human experience. For the student whose interests and talent lead into research, scholarship, and teaching, a liberal education provides an invaluable foundation. For the individual who enters business, industry, the professions, or government service, it furnishes a broadly useful and well-rounded educational background. For all it offers the opportunity to share in a rich intellectual heritage, in the adventures of the mind, and in the life of the educated imagination. A liberally educated person is identified not so much by specific knowledge as by quality of mind and by creative response to the challenges of the times.

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

Admission to the College
(See page 29.)

Programs of Study
Granting the broad, general goals of a liberal education, students come into the college with a wide variety of specific educational and vocational objectives. Recognizing this diversity, the college offers a number of different programs of study leading to the baccalaureate degree, and also several pre-professional curricula which prepare the student for advanced study but do not lead to a degree from this college.

Degrees Offered
(1) BACHELOR OF ARTS
The Bachelor of Arts is the basic liberal arts degree, representing the attainment of a broad knowledge of the arts and sciences as well as a comprehensive understanding of one or more areas of special interest. Four programs leading to this degree are open to the student:
(a) Basic Program—The program appropriate for most B.A. students, it is developed around the broad area requirements for the B.A. degree but permits the student to
(b) Individualized Program—Designed for students whose educational goals are best met
by a program tailored to their particular needs, it is similar to the Basic Program in broad area requirements but permits the student to develop an individual concentration incorporating work in two or more departments.
(c) College Scholars Program—Intended for a limited number of students who are especially highly qualified and motivated and who have been selected to undertake this honors-level program, the College Scholars Program permits the student maximum freedom to design a curriculum to meet particular interests and goals.
(d) Pre-Professional Program—The Pre-Professional Program is offered for those who wish to participate in one of the cooperative 3-1 curricula in the health sciences (medicine, dentistry, pharmacy, or medical technology). The student proceeds directly to specialized training in the chosen area after the third year of liberal arts study and offers the first year of professional study in lieu of a major concentration in the college in satisfying the requirements for the B.A. degree.
(2) BACHELOR OF FINE ARTS
The Bachelor of Fine Arts degree represents intensive study preparing students for graduate study and professional positions in art. The degree is offered with a major in studio art. Recommended course combinations for those who desire to concentrate in ceramics, communication design, drawing, painting, fiber-fabrics, inter-area, watercolor, printmaking, or sculpture are available in the art department.
(3) BACHELOR OF MUSIC
The program leading to the Bachelor of Music degree prepares students for graduate study and for positions in which a professional degree is required. The degree is offered with a major in music which has concentrations in music theory, composition, music history and literature, piano literature, and applied music (voice—organ—strings—woodwind, brass, and percussion instruments—multiple woodwind instruments, organ and church music, piano, studio music and jazz, Suzuki string pedagogy).
(4) BACHELOR OF SCIENCE IN CHEMISTRY
The Bachelor of Science in Chemistry is a professional degree designed in accordance
with standards set by the American Chemical Society 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. Students may elect either the four-year curriculum program or a five-year cooperative program in which they alternate a quarter of study with a quarter of work in a chemical industry, thus gaining seven-quarter-on-the-job experience while earning the degree.

Program Planning

Each student's academic program is highly individualistic, reflecting that person's special interests, goals, and aspirations. Usually it will reveal a growing intellectual sophistication and the development of particular motivations. On occasion, unfortunately, it gives indication of frustration and lack of clear direction. Viewed as a whole it may appear to be a miscellany of unrelated courses which were chosen almost capriciously; or it may be a carefully selected curriculum which the student brought together in a way which represented for that individual the most appropriate and effective way of attaining educational goals.

The importance of program planning can hardly be overstressed. A few students enter the college with very definite objectives in mind and their programs develop quite readily around these predetermined goals. Many, however, do not reach that stage of certainty until their academic careers are relatively far advanced. For these persons the exploration of possible directions and programs, in consultation with faculty advisers, is an important part of the educational process. It is essential for the student to develop their programs carefully and creatively in order that maximum flexibility in their ultimate decision making may be assured.

A basic decision, of course, is the degree to be sought. If it is one of the three professional degrees (Bachelor of Fine Arts, Bachelor of Music, or Bachelor of Science in Chemistry), the student's program will be somewhat circumscribed, for these degrees are necessarily more prescriptive than the general liberal arts degree. If the student chooses to work for the Bachelor of Arts degree, the three elements which make up the curricula leading to that degree will need to be kept in balance: the broad requirements in the Triad, the major area, and the elective courses which support and supplement the work in the first two categories. Most students find it desirable to lay a broad foundation by taking courses which will satisfy Triad requirements in the first two years, thus reserving most of the final years for in-depth study in the area of concentration. Elective courses may be taken at any time.

Advisers in the Liberal Arts Advising Center (220 Ayres Hall), in the various major departments, in the University Counseling Center, and elsewhere on campus are available to assist students with their program planning. In the final analysis, however, only the student can determine the program which will best satisfy particular needs.

Requirements for Degrees

Bachelor of Arts

As has already been stated, the general liberal arts degree is the Bachelor of Arts, and it is the appropriate objective for most students in the college. Requirements for this degree and the several curricular programs which lead to it will now be discussed in detail.

Note: Students are advised to consult the University's degree requirements as stated in the front section of this catalog as well as the requirements for the college or department.

GENERAL REQUIREMENTS

Each student seeking a Bachelor of Arts degree must develop a program which includes the following:

(1) A minimum of 180 credit hours;
(2) At least 60 credit hours in courses numbered 3000 or above;
(3) Appropriate work to satisfy the broad requirements of the Triad, counting no course for more than one Triad area (Basic Program, Individualized Program, and Pre-Professional Program only);
(4) A major consisting of at least 36 credit hours in courses numbered 2000 or above as specified by the department or program, and counting no course in this major which has been used for Triad credit. (A course which satisfies a Triad requirement may serve, however, as prerequisite or corequisite to a major.) A minimum grade of C must be earned in every course counted as part of a major.

Students graduating from other institutions must complete at least 12 credits at The University of Tennessee, Knoxville, in each major awarded on this campus.

Multiple Majors: After the general requirements described above have been satisfied, additional majors may be recorded on the transcript without regard to course overlap among majors or among these additional majors and Triad requirements. Students developing multiple majors must specifically declare this intent at the time they apply for graduation. Once a student has graduated, the establishment of additional majors becomes subject to University second-degree requirements.

Optional Minors: If desired, and at the time of applying 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 Triad requirements. Minors require a minimum of 24 credit hours in courses numbered 2000 or above. They are available in most departments or programs in which majors are offered and are available in the following:

- Biochemistry
- Physical Sciences
- Portuguese

Women's Studies

Minors may be developed in other colleges or schools of the University, but they must be approved by the dean of the school in which the minor is proposed as well as by the Assistant 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 21 hours of the following required courses: Accounting 2100, 2110, 2120; Economics and Statistics 2100, 2400. Also, 15 hours of upper-division business electives must be taken at UTK. Not more than six upper-division hours of accounting, economics, or statistics may be used for this minor. Students are responsible for meeting prerequisites listed for any upper-division courses taken in a particular concentration.

I. Basic Program

A. The Triad

Language, literature, and the arts; History and Society; Science and Mathematics

Language, literature, and the arts play a vital role in shaping human experience and perception. They give expression to human thought and feeling and give form and order to a sense of the world. The written and spoken word, the dramatic motion and gesture of theatre, film, and dance, the sensual structures which address the eye and ear in painting and sculpture, architecture, and music—all of these help to define what is human.

It is important that every student of liberal arts become acquainted with these modes of expression within this culture and through exposure to cultures that are foreign, distant, and strange. To know what one is not is essential for knowing what one is.

Although there is no formula for determining which disciplines, skills, and enjoyments are of primary or of secondary importance, the written and spoken word has a wider range of reference than any other human skill. A basic course in reading is thus a minimal condition for knowing how to think about and relate all other activities.

The study of history is an integral part of a liberal education. Because human beings build on their experience, a clear understanding of the present requires a historical perspective. Such perspective may be developed by a number of courses, including the traditional survey of western civilization or other broad surveys such as Asian history, Latin American history, history of the United States, and Afro-American history. More specialized courses in the history of particular segments of human experience, e.g., philosophy or religion, may also prove valuable.

A liberal education presupposes not only an awareness of the past but also a familiarity with contemporary social institutions, processes, and practices. From a wide variety of offerings in the social sciences the student may choose courses that will help them acquire that familiarity. Only by such knowledge can people of good will hope to maintain humane values in a world where industrialization, urbanization, and other dimensions of technological change challenge traditional patterns of individual and collective behavior.

Study of science and mathematics develops in the student an inquiring attitude toward the natural environment and confidence in the ability to understand scientific explanations of diverse phenomena. These ends may be realized through an understanding of the empirical and theoretical methods of inquiry and an awareness of the limitations of science and technology in solving problems. The student should attain a knowledge of the way in which the development of science and technology has affected the way of life, the development of philosophies, and the development of civilization.

Specific Requirements in the Triad

(1) Language, Literature, and the Arts

(a. Writing Proficiency

Each student is required to demonstrate ability to use the English language effectively and coherently in one of the following four ways:
(i) By completing nine credits in English writing courses in one of the following series: (1) English 1010 or 1011, 1020, and the credit test from 1031, 1032, or 1033. Students who complete 1020 with the grade of A have the additional option to satisfy the remaining credits in any 2000- or 3000-level writing course offered by the department. (2) English 1018, 1028, 1038. Students who obtain the grade of A or B in 1028 have the additional option, with permission, to satisfy the remaining three credits in any 2000- or 3000-level writing course offered by the department. (3) English 1431, 1441, 1451.

(ii) By earning a score of 4 or 5 on the College Board Advanced Placement Test in English; or, with special permission, by earning a score of 3 on that examination and completing one 2000-level course in English at The University of Tennessee, Knoxville, with a grade of B or better.

(iii) By passing (normally after completing one quarter of freshman English at UT) a proficiency examination in writing, administered by the Department of English in cooperation with the Committee on Writing Standards.

(iv) By completing the first five hours of freshman English followed by a minimum of six hours in courses which require substantial emphasis courses are identified by the Committee on Writing Standards; a list of those approved may be obtained in the office of the Department of English or the Liberal Arts Advising Center. Note: Students should normally take English in the first quarter of their registration and continue to take English or a writing-emphasis course in each succeeding quarter until this requirement is met.

(b) Literature, Foreign Language, and the Arts

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

(i) Eight hours of literature in foreign language in the 3000-level or above. Prerequisite to this option is intermediate-level competence in the language, demonstrated by a diagnostic (noncredit) or proficiency (credit) examination or by completion of the 2000-level sequence in that language.

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

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

Note: In options (i) and (ii), those who take the diagnostic examination will not receive credit toward graduation but will be exempted from the portion of the requirement not satisfied by the examination. Those who take proficiency examination may earn up to 16 hours of credit toward graduation for previous study of the language, in addition to the credit they earn for course work undertaken in the college. Normally two years of high school language study is regarded as equivalent to one year of college study. Students who have had four years of high school study of the same language should be able to satisfy the requirement for intermediate-level competence in either option by examination and those who have had less than four years of study may be able to satisfy a portion of the requirement in this way, thus reducing the time required to satisfy this requirement. Full credit toward graduation is given for any language study undertaken successfully in the college regardless of the amount of previous study of that language.

Students who have had less than two years of study of the same language in high school are admitted with an entrance deficiency. Satisfactory completion of the first quarter sequence of college level foreign language study, normally in the freshman year, is necessary to remove this deficiency.

(2) History and Society

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

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

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

(c) The remaining hours may be taken in either category (a) or (b).

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

(3) Science and Mathematics

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

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

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

(b) 16 hours drawn from additional courses in the biological and/or physical sciences or from designated courses in:

(iii) The history, philosophy, or social impact of science;

(iv) Mathematics and logic.

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

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

B. THE MAJOR

In many ways the most important part of each student's program is the major. For it is in this intensive study of one more or less limited field of knowledge that the individual begins to find a niche in the world of intellectual endeavor. The major may be drawn from the offerings of a single department or it may bring together related concerns of two or more departments. 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 or 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 advisers in each major department or area.

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

Majors available in the Basic Program:

- Anthropology
- Art
- Art History
- Audiology
- Biology
- Botany
- Chemistry
- Computer Science
- Cultural Studies
- Economics
- English
- French
- Geography
- Geology
- German
- Greek
- History
- Human Services
- Sociology
- Speech & Theatre
- Statistics
- Zoology

C. 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 in the Triad. This dimension of the student's experience in the University represents 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 the 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 satisfy the broad requirements of the Triad, just as do those in the Basic Program. The point at which the greatest degree of individualization takes place is at the area of concentration. Although the quantitative aspect of the area of concentration is the same 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 adviser, and submit it 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 students with less than 60 credit hours, and transfer students with less than 90 credit hours are invited each year to enter this distinguished honors curriculum. Selection is based on previous academic record, test scores, letters of recommendation, a written essay, and a personal interview. Admission is provisional for two quarters; continuation depends upon maintenance of a satisfactory record (normally 3.25 or above) and evidence of ongoing motivation and interest.

The College Scholars Program affords the highest degree of freedom to the student in developing a meaningful curriculum. Each program is worked out individually with a special adviser (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.

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

IV. Preparation for the Health Professions

Pre-Dental
Pre-Dental Hygiene
Pre-Medical
Pre-Medical Record Administration
Pre-Medical Technology
Pre-Nursing
Pre-Physical Therapy

Other Health Professions

Pre-health professional programs are available for students who plan a career in one of the pre-health professional programs—dental hygiene, medical record administration, cytotechnology, nursing, pharmacy, and physical therapy—after they have completed the courses necessary for professional study that can be completed through the Individual 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.

A Bachelor of Science in Dental Hygiene is granted by UTCHS upon completion of a program which includes 96 hours of prescribed courses in the College of Liberal Arts and six quarters at UTCHS. Students interested in the pre-dental hygiene program are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for more information. Bulletins describing the pre-dental hygiene program and requirements in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

Pre-MEDICAL PROGRAM

The college offers both three-year and four-year programs leading to the degree of Bachelor of Arts 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 135 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 180 or more credit hours while enrolled in the college, including a more than 45 hours in addition to the courses outlined 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. 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**

<table>
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<tr>
<td>English 1010-11</td>
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<tr>
<td>1020</td>
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<tr>
<td>1031 or 1032</td>
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<td>1033</td>
<td>9</td>
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<tr>
<td>Chemistry 1110-20-30</td>
<td>12</td>
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<tr>
<td>Math 1540-50</td>
<td>5</td>
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<tr>
<td>1840-50</td>
<td>5</td>
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<tr>
<td>Biology 1210-20-30 or Zoology 1118-28-38</td>
<td>12</td>
</tr>
<tr>
<td>Triad I (Language, Literature &amp; the Arts)</td>
<td>8</td>
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<tr>
<td>Triad II (History and Society)</td>
<td>8</td>
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<tr>
<td>Sophomore**</td>
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<tr>
<td>Biology 1210-20-30 or Zoology 1118-28-38</td>
<td>12</td>
</tr>
<tr>
<td>Chemestry 3211-25-31 and 3218-29-39</td>
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**Junior**

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<tr>
<td>Sociology 2311</td>
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<td>Triad II</td>
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**Electives**

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**Total (135)**

**Senior**

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<td>Completion of major program and B.A. requirements Completion of one year at UTCHS</td>
<td>45</td>
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**Electives**

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<th>Credit</th>
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<td>9</td>
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</table>

**TOTAL: 180 hours**

**Or equivalent honors courses:**

1. The College of Dentistry requires 8 hours of English in addition to English 1510-20.
2. Any student who has had two years of biology or one year of chemistry at high school should take the proficiency tests for Biology 1210-20-30 to determine eligibility for going directly into Biology 3110 or 3120. Chemistry 1110-20-30 is a prerequisite to Biology 3110-20.
3. Recommended electives include foreign language, literature, anthropology, economics, psychology, philosophy, logic, Greek and Latin etymology, embryology, histology, microbiology, analytical chemistry, and biochemistry. (Courses printed in italic are strongly recommended.)
4. Effective with the class entering the College of Dentistry July 1979.
5. Recommended courses in biology and zoology are genetics, cell biology, and comparative vertebrate anatomy.

**PRE-DENTAL HIGIENIE PROGRAM**

A Bachelor of Science in Dental Hygiene is granted by UTCHS upon completion of a program which includes 96 hours of prescribed courses in the College of Liberal Arts and six quarters at UTCHS. The 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 professional adviser in the Liberal Arts Advising Center, or the Coordinator of the Health Professions Office for more information. Bulletins describing the various pre-health professional programs, including a detailed statement on requirements, may be obtained from the Health Professions Office, 218 Ayres Hall.

**Hours Credit**

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**Senior**

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**Electives**

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**TOTAL: 180 hours**

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3. Recommended electives include foreign language, literature, anthropology, economics, psychology, philosophy, logic, Greek and Latin etymology, embryology, histology, microbiology, analytical chemistry, and biochemistry. (Courses printed in italic are strongly recommended.)
4. Effective with the class entering the College of Dentistry July 1979.
5. Recommended courses in biology and zoology are genetics, cell biology, and comparative vertebrate anatomy.
Arts degree with a major in medical technology makes the student eligible for a Bachelor of Science in medical technology from The University of Tennessee, Knoxville (UTMRCH).

Successful completion of the course of study in medical technology at The University of Tennessee, Knoxville (UTMRCH), in the study of medical technology:

Pre-Medical Technology Program

Students planning to seek admission to the medical technology course of study at UTMCH must complete 90 credit hours of prescribed courses while enrolled in the College of Liberal Arts. The program at Memphis is 7 quarters in length and leads to the degree of Bachelor of Science in Medical Technology from UTMCH. Classes are admitted in September and application must be made one year in advance.

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

Pre-Nursing Program

The minimum requirements for admission to the College of Nursing at UTMCH are 90 hours of prescribed courses in the College of Liberal Arts. The program at Memphis, which leads to the Bachelor of Science in Nursing from UTMCH, is two years in length.

Registered nurses who wish to work for a degree of Bachelor of Science in Nursing must complete 54 hours of prescribed courses to qualify for admission with advanced standing. Students interested in the pre-nursing program are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for more information.

Bulletins describing the pre-nursing program in the Health Professions Office, 218 Ayres Hall.
Veterinary Medicine

A library of materials about career opportunities in the health professions, including most allied health areas, has been developed and is located in the Health Professions Office, 218 Ayres Hall. Academic Advisers are available to assist students in planning their programs in order to meet the requirements for admission to other programs.

Bachelor of Fine Arts

The Bachelor of Fine Arts degree represents intensive study preparing the student for graduate programs and careers relating to art. A minimum of 189 credit hours are required for graduation. Although there are no specific concentrations within the major, guidelines for the following recommended programs are available in the departmental office: (1) art, (2) communication design, (3) drawing, (4) fiber-fabrics, (5) painting, (6) printmaking, (7) sculpture, and (8) watercolor. Interarea concentrations are also possible. Transfer students are advised that a minimum of 28 hours in studio courses and eight upper-division hours in art history must be earned at The University of Tennessee, Knoxville. The Bachelor of Fine Arts degree and its major are recorded on the student’s transcript.

Degree: Bachelor of Fine Arts

Major: Studio Art

ELECTIVES

A recommended sequence of courses from such areas as business, education, and sciences are designed to help the student combine art with other fields for possible careers in art administration, gallery and museum management, scientific illustration, non-certificate teaching, and other art related occupations. Up to 60 elective hours may be used by applying the 20 credit hour requirements of non-art electives (III.C.) to a career preparation sequence. See Option II under Electives. Counseling and programs of study are available in the Art Center Student Advisement Center, Room 112.

CORE CURRICULUM

The core is required of all B.F.A. candidates. It is designed to give a broad art background, both in studio and art history, the earliest possible time. This background, during the freshman and sophomore years, gives a foundation upon which the student may build, and 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.

Art Core

A. Art 1000 (to be completed during freshman year) 4

B. Art History

1. Art 1815, 1825, 3750 12

2. Elective art history 12

C. Studio

1. Art Fundamentals 1115, 1125, 1135 (to be completed during the freshman year) 12

2. Introduction to Media (to be completed prior to junior year)
   a. Art 2105, 2205 (or 2305), 2405 12
   b. A minimum of 12 hours selected from:
      Art 2250, 2255, 2450, 2505, 2605, 2950 12

Subtotal: 64 hours

Subtotal: 36 hours

IV. Electives

Option I: Additional art or non-art electives

Subtotal: 49 hours

Option II: Career preparation electives

Subtotal: 40 hours

TOTAL: 189 hours

COLLEGE ARTISTS PROGRAM

A program of 180 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 exploring 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. Admission to the College Artists Program is based on four criteria: (1) an overall grade-point average of at least 3.0, (2) a portfolio of work, (3) 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, music history and literature, and applied music (voice—piano—organ—organ and church music—strings—woodwind, brass, and percussion instruments—multiple woodwind instruments—studio music and jazz—Suzuki string pedagogy). The study is designed to prepare students for graduate study or for positions in music education, or for music occupations. Up to 60 elective hours may be used by applying the 20 credit hour requirements of non-art electives (III.C.) to a career preparation sequence. See Option II under Electives. Counseling and programs of study are available in the Art Center Student Advisement Center, Room 112.

CORE CURRICULUM

The core is required of all B.F.A. candidates. It is designed to give a broad art background, both in studio and art history, the earliest possible time. This background, during the freshman and sophomore years, gives a foundation upon which the student may build, and 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.

Art Core

A. Art 1000 (to be completed during freshman year) 4

B. Art History

1. Art 1815, 1825, 3750 12

2. Elective art history 12

C. Studio

1. Art Fundamentals 1115, 1125, 1135 (to be completed during the freshman year) 12

2. Introduction to Media (to be completed prior to junior year)
   a. Art 2105, 2205 (or 2305), 2405 12
   b. A minimum of 12 hours selected from:
      Art 2250, 2255, 2450, 2505, 2605, 2950 12

Subtotal: 64 hours

Subtotal: 36 hours

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Bachelor of Music

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Students who plan to work for this degree are assigned an adviser 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 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.

### MUSIC THEORY

#### Freshman

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<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
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<tr>
<td>Music 1111-11-31</td>
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#### Sophomore

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**TOTAL: 180 hours**

### COMPOSITION

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**TOTAL: 180 hours**

### MUSIC HISTORY AND LITERATURE

#### Freshman

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**TOTAL: 180 hours**

### PIANO LITERATURE

#### Freshman

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**TOTAL: 180 hours**

### PIANO

#### Freshman

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**TOTAL: 180 hours**

### VOICE

#### Freshman

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**TOTAL: 180 hours**

### Music

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#### Sophomore

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**TOTAL: 180 hours**

### College of Liberal Arts

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### Foreign language (French, Italian, or German)

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### College of Liberal Arts

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<td>Electives</td>
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<td>English 1010 or 1011; 1020; 1031 or 32 or 33</td>
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<td>Ensemble</td>
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<td><strong>TOTAL: 180 hours</strong></td>
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| **ORGAN AND CHURCH MUSIC**                  |              |
| **Freshman**                                |              |
| English 1010 or 1011; 1020; 1031 or 32 or 33 | 9            |
| Music 1111-21-31                            | 9            |
| Music 1113-23-33                            | 3            |
| Music 1140                                  | 3            |
| Principal applied study                     | 12           |
| Ensemble                                    | 3            |
| Liberal arts electives (not in music)      | 8            |
| Music 2000                                  | 0            |
| **Sophomore**                               |              |
| Music 2111-21-31                            | 9            |
| Music 2113-23-33                            | 3            |
| Music 2320-30-40                            | 9            |
| Principal applied study                     | 12           |
| Ensemble                                    | 3            |
| Liberal arts elective (not in music)       | 8            |
| Music 2000                                  | 0            |
| **Junior**                                  |              |
| Music 2340                                  | 3            |
| Music 3112                                  | 3            |
| Music 3113-23-33                            | 6            |
| Applied area literature                     | 4            |
| Principal applied study                     | 6            |
| Ensemble                                    | 3            |
| Junior recital                              | 0            |
| Music electives                             | 6            |
| Liberal arts electives (not in music)      | 9            |
| Electives                                   | 8            |
| Music 2000                                  | 0            |
| **TOTAL: 185 hours**                        |              |

| **STUDY MUSIC AND JAZZ**                    |              |
| **Freshman**                                |              |
| English 1010 or 1011; 1020; 1031 or 32 or 33 | 9            |
| Music 1111-21-31                            | 9            |
| Music 1113-23-33                            | 3            |
| Music 1140                                  | 3            |
| Music 1340                                  | 3            |
| Principal applied study                     | 12           |
| Ensemble                                    | 3            |
| Liberal arts elective (not in music)       | 8            |
| Music 2000                                  | 0            |
| **Sophomore**                               |              |
| Music 2111-21-31                            | 9            |
| Music 2113-23-33                            | 3            |
| Music 2320-30-40                            | 9            |
| Principal applied study                     | 12           |
| Ensemble                                    | 3            |
| Senior recital                              | 0            |
| Music electives                             | 6            |
| Liberal arts electives (not in music)      | 9            |
| Electives                                   | 8            |
| Music 2000                                  | 0            |
| **Junior**                                  |              |
| Music 2340                                  | 3            |
| Music 3112                                  | 3            |
| Music 3113-23-33                            | 6            |
| Applied area literature                     | 4            |
| Principal applied study                     | 6            |
| Ensemble                                    | 3            |
| Junior recital                              | 0            |
| Music electives                             | 6            |
| Liberal arts electives (not in music)      | 9            |
| Electives                                   | 8            |
| Music 2000                                  | 0            |
| **TOTAL: 180 hours**                        |              |

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Preparation for Other Professions

Law

Students who plan to study law should consult the statement regarding admission to the College of Law (page 171) and discuss their programs with advisers 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 preparation for future graduate study in professional librarianship. For further information, see page 54 or consult the Director of the Graduate School of Library and Information Science.

Planning

Students who wish to consider a career in city, regional, or state planning or a related field will find a brief description of the program of the Graduate School of Planning on page 55. 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

1Political Science 2510-20, 2530 (choose 8 hours) 8
2Economics 2110-20-30 9

Sophomore

3Political Science 3565-66 8
4Political Science 3545-46 or 3801-02 8
5Economics 3340 3
6Accounting 2110-20-30 9

Junior

7Political Science 4510-20 7
8Political Science 4440 4
9Economics 3410 3
10Accounting 3510 3
11Finance 4550-60 6

In addition, sufficient electives in political science must be taken to meet the number of hours required for a major in political science.

Further information may be obtained in the Department of Political Science.

Social Work

Students who wish to prepare for graduate professional training in social work will find a brief description of the program of the School of Social Work on page 55. Detailed information about courses and curricula, as well as requirements for admission, will be found in the catalog of the School of Social Work.

Teaching

Students in the College of Liberal Arts who wish to be certified for secondary school teaching must satisfy state certification requirements as well as all degree requirements of the College of Liberal Arts, and must be certified for certification by the College of Education. The College of Education is accredited by the National Council for Accreditation of Teacher Education (NCATE); recommendation for certification by the college, therefore, in effect certifies the student in 30 states.

Application for admission to the Teacher Education Program should be made during the second or third quarter of the sophomore year in the office of the dean of the College of Education, 212 Claxton Education Building.

Criteria for admission are: (1) a 2.2 cumulative grade point average; (2) satisfactory ratings in a speech and hearing exam as determined by tests administered by the Speech and Hearing Center; (3) a personality inventory; (4) satisfactory student conduct records; (5) a successful field experience.

One quarter during the senior year must be reserved for student teaching (Education C & I 4710-20). Application for student teaching must be filed not later than January 1 of the year preceding the academic year in which student teaching will be undertaken. Those planning to student teach during the 1981-82 academic year must apply by January 1, 1981.

For additional information contact Teacher Certification Office, Room 212 Claxton Education Building.

NOTE: The same course may be applied both to certification requirements and to Triad or major requirements of the College of Liberal Arts.

Theology

Students planning to study theology should follow one of the Bachelor of Arts curricula. Any liberal arts major is acceptable for admission to most theological schools; strong preparation in literature, philosophy, history, religious studies, and social science is desirable. Students may wish to consult with faculty members in the Department of Religious Studies in planning their programs.

General Information

Admission to the College

For information regarding admission to the College of Liberal Arts, see page 29.

Course Load

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

Lower Division—Upper Division

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

Satisfactory/No Credit Courses

A few courses in the college are offered only on a Satisfactory/No Credit (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 nor NC grades will be calculated in the student's grade point average. Satisfactory is defined as C or better work on the traditional grading scale and No Credit is defined as less than C. The following regulations apply:

1) S/NC courses, except those offered only on this basis, may not count for Triad requirements or major and minor requirements unless specifically permitted by examination. This restriction applies also to major or minor prerequisites or corequisites.

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

Independent Study

Certain educational goals may be best met through independent study done by an individual under the direction of a faculty member. Students who wish to engage in 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 4101. 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 adviser 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 those 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, 802 Volunteer Blvd., Suite 416, cooperates with the various departments and colleges of the University with respect to the development of curricular changes and innovations which incorporate the Black experience into academic and extracurricular programs of the 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 in three different theatres. The Clarence Brown Theatre has outstanding facilities for proscenium and open staging and for film productions, and, in a separate Studio Theatre, for laboratory productions. Carousel Theatre is designed for arena staging and can be converted for open-air performances in the summer.

Instructional Facilities

The college carries out its varied teaching and research activities in more than two dozen principal buildings in two areas of the campus, as well as in a number of converted residences which provide office, studio, or clinical space. The older of the two clusters of buildings is on "The Hill," and includes Ayres Hall (psychology and mathematics), Austin Peay (psychology), Heisler (biological sciences), Physics (physics and astronomy), Geology-Geography (geology and geography), and Dabney and Dickey (chemistry). West of "The Hill" is a recently built group of buildings for the humanities, social sciences, and fine arts: McClung Tower and the Humanities-Social Sciences classroom building (classics, English, foreign languages, history, human services, philosophy, political science, religious studies, sociology, and speech and theatre), the Music Building (music), and the Hearing and Speech Center (audiology and speech pathology). In this area also are the McClung Museum and the Clarence Brown and Carousel Theatres, as well as the Undergraduate Library. Anthropology is housed in South Stadium, and art utilizes several small buildings for its studios.

College Offices

The College Administrative Office is in 226 Ayres Hall. The Student Academic Affairs Office is in 218 Ayres Hall. The Liberal Arts Advising Center is in 220 Ayres Hall.

Departments of Instruction

American Studies

See Cultural Studies.

Ancient Mediterranean Civilizations

See Cultural Studies.

Anthropology (122)

Professors: W. M. Bass (Head), Ph.D. Pennsylvania; C. H. Faulkner, Ph.D. Indiana; A. K. Gulve, Ph.D. Michigan; R. L. Jantz, Ph.D. Kansas; P. W. Parmalee, Ph.D. Texas A & M.

Associate Professors: J. Harrison, Ph.D. Syracuse; M. H. Logan, Ph.D. Pennsylvania State; F. H. Smith, Ph.D. Michigan.

Assistant Professors: W. E. Kippel, Ph.D. Missouri; B. Howell, Ph.D. Kentucky; G. F. Schoedel, Ph.D. Washington State.

Research Assistant Professor: J. Chapman, Ph.D. North Carolina.

Instructor: M. A. Bass, Ph.D. Kansas State (part-time).

*Alumni Distinguished Service Professor.

UNDERGRADUATE

A major in anthropology shall consist of 42 hours, 12 of which are to be in the introductory 2000-level courses. Of the remaining 30 hours, 3333, 4450, and six hours of 3000 level or above courses are required in each of these subfields: (a) Cultural; (b) Physical; and (c) Archaeology.

(a) Cultural: 3410, 3440, 3450, 3550, 3540, 3700, 3800, 4111, 4200, 4240, 4250, 4400, 4420, 4430, 4440, 4550, 4560, 4740.

(b) Physical: 3070, 3900, 3920, 3930, 4930, 4950, 4960, 4970. (c) Archaeology: 3610, 3620, 3630, 3640, 3660, 3670, 4400, 4600, 4610, 4640, 4650.

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 prehistoric background, fossil primates, fossil man, and living races of man.

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

2530 Human Culture (4) Introduction to ethnology: survey of nature of culture and society and similarities and differences in man's material culture, social, economic, and political organizations, ideology, art, and language.

2540 Introduction of Linguistic Anthropology (4) Basic linguistic concepts. Aspects of language studied by anthropologists and sociolinguists.

3010 Prehistoric Humans and Their Lifeways (3) Survey of the development of humans and their cultural behavior from earliest evidence of humans until the end of the Paleolithic. Emphasis on the interaction between cultural and biological development and adaptation. Prereq: 2510 or 2520 recommended.

3070 Genetics and Society (3) (Same as Botany 3070.)

3333 Visiting Lecture Program (3) Developed around lectures by visiting scholars in physical anthrop-
concepts and objectives in study of culture. Range of 3410 Principles of Cultural Anthropology (3) Basic basis. May be repeated . Maximum credit 9 hours.

- Range of 3490 African Religions (4) (Same as Religious Studies 3490.)
- Range of 3510 Peoples and Cultures of Mainland Asia (3) Ethnographic survey indigenous cultures of mainland Asia. Cultural diversity and human ecology in a real perspective. 2530 recommended.
- Range of 3520 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.
- Range of 3610 Archaeology of United States and Canada (3) Survey of prehistoric peoples and cultures in North America from initial occupation to European contact. 2530 recommended.
- Range of 3620 European Prehistory I (3) Cultural developments during Paleolithic, Mesolithic, and Neolithic periods. 2520 recommended.
- Range of 3630 European Prehistory II (3) Cultural developments during Metal Ages. From close of Neolithic through Iron Ages. 2520 recommended. 3620 and 3630 should be taken in sequence.
- Range of Ancient Civilization of Mesoamerica (3) Introduction to archaeological areas of advanced Indian culture in Mexico and Central America beginning with earliest cultures and proceeding to contact with European explorers. 2520 recommended.
- Range of 3660 Prehistory of Tennessee (3) History of archaeological research in Tennessee and survey of prehistoric Indian cultures identified through research.
- Range of 3670 Principles of Archaeology (3) Research strategies in an archaeological excavation, interpretation, and explanation. Prereq: 2520 or consent of instructor.
- Range of 3700 Forms of Folklore (4) Introduction to anthropological study of folklore.
- Range of 3710 European Folk Culture (3) Traditional aspects of life as expressed in technology, beliefs, art, and folklore, under changing historical and socio-economic conditions.
- Range of 3800 Language and Culture (3) Relationship between linguistic categories and functional elements of culture. Prereq: 2540 or consent of instructor. Recommended: 2530.
- Range of 3811 Introduction to Museology (3) (Same as Art 3811.)
- Range of 3900 Human Osteology (4) Intensive examination of the human skeleton. Prereq: 2510 or consent of instructor. 3 hrs and 1 lab.
- Range of 3920 Principles of Physical Anthropology (3) Survey of major methods in physical anthropology. 2510 recommended.
- Range of 3930 The Biology of Races of Man (3) Processes of racial differentiation; critical significant differences among existing stocks; influence of biology and culture in race formation, analysis of studies concerning blood groups, race mixture, constitution, growth, and nutrition. 2510 recommended.
- Range of 3950 Human Identification (3) Introduction to techniques in identification of human skeletal material in forensic medicine.
- Range of 4101 Foreign Study (1-16) See page 185.
- Range of 4102 Off-Campus Study (1-16) See page 184.
- Range of 4103 Independent Study (1-16) See page 184.
- Range of 4110 Education in Cultural Perspective (3) (Same as Educ. C & I 4110.)
- Range of 4111 Non-Western Education: Anthropological Approaches (3) Analysis of traditional educational practices among non-western peoples encountered from application of western models of education among non-western peoples. Prerequisite: 2530 recommended.
- Range of 4200 Contemporary North American Indians (3) Survey of Indian cultures from initial Euro-Amercian contact to present; emphasis on change, U.S. government Indian policy, reservation life. Prereq: 2530 or consent of instructor.
- Range of 4210 Ethnographic Research Techniques (3) Methods of collecting, organizing, and utilizing data. Prereq: Consent of instructor.
- Range of 4240 Applied Cultural Anthropology (3) Applications of anthropological theory, methods, and findings in programs of community and national development, public health, international aid, and military assistance. Examination of roles of anthropologists, questions values and ethics in intervention schemes, and of organization of research change in applied programs. Prerequisite: 2530 or consent of instructor.
- Range of 4250 Medical Anthropology: Lecture (3) Survey of medical anthropology. Emphasis on Western and non-Western culture aspects of health, disease, and death in industrial societies and folk medicine systems which co-exist with Western, technical medicine. Coreq: or prereq 4250.
- Range of 4300 Readings in Anthropology (1-9) Intensive reading, problem oriented. For anthropology majors with senior standing. Others by consent of instructor. May be repeated to a maximum of 9 credit hours.
- Range of 4320 Field Work in Anthropology (3) Practicum work reporting, processing, and analyzing data; intensive reading. Prereq: 2510-20-30 and consent of instructor. May be repeated to a maximum of 9 credit hours.
- Range of 4400 Cultural Ecology (3) Survey of concepts and methods in cultural ecology between cultures and their environments. Topics include ecological theory, methods of analysis, and application from selected case studies. Prereq: Anthropology 2520 or 2530, or 3410, or consent of instructor.
- Range of 4420 Dynamics of Culture (3) Culture change: innovation, diffusion, and acculturation; cultural continuity and stability. Prereq: 2530 or consent of instructor. Recommended: 2520 or 2530.
- Range of 4440 Urban Anthropology (3) Survey of theoretical and methodological issues anthropologists encounter researching cross-cultural urban settlements. Focus is on anthropological perspectives on urban problems and planning. Prereq: 3450 or consent of instructor. (Same as Urban Studies 4440.)
- Range of 4480 Current Trends in Anthropology (3) Analytical integrative review in symposium of current debates, research directions, theories, fieldwork methods, and general assumptions of the four subfields of anthropological study: cultural, physical, linguistic, and cultural anthropology. Required of anthropology major in senior year. Prereq: Senior standing.
- Range of 4490 Cross-Cultural Survey of Sex Roles and Behavior (3) Examination of sex roles and sex behavior from cultural and diachronic viewpoints. Draws disparate and scattered studies together and attempts to arrive at conclusions on questions such as how sex roles are learned, the parameters of acceptable sexual behavior, and degrees of tolerance for sexual deviation in various cultures.
- Range of 4550 Indians of the Southeastern United States (3) Survey of southeastern Indian cultures; emphasis on anthropological adjustment to environment; lifeways of southeastern Amerind groups prior to Euro-American contact. Prereq: 2520, 3540, or consent of instructor.
- Range of 4570 Peoples of Southeast Asia (3) Survey of representative ethnic groups and indigenous cultures of mainland and island Southeast Asia. Problems of contemporary culture changes. Prereq: 2530, consent of instructor, or an East Asian course.
- Range of 4580 Asians in the Americas since 1800: Anthropological Perspectives (3) Character, factors, and motivations in Asian immigration to North, Central, and South America. Assimilation pattern and enclave communities are major topics. Major focus on United States.
- Range of 4590 Peoples of Japan (3) Analysis of cultural diversity and unity of peoples of Japan. Prereq: 2530 or consent of instructor. Recommended: 3510 or an East Asian course.
- Range of 4600 Method and Theory in American Archaeology (3) Historical development of New World archaeology with emphasis on theory and field techniques. Prereq: 2520 or consent of instructor.
- Range of 4610 Africa Prehistory (3) Survey of cultural history in Africa, south of the Sahara, from earliest evidence of human activity to time of European contact. Prereq: 2520 or consent of instructor.
- Range of 4640 Zooarchaeology (3) Basic osteological studies of vertebrate classes; emphasis on aboriginal man's utilization of native animals in his subsistence and recreational activities. Identification and interpretation of archaeologically derived molluscan and vertebrate remains.
- Range of 4650 Archaeology of Southeastern United States (3) Intensive study of prehistoric American Indian. Special emphasis on Tennessee prehistoric. Prereq: 3610 or consent of instructor.
- Range of 4720 American Folklore (3) Anthropological perspectives on folklore of geographical regions and ethnic groups of the United States. Prereq: 3700 or consent of instructor.
4740 Southern Appalachian Folk Culture (4) Research-oriented course dealing with wide range of traditional culture in southern Appalachia: settlement patterns, folk housing, economy, clothing, beliefs, speech, art, song, dance, and oral traditions and customs. Prereq: Consent of instructor. May be repeated for credit.

4750 Mexican Folklore (3) Anthropological perspectives on folklore of Mexico and Spanish-speaking southwestern United States. Prereq: 3700 or consent of instructor and a reading knowledge of Spanish.

4760 Italian Folklife (3) (Same as Romance Languages 4760.)

4870 Cherokee Language (3) Linguistic survey of structure of the Cherokee language.

4830 Physical Growth and Constitution (3) Comparative growth patterns throughout the life cycle of man; 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 genetics of living populations. Emphasis on North American Indi ans. Prereq: 2510 or consent of instructor.

4950 Primate Studies (3) Survey of primate behavior. Prereq: 2510 or consent of instructor.

4960 Primate Paleontology (3) Survey of fossil primate forms; origin and evolution of major primate lineages, emphasizing the earliest Hominid and related forms. Prereq: 2510 or consent of instructor. Recommended: 4970 and Zoology 4390.


4975 Human Paleontology Laboratory (1) Detailed examination of casts and other materials pertinent to study of human paleontology. Prereq: 2510 or consent of instructor.

5010 Graduate Research (1-12)

5012 Off-Campus Study (1-12)

5014 Seminar in Research and Dissertation

5030 Advanced Study (1-12) Graduate work normally requires at least one foreign language and by studio art majors. Knowledge of the practice of art is required of art history majors; knowledge of art history is required of studio majors.

5340 Fieldwork in Archaeology (3-9) Each summer the craft workshops in Gatlinburg, Tennessee, are made possible through cooperative efforts between the Department of Art and the Pi Beta Phi Arrowmont School of Crafts. The Pi Beta Phi Fraternity provides the funds, the facilities, and the management for Arrowmont. The University of Tennessee, Knoxville, College of Liberal Arts, Department of Art appoints the instructors and provides for the administration of craft classes with appropriate accreditation. In addition to providing advanced instruction and training in the area of design, there is a strong emphasis on the demonstration and the acquisition of student studio work.

UNDERGRADUATE

B.A. Major: Art History—Consists of 36 hours in art history courses numbered 2000 and above. Greek and Roman art and archaeology from the Department of Classics may be included. Art 1815 and 1825 are prerequisites to the major. Undergraduate work in art history is enhanced by knowledge of at least one foreign language and by instruction in art history. Graduate work normally requires knowledge of at least two foreign languages, usually German and French.

B.A. Minor: Art History—Consists of 24 hours of courses numbered 2000 and above. Art 1815 and 1825 are prerequisites to the minor.

B.A. Major: Art (Concentration in Studio)—Art 1800, 1815, 1825, 1835, 1840, 1850, and eight additional hours in studio art usually numbered 2000 and above, including a minimum of 21 hours in upper-division courses.

B.A. Minor: Art (Concentration in Studio)—None offered. For information regarding the Bachelor of Fine Arts degree, see page 180.

1000 The Visual Artist (4) 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 for a grade.

1115 Studio Fundamentals (4) Development of observational skills and perception of reality. Fundamental aspects of drawing—line, tone, space, form, and composition. Primarily for art, architecture, interior design, and art education majors.

1125 Studio Fundamentals (4) Surface composition and color. Primarily for art, architecture, interior design, and art education majors.

1135 Studio Fundamentals (4) Real space and volume. Primarily for art, architecture, art education, and interior design and art education majors. The University of Tennessee, Knoxville, College of Liberal Arts, Department of Art appoints the instructors and provides for the administration of studio classes with appropriate accreditation. The Creative Arts Studio Program serving as a training center for artists and art history majors.

1160 Introduction to Crafts (4) Presence of art in immediate environment; design used in daily living by

McQueen; T. Markusen; G. Obremski; J. Paque; E. Pujol; B. Ramsey; T. Reising; Sr. M. Revor; J. Robinson; V. Rivers; J. Saliesland; L. Schutte; W. Seelig; V. Spinski; T. Suomalainen; T. Turner; D. Valdasi; D.B. VanDomenehel; J. Wallace; D. Warner; L. Watson; C. Yarborough; N. Znamierowski.
cultures different from ours; emphasis on awareness of design. 2 hrs. and 2 labs.

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 of the 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 Matisse and Picasso.

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 (4) Intensified study for the exceptional student. May be repeated for a maximum of 24 credit hours.

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

2106 Special Topics in Drawing (4) Student or instructor initiated course offered at convenience of Department. Prereq: determined by department. May be repeated. Maximum credit 16 hours.

2115 Life Drawing (4) Further development of drawing and painting skills with special emphasis on structure and dynamics of human figure and of the figure in environment. Prereq: 2105. May be repeated. Maximum credit 8 hours.


2205 Introduction to Painting (4) Capacities of oil and acrylic. Prereq: 1115, 1125, 1135 for art majors; none for non-art-majors.

2206 Special Topics in Painting (4) Student or instructor initiated course offered at convenience of department. Prereq: determined by department. May be repeated. Maximum credit 16 hours.

2215 Painting II (4) Techniques of expression in oil and/or acrylic. May be repeated. Maximum credit 8 hours. Prereq: 2205 for art majors, none for non-art majors.


2256 Special Topics in Fiber and Fabrics (4) Student or instructor initiated course offered at convenience of Department. Prereq: determined by department. May be repeated. Maximum credit 16 hours.


2260 Fabric Design II: Dyeing Techniques (4) Application of interlocking, coiling, and twining in contemporary fiber conceptualizations. Prereq: 2256. May be repeated. Maximum credit 8 hours.

2265 Fabric Design II: Non-Woven (4) Application of weaving controlled and loom-controlled constructions in floor loom weaving. Prereq: 2250. 2260 also recommended. May be repeated. Maximum credit 8 hours.

2305 Introduction to Watercolor (4) Capacities of transparency, wash and color. Prereq: 1115, 1125, 1135 for art majors; none for non-art-majors.

2315 Watercolor II (4) Techniques that make watercolor a major medium of expression. Prereq: 2305 for art majors, none for non-art majors.

2405 Introduction to Sculpture (4) Problems in clay modeling, construction, and basic casting techniques. Prereq: 1115, 1125, 1135 for art majors, none for non-art majors.

2406 Special Topics in Sculpture (4) Student or instructor initiated course offered at convenience of department. Prereq: determined by department. May be repeated. Maximum credit 8 hours.

2415 Sculpture II (4) Development of skills and experience in particular area of sculpture as agreed by student and instructor. May be repeated. Maximum credit 8 hours.

2416 Sculpture: Life Modeling (4) Modeling techniques in clay and wax, working from figures. Prerequisites: 1115-25-35 for art majors, none for non-art majors.

2450 Introduction to Wood Sculpture (4) Exploration of wood as design media. Introduction to woodworking tools and basic skills in laminating, finishing, carving, and use of joints. Prereq: 1115-25-35 for art majors, none for non-art majors.

2460 Wood Sculpture: Studio Projects (4) Application of lamination and carving skills in designing utilitarian and nonutilitarian art objects. Prereq: 2450. May be repeated. Maximum credit 8 hours.


2506 Special Topics in Communication Design (4) Student or instructor initiated course offered at convenience of department. Prereq: determined by department. May be repeated. Maximum credit 16 hours.


2516 Advertising Design (4) Fundamentals of lettering and use for newspaper, magazine, television, outdoor advertising. Non-art majors only.


2545-55-65 Photo-Graphics (4,4,4) Introduction to art of photography.

2605 Introduction to Printmaking (4) Relief, lithography, Intaglio, and screen printing.

2615 Intaglio II (4) Metal plate intaglio printing in traditional and contemporary techniques of etching, drypoint, mezzotint, aquatint, and photomechanical. May be repeated. Maximum credit 8 hours.

2616 Lithography II (4) Exploration of stone and aluminum plate lithography applying traditional and contemporary printing techniques. Prereq: 2506.

2617 Screen Printing II (4) Creative explorations of a variety of screen printing techniques. Prereq: 2506. Maximum credit 8 hours.

2655 Introduction to Metal Design (4) Basic techniques of jewelry and metalworking. Prereq: 1115, 1125, 1135 for art majors, none for non-art majors.

2656 Special Topics in Metal Design (4) Student or instructor initiated course to be offered at convenience of department. Prereq: determined by department. May be repeated. Maximum credit 16 hours.

2665 Metal Design II: Jewelry (4) Additional jewelry and metalworking techniques including casting, stonestepping, and forming. Prereq: 2655. May be repeated. Maximum credit 8 hours.

2755 Metal Design II: Enameling (4) Exploration of vitreous enamel as individual art form and in combination with other metallics. Prereq: 2655. May be repeated. Maximum credit 8 hours.

2725 Black Art (4) Black art history in America. 19th century to contemporary trends.

2735 Film Design (4) Introductory theory and practice of film making. Emphasis on graphic elements through use of motion picture camera. May not receive credit for both 2116 and 2935.


2760 Ceramics II: Handbuilding Techniques (4) Prereq: 2750.

2770 Ceramics II: Wheel Techniques (4) Prereq: 2750.

3008 Honors: Intermediate Art (4) Intensified study for the exceptional student. May be repeated for a maximum of 24 credit hours.

3115 Drawing III (4) Development of personal drawing techniques and concepts through class problems. Prereq: determined by department. May be repeated. Maximum credit 12 hours. Prereq: 2516.

3119 Design Resources (4) Sources, development, and application of art materials as they relate to visual arts. Design proceedings, tools, and materials utilized in developing design resources. Prereq: Completion of studio core.

3215 Painting III (4) Individual expression with varied media on canvas. May be repeated. Maximum credit 12 hours. Prereq: 8 hours of credit in 2215 for art majors; consent of instructor for non-art majors.


3265 Fiber Design III: Splicing and Dyeing (4) Application of spinning in development of yarns from natural fibers. Dyeing yarns chemically. Prereq: 2265 or 2275.

3270 Fabric Design III: Individual Class Projects (4) Prereq: 3260 or consent of instructor. May be repeated. Maximum credit 8 hours.

3275 Fiber Design III: Individual Class Projects (4) Prereq: 3260 or consent of instructor. May be repeated. Maximum credit 8 hours.

3315 Watercolor III (4) Individual expression with water-based media on paper. May be repeated. Maximum credit 12 hours. Prereq: 8 hours in 2315 for art majors; consent of instructor for non-art majors.

3415 Sculpture III (4) Individual projects through discussion with instructor, designed to widen previous experience. May be repeated. Maximum credit 12 hours.

3416 Sculpture: Advanced Life Modeling (4) Advanced modeling techniques in clay and wax, working from life. Prereq: determined by instructor.


3516 Typography (4) Theories and techniques of typesetting and printing as fine art medium. Creative problems are solved using type and printing presses. May be repeated. Maximum credit 12 hours.
Role of designer in society as producer and teacher.

3765 History of North American Art (4) Survey of landscape, architecture, sculpture, and design from prehistory to 1900.

3766 History of Twentieth-Century American Art (4) Analysis of developments in architecture, painting, sculpture, and design from 1900.

3767 Nineteenth Century American Painting (4) From West and Copley to emergence of "The Eight".

3775 Art of Indian Asia (4) History of Indian art with consideration of art of Central Asia and Southeast Asia.

3776 Chinese Art (4)

3777 Japanese Art (4)

3811 Introduction to Museology (3) Concepts, practices, and historical development of museums of art, archaeology, anthropology, and science. (Same as Anthropology 3811.)

3935 Film Design (4) Theory and practice of film making. Prereq: 2935.

3945 Cinematography (4) Familiarization with photographic processes and basic production techniques: artistic potential of film, aesthetic problems, and challenges of the medium. May be repeated for a maximum of 12 hours.

3950 Glazes (4) Prereq: 2970.

3960 Ceramics III: Individual Class Projects (4) Prereq: 3950 or consent of instructor. May be repeated. Maximum credit 16 hours.

4004 Special Topics (1-4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 8 hours.

4006 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.

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

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

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

4101 Foreign Study (1-16) See page 185.

4102 Off-Campus Study (1-16) See page 164.

4103 Independent Study (1-16) See page 184.

4115 Drawing IV (4) Personalized pursuit of drawing techniques and concepts, supplemented by individual and group critiques as well as weekly life drawing sessions. May be repeated. Maximum credit 12 hours. Prereq: 12 hours of 3115.

4119 Advanced Design Studio (4) Studio experience planned to explore strengths, structural variability, and aesthetic potential of film, aesthetic problems, and challenges of the medium.

4120 Special Topics in Painting (4) Prereq: Determined by department. May be repeated. Maximum credit 8 hours.

4126 Special Topics in Sculpture (4) Prereq: Determined by department. May be repeated. Maximum credit 16 hours.

4145 Special Topics in Communication Design (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 12 hours.

4151 Corporate Design (4) Concepts of corporate graphics. Problems include all areas of graphic design and illustration. Prereq: 3535. May be repeated. Maximum credit 12 hours.

4156 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.

4155 Special Topics in Communication Design (4) Same as Anthropology 3811.

4156 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.

4155 Special Topics in Communication Design (4) Same as Anthropology 3811.

4160 Special Topics in Printmaking (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hours.

4165 Intaglio IV (4) Extensive use of aluminum plates, color combining, photographic technology. May be repeated. Maximum credit 12 hours.

4165 Intaglio IV (4) Extensive use of aluminum plates, color combining, photographic technology. May be repeated. Maximum credit 12 hours.

4166 Lithography IV (4) Extensive use of aluminum plates, color combining, photographic technology. May be repeated. Maximum credit 12 hours.

4167 Screen Printing (4) Traditional hand cut and photographic stencils; combine printing on paper and other surfaces. May be repeated. Maximum credit 12 hours.

4156 Special Topics in Metal Design (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hours.

4165 Metal Design IV: Advanced Projects (4) Prereq: 3665. May be repeated. Maximum credit 12 hours.

4156 Special Topics in Metal Design (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hours.

4165 Metal Design IV: Advanced Projects (4) Prereq: 3665. May be repeated. Maximum credit 12 hours.
GRADUATE

There are two advanced degrees available in this department: Master of Arts and Master of Fine Arts. In addition to meeting requirements of the Graduate School, applicant 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.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5011-21-31 Exhibition in Lieu of Thesis (3,3,3)

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5103 Independent Study (1-12)

5115 Graduate Drawing I (2-6)

5125 Graduate Drawing II (2-6)

5215 Graduate Painting I (2-6)

5225 Graduate Painting II (2-6)

5255 Graduate Fiber and Fabrics I (2-6)

5275 Graduate Fiber and Fabrics II (2-6)

5315 Graduate Watercolor I (2-6)

5325 Graduate Watercolor II (2-6)

5415 Graduate Sculpture I (2-4)

5425 Graduate Sculpture II (2-6)

5515 Graduate Watercolor I (2-4)

5555 Graduate Communication Design I (2-6)

5525 Graduate Communication Design II (2-6)

5615 Graduate Printmaking-Lithography I (2-6)

5616 Graduate Printmaking-Intaglio (2-6)

5617 Graduate Printmaking-Screen Printing I (2-6)

5625 Graduate Printmaking-Lithography II (2-6)

5626 Graduate Printmaking-Intaglio II (2-6)

5627 Graduate Printmaking-Screen Printing II (2-6)

5755 Reading and Research in Art History (2)

5770 Seminar in Art History (4)

5955 Graduate Ceramics I (2-6)

5975 Graduate Ceramics II (2-6)

5990 Seminar in Art Criticism (4)

5999 Projects in Lieu of Thesis (10)

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; C. W. Asp, Ph.D. Ohio State; P. J. Garney, Ph.D. Iowa; D. M. Lipscomb, Ph.D. Washington; I. V. Nabelek, Ph.D., Czech Technical (Prague); H. A. Peterson, Ph.D. Illinois; B. Silverstein, Ph.D. Purdue.

Associate Professors:
S. B. Burchfield, Ph.D., Michigan State; C. G. Maisel, M.Ed. Texas.

Assistant Professors:
T. O. Davidson, M.A., Tennessee; C. J. Ferrell, M.A. Tennessee; E. I. Hamby, Ph.D. Iowa.

Instructors:

UNDERGRADUATE

Gradual Information. One of society's most significant developments has been the acquisition of organized systems of communication. Basic to most human language systems has been dyadic oral-aural communication. The Department of Audiology and Speech Pathology offers course work in the scientific study of oral-aural communication with special attention to variations considered abnormal or different. Many of the courses offered in the department cover information that should be valuable to students planning to enter any social service discipline. Suggested electives for non-departmental majors include 3010, 3040, 3050, 3170, 4070, and 4720.

 Majors. The two majors (audiology and speech pathology) within the department are pre-professional; that is, they are preparatory to graduate work and to professional certification in some aspect of communicative disorders. The master's degree is required for most professional certificates and employment positions. Within the broad coverage of audiology, it is possible for a student to specialize to a limited extent by choosing elective courses which emphasize traditional diagnostic audiology or aural rehabilitation. Students in speech pathology may specialize to a limited extent by choosing elective courses which emphasize speech disorders, language disorders, or cultural language differences. Students desiring school certification in speech and hearing or education of the deaf should consult the Department of Special Education and Rehabilitation for specific requirements. A major in speech pathology consists of Audiology and Speech Pathology 3010, 3040, 3050, 3065, 3200, 3310, 3710, 4040, 4330, 4650, 4720, plus not less than 9 nor more than 15 hours from the following: 3070, 4310, 4350, 4400, 4610, 4930, 4940.

Additional recommended courses for audiology majors are Audiology and Speech Pathology 4560, 4610, 4750 and Psychology 2500, 2520, 2540, and 3150.

A major in audiometry consists of Audiology and Speech Pathology 3010, 3040, 3050, 3200, 3310, 3710, 4040, 4450, 4720, 4930 plus not less than 10 nor more than 22 credit hours from the following: 3065, 4320, 4460, 4740, and 4940.

Additional recommended courses for speech pathology majors are: Audiology and Speech Pathology 4520, 4450, 4460, 4470, 4750, Anthropology 2530 or 3410, Psychology 2500, 2520, 2530, 2540, 3150, Special Education 4030, 4341, 4342, 4110, 4120, 4130, 4610, and Child and Family Studies 4610.

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

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

3040 Introduction to Speech Pathology and Audiology (3) Nature, etiology, and incidence of speech, hearing, and language disorders.
3050 Speech Science I: Phonetics (3) Basic phonetics including recognition and predication of speech sounds with analysis of their formation and acoustic characteristics of speech and speech perception.

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

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 impairment. Prereq: Psychology 3550 or Educational Psychology 2430 recommended.

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

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

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

4070 Free Association (4) Oral and written free association as process for diagnosing and treating communicative disorders. Includes idiographic self-analysis.

4101 Foreign Study (1-16) See page 185.

4102 Off-Campus Study (1-16) See page 185.

4103 Independent Study (1-16) See page 184.

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

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

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

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

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

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

4330 Clinical Practice in Speech Pathology I (1-6) Prereq: 3040 and consent of instructor. May be repeated for credit. S/N. (Same as Special Education 4330.)

4340 Clinical Practice in Speech Pathology II (1-6) Prereq: 4330 and consent of instructor. (Same as Special Education 4340.)

4400 Voice Disorders (4) Etiology, diagnosis, and treatment of organic and functional voice disorders. Prereq: 3040, 3065, or consent of instructor. (Same as Special Education 4400.)

4450 Clinical Practice in Audiology (1-6) Prereq: 4720 and 4930. (Same as Special Education 4450.)

4460 Clinical Practice in Audiology (1-6) Prereq: 4450, 4720, and 4930. (Same as Special Education 4460.)

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

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

*ADMISSION TO CLINICAL TRAINING SPEECH PATHOLOGY AND AUDIOLOGY

Students who wish to enroll in clinical practice courses in speech pathology and audiology must apply for admission at the Hearing and Speech Center prior to the initial practicum enrollment. Clinical applications may be limited due to available supervisory staff, clinical facilities and caseloads. A grade of "C" or better in each prerequisite course is required for clinical practice enrolment. Once admitted to clinical training, students will be continued in the program so long as they are clinically and academically successful. Academic success is defined as a grade of "C" or better in each course taken in the Department of Audiology and Speech Pathology. Clinical success is defined as performance judged as "adequate" on at least 75 percent of the clinical contact hours assigned during each quarter's enrollment. Failure to meet either the clinical or academic success criteria for two successive quarters automatically removes the student from clinical practice enrolments.

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

4610 Introduction to Language Pathology in Children (4) Nature, etiology, and treatment of language retardation. Observation in language clinic is available. Prereq: 3040, 3200, or consent of instructor. (Same as Special Education 4610.)

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.

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.

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.

4650 Speech and Language of the Culturally Diverse 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.

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

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


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 4930.)

4940 Introduction to the Verbo-Tonal System (4) Prereq: 3710 or 4760; 4930 and 3050 recommended. (Same as Special Education 4940.)

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5040 Advanced Clinical Practice in Audiology (1-6)

5045 Practicum in Hearing Aid Orientation and Communication Counseling (1-6)

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

5051 Practicum in Aural Rehabilitation (1-6)

5060 Anatomy and Physiology of Speech (3)

5070 Anatomy and Physiology of Hearing (3)

5071 Physiological Acoustics and Electrophysiology (3)

5100 Comparative Anatomy of Peripheral Auditory Structures (3)

5110 Introduction to Research in Speech and Hearing (3)

5117 Instrumentation in Audiology and Speech Pathology (3)

5119 Laboratory in Instrumentation in Audiology and Speech Pathology (1)

5200 Seminar on Stuttering (3)

5201 Aphasia (3)

5220 Seminar: Articulation Disorders (3)

5230 Seminar: Voice Disorders (3)

5320-30-40 Advanced Clinical Practice in Speech and Language Disorders (1-6, 1-6)

5350-60-70 Advanced Clinical Practice in Speech Diagnosis (1-6, 1-6, 1-6)

5390 Cerebral Palsy (3)

5381 Adult Dysarthria (3)

5390 Cleft Palate (3)

5440 Hearing Aid Evaluation (3)

5450 Sound Measurement and Audiometer Calibration (3)

5451 Noise and Audiology (3)

5460 Advanced Audiology (3)

5470 Impedance Measurement in Audiology (2)

5490 Practicum in Hearing Conservation (1-6)

5500 Seminar in Audiology (3)

5503 Special Auditory Tests (3)

5505 Special Problems in Audiology (1-6)

5520 Seminar in Speech Pathology (3)

5540 Seminar in Language Pathology (3)

5550 Special Problems in Speech Pathology (1-3)

5560 Independent Study in Speech Pathology (1-3)

5570 Management and Supervision for Speech-Language-Hearing Professionals (3)

5600 Independent Study in Audiology (1-6)

5610 Practicum: Language Pathology in Children (3)

5651 Seminar in Language Differences (3)

5730 Hearing Disorders (3)

5740 Pediatric Audiology (3)

5750 Educational Audiology (3)

5790 Seminar in Psycholinguistic Concepts in Speech Pathology (3)

5830 Advanced Aural Rehabilitation (3)

5950 The Verbo-Tonal System (3)

6000 Doctoral Research Dissertation

6010 Experimental Phonetics (3)

6019 Experimental Phonetics Laboratory (2)

6020 Psychoacoustics (2)

6029 Psychoacoustics Laboratory (2)

6060 Applied Anatomy and Physiology of Speech Mechanism (3)
6069 Laboratory in Applied Anatomy and Physiology of Speech Mechanism (2)
6070 Experimental Techniques in Cochlear Physiology and Neurophysiology (3)
6080 Seminar in Speech Science (3)
6090 Seminar in Hearing Science (3)
6110 Experimental Design in Speech and Hearing (3)
6117 Theories of Hearing (3)
6119 Advanced Instrumentation in Speech and Hearing Science (3)
6500 Advanced Seminar in Audiology (3)
6520 Advanced Seminar in Speech and Language (3)
6560 Directed Research (1-4)
6570 Directed Study in Speech Pathology (1-3)
6580 Directed Study in Audiology (1-3)
6590 Directed Study in Speech Science (1-3)
6600 Directed Study in Hearing Science (1-3)

Bacteriology

See Microbiology.

Biochemistry (186)

Professors: W. D. Hicks, Ph.D. Harvard (Head); J. E. Churchich, Ph.D. Sheffield (England); J. G. Joshi, Ph.D. Poona (India); K. J. Monty, Ph.D. Rochester.
Associate Professors: L. Huang, Ph.D. Michigan State.
Assistant Professors: L. Brattsten, Ph.D. Illinois; R. E. Bryant, Ph.D. Illinois; R. H. Feinberg, Ph.D. California (Berkeley); E. Freire, Ph.D. Virginia; J. Kootz, Ph.D. Kentucky.

UNDERGRADUATE
No major is offered, although course work in biochemistry is applicable to majors in biology and chemistry.
For the Bachelor of Arts degree with a minor in biochemistry, the following courses are required: Chemistry 2140-49, 3211-21-31, 3219-29-39, and Biochemistry 4110-20 and 4220-20-30; additional credits from Biochemistry 4220-20-30 and/or 4500 and/or 5010 are desirable.

3110 Introduction to Biochemistry (4) Biochemical principles underlying physiological events in animal tissues. Metabolism of carbohydrates, lipids, proteins, and nucleic acids. Biochemistry of body fluids; action of drugs and hormones. Prereq: Chemistry 1110-20-30 or 1510-20-30 and least 2 quarters of introductory biological sciences. Not available for credit if credit has been previously received for 4110 or 4120.

4110-20 Cellular and Comparative Biochemistry (4,4) Electrolyte behavior; chemistry and structure of proteins, enzyme behavior and biological function; carbon metabolism and energy capture; synthetic metabolism; nucleic acid function, protein synthesis, and biochemical genetics; regulation of biochemical 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 biochemical procedures of general application in biochemistry and molecular biology. Prereq or coreq: 4110.

4210-20 Introduction to Physical Biochemistry (3,3) Introduction to thermodynamics, phase stability and phase change; chemical potential; osmotic pressure; activity and the Debye-Huckel model; electrophoresis; activity and the Debye-Huckel model; electrochemistry; membrane permeability. 4220—Elements of statistical mechanics, diffusion, collision theory; chemical kinetics; and transition state theory; higher order kinetics; specialized kinetics of enzymatic processes; some biopolymer considerations. Prereq: Mathematics 1840-50-60, Chemistry 3211-21-31 and 3219-29-39, and an introductory course in biology.

4230 Introduction to Physical Biochemistry (3) Physical characterization of macromolecules; polarized light, absorption and fluorescence, sedimentation and transport hydromechanics, electro-photonic mobility, light scattering, and structural x-ray crystallography of proteins and nucleic acids. Prereq: 4220 or Chemistry 3430, or equivalent.

4500 Independent Research in Biochemistry (1-6) Special experimental problems under direction of staff member. 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 are found in the Graduate Catalog. Master's degree candidates usually should offer an undergraduate major in biology or chemistry. Doctoral degree candidates must present an undergraduate major in chemistry or biology.

5000 Thesis
5010 Biochemical Techniques (2)
5110 The Metabolism of Nitrogen Containing Compounds (2)
5120 Biochemistry of Mitochondria and Selected Organelles (3)
5130 Protein Structure and Enzyme Function (3)
5210 Structure and Function of Biological Membranes (1)
5220 Structure and Functions of the Nucleic Acids (3)
5230 Protein Synthesis and Its Role in Metabolic Regulation (3)
5300 Graduate Research Participation (3-9)
5310-20-30 Experimental Techniques (2,2,3)
5450 Special Topics (1-3)
5510 Properties of Biomolecules Related to Function (3)
5520 Molecular Basis of Metabolism and Its Regulation (3)
5530 Biosynthesis and Regulatory Functions of Information Molecules (3)
5560 Techniques in Environmental Toxicology (3)
6000 Doctoral Research and Dissertation
6010 Advanced Biochemistry Seminar (1)
6140 Current Topics in Biochemistry (1)
6420 Current Topics in Biological Membrane Research (1)
6431 Current Topics in Environmental Toxicology (1)
6450 Advanced Special Topics (1-3)

Biology (190)

Coordinator. K. J. Monty

A major in biology may be obtained by completing one of the three following concentrations:
A. Concentration in Cell Biology. Consists of Biology 3110-2030, Chemistry 3211-21-31,
introductory biology courses (Biology 1210-20-30 or Botany 1110-20 or 1118-28 or Zoology 1118-28) and Chemistry 1110-20-30.

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

1210-20-30 General Biology (4,4,4) 1210—Biology of cells: chemical basis of life, cell structure and function, energy metabolism, cell division, DNA, RNA, and protein synthesis, monera, protista, and fungi. 1220—Biology of plants and animals; survey of plant kingdom, structure and function of plant cells; 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. May be taken in any sequence. Students who receive credit for 1210-20-30 may not also receive credit for Botany 1110-20, 1119-28 or Zoology 1118-28-38.

3110 General Genetics (4) Classical and modern principles of heredity. Prerequisite: 1210-20-30 or Biology 1110-20 or equivalent of 2 years of high school biology and satisfactory ACT scores; Chemistry 1110-20-30. 3 hrs and 1 additional class meeting. May be taken in any sequence or combination with 3120 and 3130.

3120 Cell Biology (4) Organization and function of the cell and cell structures with the consensus of the department, omit the freshman year sequence and enter Biology 3110-20-30 directly (see course listings under lower-division). Minor: Consists of Biology 3110-20-30 and 15 upper-division hours in botany. Not more than 3 hours from 3050, 3070, 3090 are allowed for minor credit. Prerequisites to this minor are Botany 1110-20, 1140 or 1118-28, or Biology 1210-20-30. Corequisites are 4 hours of upperdivision courses in a related biological science (zoology, microbiology, biochemistry, entomology, plant pathology, forestry, or plant and soil science).

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. 2-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.

1118-20 Honors: Fundamentals of Botany (6,6) Honors courses designed for superior students in beginning botany. Open to freshmen with a score of 27 or better on national science section of American College Testing Program, or sophomores who have a cumulative grade point average of 3.25 (or 3.5 in the sciences) or who are accepted through an interview with a member of botany faculty. Prereq: 1210-20-30 or C or D in 1118 must transfer to 1120. Three 2-hour lecture-lab-discussion hours per week. Students may not receive credit for both Botany 1118-28 and Biology 1210-20-30.

1140 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.

3010-20 Plants in Evolution (4,4) Monera to angiosperms; emphasis on evolutionary relationships, morphology, and development. Not for botany graduate credit. Prereq: 6 hours in biological science.

3020 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.

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

3050 Socio-Economic Impact of Plants (3) Significance of plants in origin and development of human cultures, evolution of cultivated plants, and role of plants in present civilizations. Occasional field trips. Not for botany graduate credit.

3070 Genetics and Society (3) An introduction to genetics, anthropology, and evolution with emphasis on their implications for human society. Not for botany graduate credit. (Same as Anthropology 3070.)

3080 Biology and Human Affairs (3) Basic biological principles involved in deterioration and preservation of an individual's health and in the impact of human cultures may survive. Not for botany graduate credit. (Same as Zoology 3080.)

3100 Introductory Plant Pathology (4) (Same as Entomology and Plant Pathology 3100.)

3120 Introductory Plant Physiology (4) Organismal physiology of plants; water relations, mineral nutrition, morphogenesis, elements of metabolic processes, effects of age, light, natural rhythms, temperature, and other environmental factors. Lecture and lab. Not for botany graduate credit. Prereq: One year of general chemistry and one year biological science.

3300 Biological Oceanography (3) Distribution of abiotic factors in the sea and their effect on plankton growth; temperature and salinity and biological processes affecting each; food webs in the sea; role of hyperproductive regions (estuaries, upwellings), Prerequisites: Chemistry 1110-20-30 and Botany 1110-20 or Geology 5710.

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.

4017 Field Mycology (3) Field experience on identification of higher fungi; 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.

4021 Field Bryology (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.

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.

4023 Field Agrostology (3) Field experience on identification of grasses; 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.

4030 Mechanisms of Plant Speciation (3) Processes of plant specialization emphasizing population genetics, isolation, drift, hybridization, variation in populations, establishment of population barriers, and other aspects of plant specialization. Prereq: 3010-20 and Biology 3110.

4045 Aquatic Vascular Plants (3) Field experience on identification of aquatic vascular plants. 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.


4061 Field Phycology (3) Field experience on identification of fresh water algae. 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.

4075 Botanical Photography (3) Emphasis on phototechnology of natural history subjects and achievement of technical and aesthetic skills and knowledge to produce illustrations for class, seminar, or public lecture. Landscape, habitat, close-up, and small object photography, in color, using 35 mm format emphasized. Limited shared equipment available. Students encouraged to use own equipment. Film and processing costs paid by student. Photos processed and critiqued in class. Prereq: 6 hours of botany. Recommended: Botany 3010-20.

4080 Field Herpetology (3) Field experience on identification of frogs and fern allies. 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.

4240 Paleobotany (4) (Same as Geology 4240.)

4310 Plant Ecology (4) Interactions between individuals, species communities and their environments. Circulation of energy and matter in ecosystems. Weekly field trips or laboratory periods, and at least two weekend field trips. Prereq: 3030 or equivalent.

4410-20-30 Undergraduate Research Participation (2,2,2) Experience in active research projects under supervision of staff members. Prereq: junior or senior standing, minimum grade average 3.0, consent of instructor.

4710-20-30 Senior Seminar (1,1,1) At least 2 hours of 4710-20-30 are required of botany majors. Prereq: standing.

4830 Field Measurements in Plant Ecology (3) Practice in the use of field and laboratory instruments for the measurement of environmental factors, plant functions, and/or community characteristics. Data collection will be followed by analysis and interpretation of data. Visits to highly instrumented field sites will be included. Prereq: 3030 or equivalent; 1 year of physics and chemistry recommended.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5003-04 Non-Thesis Research (3,3)

5011 Mycology (4)

5012 Morphology and Evolution of Phycocyanes (4)

5021 Bryology (4)

5022 Lichenology (4)

5031 Vascular Plant Taxonomy (4)

5056 Phytoplankton Ecology (4)

5070 Principles of Biological Illustration (3)

5080 Pteridology (4)

5090 Morphology and Evolution of Beadilomyces (4)

5120 Agrostology (4)

5150 Advanced Morphology of Flowering Plants (4)

5160 Biosystematics (4)

5210 Advanced Plant Physiology I (3)

5220 Advanced Plant Physiology II (3)

5235 Advanced Plant Physiology III (3)

5290 Quaternary Problems (4)

5310-20-30 Special Problems in Botany (1-6,1-6)

5340 Plant Geography (4)

5350 Analysis of Plant Communities (4)

5360 Marine Ecology (3)

5410-20-30 Seminar in Teaching of College Botany (1,1,1)

5440 Seminar in Botany (1)

5510-20-30 Systems Ecology (3,3,3)

5780 Plant Cytology (4)

5810 Cytogenetics (4)

5820-21-22-23-24 Methods and Instrumentation in Laboratory Investigations (1,1,1,1,1)

5830 The Field Research Problem (4)

5850-51-52-53-54 Methods and Instrumentation in Field Investigations (1,1,1,1,1)

5870 Experimental Plant Genetics (4)

5910-20 Developmental Plant Morphology (3,1)

6000 Doctoral Research and Dissertation

6010 Advanced Topics in Morphology of Vascular Plants (2-4)

6060 Advanced Topics in Cryptogamic Botany (2-4)

6210 Photobiology (3)

6310 Advanced Topics in Cytology and Cell Biology (2-3)

6320 Ecosystems of the World (3)

6420 Advanced Topics in Genetics (2-4)

6520 Seminar in History of Botany (2)

6820 Advanced Topics in Plant Physiology (2-4)

6930 Advanced Topics in Systematic Botany (2-4)

Chemistry (235)

Professors:

G. Mamantov (Head), Ph.D. Louisiana State; N. S. Bowman, Ph.D. Princeton; C. A. Butcher (Emeritus), Ph.D. Ohio State; S. I. Dull, Ph.D. Illinois; J. Q. Chambers, Ph.D. Kansas; J. A. Dean (Emeritus), Ph.D. Michigan, J. F. Eastham, Ph.D. California (Berkeley); W. H. Fletcher, Ph.D. Minnesota; G. W. Kabalka, Ph.D. Purdue; C. W. Keenan, Ph.D. Texas; D. C. Kneitel, Ph.D. Princeton; J. W. Larson, Ph.D. Purdue; M. H. Lietzke, Ph.D. Wisconsin; R. M. Magid, Ph.D. Yale; G. D. O'Keelly, Ph.D. California (Berkeley); R. M. Pagni, Ph.D. Wisconsin; J. R. Peterson, Ph.D. California (Berkeley); G. K. Schweitzer, Ph.D. Illinois; D. A. Shively (Emeritus), Ph.D. Iowa State; H. A. Smith (Emeritus), Ph.D. Harvard; W. T. Smith (Emeritus), Ph.D. Ohio State; W. A. Van Hook, Ph.D. Johns Hopkins; E. L. Wehry, Ph.D. Purdue; T. F. Williams, Ph.D. London (England); J. H. Wood (Emeritus), Ph.D. North Carolina.

Associate Professors:

J. E. Bloor, Ph.D. Manchester (England); F. A. Grimm, Ph.D. Cornell; J. F. Kinstle, Ph.D. Akron; C. A. Lane, J. E. Bloor, Ph.D. Manchester (England); J. H. Wood (Emeritus), Ph.D. California (Berkeley); G. D. O'Kelley, Ph.D. California (Berkeley); D. C. Kleinfelter, Ph.D. Princeton; J. W. Larsen, Ph.D. Purdue; T. F. Williams', Ph.D. London (England); R. M. Pagni, Ph.D. Wisconsin; J. R. Peterson, Ph.D. California (Berkeley); G. K. Schweitzer, Ph.D. Illinois; D. A. Shively (Emeritus), Ph.D. Iowa State; H. A. Smith (Emeritus), Ph.D. Harvard; W. T. Smith (Emeritus), Ph.D. Ohio State; W. A. Van Hook, Ph.D. Johns Hopkins; E. L. Wehry, Ph.D. Purdue; T. F. Williams, Ph.D. London (England); J. H. Wood (Emeritus), Ph.D. North Carolina.

Assistant Professors:

J. L. Adcock, Ph.D. Texas; S. D. Alexandrats, Ph.D. California (Berkeley); J. D. Kovey, Ph.D. Yale; L. J. Magid, Ph.D. Tennessee; M. J. Sepaniak, Ph.D. Iowa State; C. Woods, Ill, Ph.D. North Carolina State.

Undergraduate:

For information regarding the Bachelor of Science in Chemistry degree and the cooperative program in chemistry, see page 183.

There are two alternative routes for the student to take in designing a program for a B.A. degree with a major in chemistry. Concentrations are designed to prepare the student for a career as a professional chemist or for entrance into graduate school in such fields as chemistry, biochemistry, geochromotography, etc. This program has similarities to that leading to the degree of Bachelor of Science in Chemistry (page 183), but with more opportunity for selection of electives outside the department and outside of science. Unlike the Bachelor of Science in Chemistry degree, the B.A. degree requires concentration A is not approved by the College of Liberal Arts.

Concentration B is specifically designed for students who have career objectives in fields other than chemistry, but in fields where chemistry has direct applications, such as medicine, dentistry, pharmacy, law, business, and ecology. This concentration, supplemented by appropriate courses from other areas, is suitable for students planning careers in these areas. Concentration B is not appropriate for students intending to become professional chemists.

The prerequisites consist of Chemistry 1110-20-30, Mathematics 1500-50-60 or 1840-50-60, and any one of the following natural science options: (a) Physics 2210-20-30 or 2510, 2310-20; (b) Geology 1510-20; (c) Biology 1210-20-30; (d) Biology 3110-20 and Microbiology 3200, 3519; (e) Botany 1110-20. The concentration consists of Chemistry 2140, 2149, 2311-21-31, 2319-29-39, 4910-20, 4920 plus at least 10 hours of additional upper-division work in chemistry, including at least one of the following courses: Chemistry 4110, 4210, 4220, 4310, 4420, 4510, 4550. (Up to six hours of biochemistry 4000 level and above or Geology 4610 may be applied to the 10-hour requirement but at least one three-hour chemistry course must be included.) A minor in chemistry shall consist of the successful completion of 24 hours of chemistry courses numbered 2000 and above including Chemistry 2140-49 (4 hours) and at least one of the following sequences: Chemistry 2311-21-31, 2319-29-39 (12 hours) or Chemistry 4910-20-30 (9 hours) or Chemistry 4910-20-30 (9 hours).

Placement in Freshman Sequences: The sequence which meets all requirements of a year of general chemistry and is a prerequisite for upper-division courses is 1110-20-30. The 1500 and 1600 series have more limited applications. The 1500 series emphasizes organic and biochemistry and may be used as a prerequisite only for 2230 and 3510. The 1600 series is for non-science majors and does not provide an adequate background for any additional courses in chemistry.

It is possible to select one sequence to another if permission for substitution is obtained in advance. For example, a student who finds a need to complete the 1110 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 1500 or 1600 sequences may be substituted for 1120 or 1130. Credit may be received for only one of the courses 1110, 1510, or 1610.

In any chemistry course above the freshman level which has Chemistry 1110-20-30 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 grade of C or D in 1128 will not be eligible for 1138 and must take 1130 to get credit.

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 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 course. The student must complete the year's work by taking 1120-30. A student receiving a grade of C or D in 1128 will not be eligible for 1138 and must take 1130 to get credit.

1110-20-30 General Chemistry (4,4,4) General courses of theoretical and descriptive chemistry. 1110—Modern atomic theory, chemical bonding, stoichiometry, endothermic and exothermic reactions. 1120—Quantitative aspects of solution chemistry, kinetics, chemical equilibrium, and thermochmistry. 1130—Organic chemistry and physical concepts. 1140—Organic and biochemical properties. Must be taken in sequence. 3 hours and 1 lab.

1110-20-38 Honors: General Chemistry (4,4,4) (See explanation above) 3 hours and 1 lab.

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

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

1510-20-30 General Chemistry (4,4,4) Introductory course with emphasis on topics related to living systems. 1510—Bonding and molecular structure, gas laws, liquid and solid state, solutions, colloids. 1520—Acids and bases, oxidation and reduction, kinetics and equilibrium. Introduction to organic chemistry, alkaline, unsaturated and aromatic hydrocarbons. 1530—Structures of the periodic table, carbon compounds, nucleic acid structure, amino acids and proteins, carbohydrates, lipids, nucleic acids. Must be taken in sequence. 3 hours and 1 lab.

1610-20 Chemistry and Society (4,4) Chemistry for non-science majors emphasizing the role of chemistry in society and dealing with current social concerns. 1610—Basic principles of chemistry. 1620—Impact and utilization of chemical principles in modern society with selected topics in areas of energy, environment, medicine, and consumer products. Must be taken in sequence. 3 hours and 1 lab.

2140 Analytical Chemistry (3) Principles and practice of quantitative measurements in chemical systems. Acid-base equilibria, oxidation reduction systems, complexometric titrimetry, elementary spectrophotometry, potentiometric methods, application of titrimetric analysis. Prereq: 1110-20-30; coreq: 2145.

2149 Analytical Chemistry (1) Experiments on topics discussed in 2140. Prereq or coreq: 2140. 1 lab.

2230 Elements of Organic Chemistry (4) Brief treatment of organic chemistry with emphasis on common compounds and biological interest. Prereq: One year of general chemistry. Not open to chemistry majors or minors. Credit may not be received for both Chemistry 2230 and 3211, toward graduation or otherwise.

3211-21-31 Organic Chemistry (3,3,3) Compounds of carbon, hydrogen, oxygen, and other organic and physical principles. Must be taken in sequence. Prereq: 1110-20-30. Corresponding laboratory 3219-29-39 is coreq for students not having credit for the laboratory.

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


4329-39 Physical Chemistry Laboratory (1,1) Gases, liquids, chemical equilibria, solutions, phase equilibria, and physical and electrochemistry. Prereq or coreq: Corresponding courses 3420 and 3430. 1 lab.

5351-21-31 Principles of Organic Chemistry (3,3,3) Structure and reactivity of aliphatic and aromatic compounds emphasizing reactions of synthetic utility. Use of spectroscopic and physical techniques to elucidate reaction mechanisms. Recommended for chemistry majors and students planning careers in physical or biological sciences. Must be taken in sequence. Prereq: 1110-20, corresponding laboratory. 3219-29-39 or 3219, 3528-39 is a coreq; letter is recommended.

5359-39 Organic Chemistry Laboratory (1,1) Experiments on topics discussed in 3521-31. Similar to 3229-39 except for those students who have need for operating knowledge of various spectroscopic and chromatographic techniques. Corresponding lecture 3521-31 is coreq for students not having credit for the lecture.

3180 Radioactivity and Its Applications (3) Radioactive processes in nuclear and biochemistry. Prereq: Math 1550 or equivalent. 1 lab.


4119 Physical Chemistry Laboratory (1) Solutions, phase equilibria, reaction kinetics and spectroscopy. Corresponding course 4110 is coreq.

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

4210 Advanced Analytical Chemistry (3) Chemical separations including chromatography, ion exchange, and solvent extraction; spectrophotometric techniques. Prereq: 2140-49.

49 Advanced Analytical Chemistry Laboratory (1) Experiments on topics discussed in 4210. Coreq: 4210.

4220 Advanced Analytical Chemistry (3) Electroanalytical methods of analysis (including potentiometry, coulometry, polarography, and voltammetry); magnetic resonance methods; mass spectrometry; x-ray absorption and fluorescence techniques. Prereq: 2140-49, 3420 or 4920 recommended.

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

4429 Physical Inorganic Chemistry (3) Theoretical concepts leading to an understanding of inorganic chemistry, quantum chemistry, group theory, the atom, principles of molecular structure, and elementary nuclear chemistry. Prereq: 341020-30, 4110.

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

4510 Organic Qualitative Analysis (3) Identification of pure organic compounds and mixtures. Prereq: 3521-21 or 3521-29-39 or 3529-39. 3630-39, 4220. Students who receive credit for 4510 may not also receive credit for 4510.


4610-20 Advanced Chemical Experimentation (2,2) Laboratory courses 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: 3351-39 or 3331-3539, 3430-39, 4220. Students who receive credit for 4610 may not also receive credit for 4510.

4640 Chemical Instrumentation (4) Principles of chemical instrumentation; practice in the design and construction of chemical instruments. 2 hrs and 2 labs. Prereq: 2140-49.

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.

4910-20-30 Biophysical Chemistry (3,3,3) Physicochemical principles with applications to biological systems. Must be taken in sequence. Not open to students having 4310-20-30: 4910—Gas laws: first, second, and third laws of thermodynamics, gas laws, equilibrium. 4920—Solution chemistry, electrochemistry; kinetics; nuclear chemistry. 4930—Elementary quantum chemistry; optical and magnetic spectroscopy, light scattering; macromolecular properties. Prereq: 1110-20-30, Math 1550 or equivalent.

4929 Biophysical Chemistry Laboratory (1) Experiments in topics discussed in 4910-20-30. Must be taken in sequence. Not open to students taking 4310-20-30-39 sequence. 4929 is coreq or prereq for 4929. 1 lab.

Graduate Students: Students majoring in the chemistry. 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 qualitative analysis.

The master's and doctoral degree requirements are found in the Graduate Catalog. The department offers specialization in nine areas for the Ph.D.: analytical, energy, environmental, inorganic, organic, physical, theoretical, chemical physics, and polymer science.

5000 Thesis 5110-20-30-35 Advanced Organic Chemistry (3,3,3)

5125 Advanced Organic Chemistry Laboratory (3)

5139 Spectroscopic Characterization of Organic Compounds (2)

5140 Introductory Polymer Chemistry (3)

5150 Kinetics of Polymerization (3)

5160 Organic Chemistry of Polymers (3)

5170 Physical Chemistry of Polymers (3)

5220 Analytical Chemistry of Environmental Pollutants (3)

5240 Chemical Instrumentation (4)

5250-60-70 Advanced Analytical Chemistry (3,3,3)

5259-69-79 Advanced Analytical Chemistry Laboratory (1,1,1)

5340-50 Quantum Chemistry (3,3)
Greek

UNDERGRADUATE
A major in Greek consists of 39 hours of language courses numbered above 2000 but including Classics 4220. Nine hours from the following general courses may be substituted for language courses at the discretion of the department: Classics 3210-20, 3310-20, 4101. 4101 may be taken for a maximum of 6 hours.

The Greek minor consists of 24 hours in language courses numbered above 2000 including Classics 4220. Six hours from the following general courses may be substituted: Classics 3210-20, 3310, 3320.

1210-20-30 Beginning Greek (3,3,3) Must be taken in sequence.

2610 Xenophon (4)

2620 Homer: Odyssey (4)

2630 Homer: Iliad (4)

2640 Greek New Testament (4) Prereq: 2610 or consent of instructor.

2650 Readings in Hellenistic Greek (4) Reading and discussion in religious and secular literature of Hellenistic Greek (single, 3210). Prereq Classics 1210-20-30. May be repeated. Maximum credit 8 hours. (Same as Religious Studies 2650.)

3010 Plato (3)

3020 Herodotus (3)

3030 Euripides (2)

4020 Aeschylus, Sophocles (3)

4030 Lysias (3)

4040 Aristophanes (3)

4050-60-70 Directed Readings in Greek (3,3,3)

Latin

UNDERGRADUATE
A major in Latin consists of 39 hours in language courses, numbered above 2000, but including Classics 4220. Nine hours from the following general courses may be substituted for language courses at the discretion of the department:

Classics 3210-20-30, 3310, 3320, 3330; 4101 may be taken for a maximum of 6 hours. Greek language courses numbered above 2000 may be substituted for a maximum of 9 hours of Latin courses with consent of department.

The Latin minor consists of 24 hours in language courses numbered above 2000 including Classics 4220. Six hours from the following general courses may be substituted: Classics 3210-20-30, 3310, 3320, 3330.

Placement Examination: Students who have acquired a knowledge of Latin through private 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.

2511-21 Intermediate Latin (4,4) 2511-21 Readings from the age of Cicero. 2521—Virgil's Aeneid. Open to those who have had at least two years of high school Latin, or equivalent.

3140 Ovid (3) Prereq: 3 or 4 years of high school Latin or 2521.

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

3160 Catullus (2) Prereq: 3 or 4 years of high school Latin or 2521.

3440 Livy (3)

3450 Pliny and Martial (3)

3460 Elegiac Poets (3)

4120 Horace, Satires and Epistles (3)

4140 Cicero and Techniques of Latin Prose Composition (3) Recommended for Latin majors and minors, especially those intending to teach or pursue graduate work. Works of Cicero studied as models for prose composition.

4310 Selected Readings from Latin Literature (3)

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

4340 Horace, Odes (3)

4350 Tacitus (3)

4360 Lucretius (3)

4370 Readings in Medieval Latin (3)

GRADUATE

5410-20-30 The Latin Epic. Lucretius, Virgil, Lucan (3,3,3)

5510-20-30 The Latin Tragedy. Sophocles, Euripides, Aristophanes (3,3,3)

5550 Roman Prose Composition (3) May be repeated for credit.

5560 Latin Poetics (3)

5610-20-30 Chemical Basis of Energy Conversion (3,3,3)

5650 Industrial Chemical Research (3)

5670-20-30 Theoretical Inorganic Chemistry (3,3,3)

5810 Nuclear Chemistry (3)

5911-21-31 Chemistry Seminar (1,1,1)

5950-60-70 Advanced Physical and Theoretical Chemistry (3,3,3)

6111 Selected Topics in Inorganic Chemistry (3)

6115 Atomic Structure Control (3)

6117 Organometallic Chemistry (3)

6160 Physical Organic Chemistry (3)

6150 Theoretical Organic Chemistry (3)

6150 Organic Photochemistry (3)

6210 Advanced Analytical Spectroscopy (3)

6211 Selected Topics in Analytical Chemistry (3)

6311 Selected Topics in Polymer Chemistry (3)

6320 Natural Polymers (3)

6411 Selected Topics in Physical and Theoretical Chemistry (3)

6420 Nuclear Magnetic Resonance (3)

6430 Photochemistry and Radiation Chemistry (3)

6450 Electrochemistry (3)

6475 Electronic Structure of Radicals (3)

6480 Statistical Thermodynamics (3)

6495 Advanced Chemical Kinetics (3)

6810 Thermodynamics of Solutions (3)

6820 Magnetic Resonance (3)

6711 Selected Topics in Inorganic Chemistry (3)

6730 Topics in Quantum Chemistry (3)

6750 Molten Salt Chemistry (3)

6810 Vibrational Problems in Molecular Spectra (3)

6820 Molecular Vibration-Rotation Theory (3)

6811 Selected Topics in Nuclear Chemistry (3)

Chinese

See Cultural Studies (Asian Studies).

Classics (257)

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

Associate Professors:
G. G. 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.

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 private 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.

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

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

3210 Early Greek Mythology (3) Comprehensive study of Greek myths through readings, lectures, and discussion with emphasis on significance for Greek thought and religion. Slides and tapes illustrate influence of Greek myths on art, music, and literature of ancient Greek and later cultures. (Same as Religious Studies 3210.)

3220 Greek Mythology in the Classical Period (3) Use of myth in literature, history, religion, philosophy, and art of Classical Age of Greece, and change of
attitude toward myth from earlier periods. Familiarity with basic Greek myths is assumed. Readings, lectures, slides, and discussion. (Same as Religious Studies 3220.)

3230 Roman Mythology (3) Myths created by Romans, as well as those the Romans borrowed from Greece. Introduces students to Roman attitude toward myth, religion, and society. Readings, lectures, slides, and discussion. (Same as Religious Studies 3230.)

3310 Art and Archaeology of the Aegean Bronze Age and Early Greece (3) and Early Greece (3) Troy, and cicadas islands. Greek mainland, and Crete. Emphasis on palaces of Crete and Mycenae. Tiryns, and Mycenaean, their fall, the following Dark Age, and rebirth of Greek civilization. Illustrated lectures.

3320 Art and Archaeology of Archaic and Classical Greece (3) Survey of development of Greek architecture, sculpture, and painting from 650 B.C. to death of Alexander. Illustrated lectures.

3330 Art and Archaeology of Hellenistic Greece and Rome (3) Hellenistic Greek, Etruscan, and Roman sculpture, painting, and architecture with attention to city planning. Illustrated lectures.

3340 Cities of the Greek and Roman World (3) Archaological survey of Greek and Roman cities from 800 B.C. to 500 A.D. Introduction to development of city planning and quality of life. Such cities as Mycenae, Athens, Priene, Alexandria, Rome, and Lepcis Magna will be studied.

3350 Shrines and Sanctuaries of the Greek and Roman World (3) Survey of major shrines and sanctuaries of Greek and Roman world with emphasis on archaeological remains. Such sites as Olympia, Epidaurus, Paestum, Cumae, Praeneste, and Baalbek will be considered. Readings in selected classical authors add to understanding of place of great shrines and sanctuaries in Greek and Roman life.

3510 Early Greek Literature in English Translation (3) Epic and lyric poetry, including Homer and Sappho, and Herodotus' history of Persian Wars.

3520 Classical Greek Literature in English Translation (3) History, philosophy, and drama of Golden Age from its brilliant rise to its tragic decline in Peloponnesian War.

3530 Roman Literature in English Translation (3) Poetry and prose of major Latin authors, with attention to Greek background. Selections made from early comedy through literature of Augustan Age and of later Empire.

4010 Greek Drama in English Translation (3) Survey of dramatic masterpieces of Greek literature.

4101 Foreign Study (1-18) See page 185.

4210 Teaching of Latin (3) Carries no language credit. (Same as Educ. C & L 3856.)

4220 Seminar in Classical Studies (3) Special problems in literature and other arts of Greece and Rome. For graduate students and advanced undergraduates. May be repeated for credit with consent of department.

4230 Classical Mythology and Its Uses (3) Intensive review and survey of Greek and Roman mythology for graduate students and advanced undergraduates. Emphasis on uses of classical mythology in literature, music, and plastic arts, especially of modern times.

4510 Selected Readings in Latin Literature in Translation (3) Content varies; may be repeated for credit with consent of department.

4610 Studies in Classical Archaeology (3) Variable content course offering subject matter not taught in an existing course, or concentrating on one aspect of the existing survey. May be repeated for credit to a maximum of 9 hours. Prerequisites according to topic.

GRADUATE

5620 Problems in Old World Archaeology (3)

Comparative Literature

See Cultural Studies.

Computer Science (266)

Professors:

T. Feigin (Head), Ph.D. Texas; R. M. Aiken, Ph.D. Northwestern; J. M. Moshell, Ph.D. Ohio State; K. G. O'Kane, Ph.D. Pennsylvania State; C. P. Pfeiffer, Ph.D. Pennsylvania State; M. G. Thomason, Ph.D. Texas.

Assistant Professors:

R. H. Wheeler, Ph.D. Texas; and Joseph Methodist; D. L. Matsuzawa, Ph.D. Texas; M. R. O'Connell, Ph.D. Clarkson; R. H. Sady, Ph.D. Notre Dame; D. W. Straight, Ph.D. Texas.

Instructor:

K. Y. Bowder, M.S. Tennessee.

*Space Institute

UNDERGRADUATE

Computer science offers an undergraduate major as well as a Master of Science degree (for details, see Graduate Catalog). Information about computer science programs may be obtained from the departmental office, 8 Ayres Hall, or from the Library Arts Advising Center, 220 Ayres Hall.

Major: Computer Science 1610 is a prerequisite to a major in computer science which consists of 2610, 2710, 3155, 3520, 3715, 4510, 4550, and an additional 15 hours selected from computer science intermediate and advanced courses. Also required are Math 2450-50 and Statistics 3450.

Minor: A minor in computer science consists of 2610, 2710, and an additional 18 hours of upper division computer science courses.

Introductory and Service Courses

1410 Introduction to Business Oriented Programming (3) Current and potential uses of computers as tools in business. In-depth treatment of topics such as data base management with emphasis on learning FORTRAN programming. Not for computer science majors. Students may not receive credit for both 1410 and 1510.

1510 Introduction to Programming—FORTRAN (4) 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.


2610 Programming Techniques in FORTRAN (3) Problem formulation and solution. External devices and direct access input and output. For students who have programming background in a higher level language. Prereq: 1510 or 1610 or 3150 or consent of instructor.

2710 Machine Organization (3) Elementary computer architecture. Introduction to machine and assembly language programming, representation of data, program structure and internal design. Prereq: Program A510 or 1610 or 3150.

3010 Computers and Society (3) History of computing and computer systems; capabilities of computers; applications in artificial intelligence, humanities, social sciences, language processing, and education; computer use 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. Students may not both take credit for, students with a knowledge of FORTRAN should take 3155. Prereq: Coreq: Math 2860. (Same as Math 3152.)

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. Students may not both take credit for, students with a knowledge of FORTRAN should take 3155. Prereq: 1510 or 1610 or consent of instructor. Prereq or coreq: Math 2860. (Same as Math 3155.)

3410 Computer Programming—COBOL (3) Computer programming in businessoriented language COBOL. Prereq: 1410 or 1510 or 3150 or consent of instructor.

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. Prereq: 3410 and Accounting 3210.

4310 Statistical Data Processing (3) FORTRAN language and its use for scientific data. Use of SPSS and SAS programs for standard statistical analyses such as frequency distribution, percentage data, correlation, data reduction correlation and regression, analysis of variance. Not for credit toward computer science majors. Prereq: Statistics 2100 or equivalent.

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

4340 Interactive Statistical Data Processing (3) Statistical data processing using interactive computer systems. Use of computer utility and statistics programs such as StataPack, editors, and FORTRAN. Not for credit toward computer science majors. Prereq: Statistics 2100 and Computer Science 4310 or knowledge of a procedure-oriented language such as FORTRAN.

Intermediate and Advanced Courses

3510 Computer Organization and Programming I (3) Problem formulation and advanced programming in FORTRAN; operation and control of digital computers. Prereq: 1410 or 2510 or 3150 or consent of instructor.

3520 Assembly Language Programming (3) Machine assembly language programming, elementary computer architecture, interpretation of memory dumps. Prereq: 2710.

3715 Discrete Structures (3) Introduction to discrete structures useful in computer science. Graphs and algorithms for manipulating data represented by them. Algebraic structures, Boolean algebra, lattices, graphs, networks, and algorithms. Prereq: 1510 or 1610 or 3150 or equivalent. Prereq or coreq: Math 2860. (Same as Math 3715.)

3725 Advanced Discrete Structures (3) Advanced topics in discrete structures useful in computer science. Graphs and algorithms for manipulating data represented by them. Algebraic structures, Boolean algebra, lattices, graphs, networks, and algorithms. Prereq: 1510 or 1610 or 3150 or equivalent. Prereq or coreq: Math 2860. (Same as Math 3715.)

3725 Advanced Discrete Structures (3) Advanced topics in discrete structures useful in computer science. Graphs and algorithms for manipulating data represented by them. Algebraic structures, Boolean algebra, lattices, graphs, networks, and algorithms. Prereq: 1510 or 1610 or 3150 or equivalent. Prereq or coreq: Math 2860. (Same as Math 3715.)

4650 Number Systems for Digital Computers (3) Floating-point number representation, mixed-radix number representation, multiplication and division, roundoff error in computer arithmetic. Relations, functions. Proof techniques, induction, logic. Graphical representations and algorithms. Prereq: 1510 or 1610 or 3150 or equivalent. Prereq or coreq: Math 2860. (Same as Math 3715.)

4610 Introduction to Artificial Intelligence (3) Introduction to artificial intelligence. Problem solving, search, automated deduction, expert systems, natural language understanding, computer vision and learning. Computer implementation of AI problems using PROLOG. Prereq: 4510. (Same as Electrical Engineering 4210.)
4225 Numerical Solution to Equations and Numerical Approximations (3) (Same as Math 4425.)

4235 Numerical Methods for Ordinary Differential Equations (3) (Same as Math 4335.)

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

4470 Programming Languages (4) Comparison and differences of high level programming languages, their design, features, and implementation. Topics include processors, operations, sequence control, data control, and storage management. Detailed discussion and programming experience in LISP and either SNOBOL, APL, or SIMUL. Prereq: 4510. Preereg: 4510.

4510 Data Structures and Non-numeric 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: 2710 and either 1610 or 2610.

4550 Systems Programming (3) Computer organization and advanced programming. Machine language and design of computer systems, representation of information, microprogramming, software systems, input-output systems, interpreters, macro assemblers. Prereq: 3520 or equivalent.

4570 Introduction to Database Management Systems (3) Introduction to database management systems. Hierarchical, network, and relational models of data. Logical and physical views of data. Data definition and manipulation languages. Data independence, implementation, and operational considerations such as performance, integrity, security, and reliability. Prereq: 4510 or 4550 and 4570. Students may not receive credit for both 4570 and 5670.

4610 Operating Systems—Concepts and Facilities (3) Detailed examination of a major operating system. Memory, processor, device, and data management interrupts, machine-level I/O, loaders and relocation device characteristics, data set organizations, SPOOLing. Prereq: 4550 and 4510. Students may not receive credit for both 4610 and 5670.

4620 Operating Systems—Case Studies (3) Alternatives in operating system design, dynamic relocation, paging, segmentation, time-sharing, time slicing, protection, concurrency, real-time systems. Examples from different operating systems analyzed as appropriate. Prereq: 4610 or equivalent or consent of instructor. Students may not receive credit for both 4620 and 5680.

4660 Compiler Construction (3) Practical experience with design of compilers. Scanning, parsing, semantic processing, code generation, and error detection and correction. Term project will include a complete compiler for small block-structured language. Prereq: 4510.


4750 Interactive Computer Graphics (3) Point plotting, line drawing, and graphical techniques, two- and three-dimensional transformation, perspective depth, hidden line elimination, shading, software and hardware aspects. Use of computer-graphics techniques in design, problem solving, mapping, architecture, and many other areas. Prereq: Senior standing or permission of instructor. Prereq: 4510.

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

4940 Computer Assisted Instruction (3) (Same as Elec. Engr. 4950.)

4945 Special Topics in Computer Science (1-3) Credit determined at time of registration. May be repeated. Maximum credit 9 hours with consent of department. Prereq: Recommendation of computer science staff.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5010 Computer Assisted Instruction (3)

5050 Computer Modeling and Simulation of Physical Systems (3)

5100 Immigration of Computer Science (5)

5108 Immigration to Computer Science Practicum (2)

5175 Introduction to Logic Design (3)

5210 Artificial Intelligence (3)

5250 Medical Computing (3)

5430 Theory of Compilers (3)

5655 Finite Difference Methods for Partial Differential Equations (3)

5658 Finite Element Methods (3)

5745 Advanced Topics in Numerical Partial Differential Equations (3)

5870 Database Management Systems (3)

5865-67-75 Numerical Mathematics (3,3,3)

5870-90 Advanced Operating Systems (3,3)

5870 Finite Automata Theory (3)

5870 Computability and Computational Complexity (3)

5870 Theory of Formal Languages (3)

5775 Combinatorial Algorithms

5810 Information Organization and Retrieval (3)

5840-50 Pattern Recognition (3)

5860 Data Security (3)

5910-30 Special Topics in Computer Science (1-4,1-4,1-6

5940-50 Advanced Small Computer Systems (3,3)

5970 Independent Study in Computer Science (1-3)

Cultural Studies

Director: Dr. Charles O. Jackson

Basic Faculty:
- B. K. Durand, Ph.D. English; Donald M. Fieno, Ph.D. Russian; E. J. Gangloff, Ph.D. Asian Studies; R. G. Gwyne, Ph.D. Special Programs; T. J. A. Heffernan, Ph.D. English; Ferdinand A. Halter, Ph.D. Special Programs; W. L. Humphreys, Ph.D. Religious Studies; C. O. Jackson, Ph.D. History; I. Leki, Ph.D. Special Programs; H. E. Lewald, Ph.D. Spanish; D. M. Mormon, M.A. Special Programs; M. L. Osborne, Ph.D. Philosophy; M. E. Peek, 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 this cultural study, open to students with concentrations in American studies, Ancient Mediterranean Civilizations, Asian studies, Black studies, comparative literature, Latin American studies, linguistics, Medieval studies, Russian and East European studies, and urban studies. Minors are provided in Asian studies, Black studies, comparative literature, Latin American studies, linguistics, Medieval studies, urban studies, and women's studies.

American Studies (099)

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 elective 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 chairman of the American Studies Committee, Dr. Charles Jackson.

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

2223-34 Forms of Popular Literature and Culture (3,3) (Same as English 3223-34.)

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

Asian Studies (145)

The Asian studies concentration consists of 36 quarter hours: Asian Studies 2510-20 plus 28 additional credits from Asian studies or approved departmental courses. The latter should constitute a coherent program, including a minimum of one courses (3 or 4 hours) from each of the following three areas: (a) art, Asian culture, literature, and music; (b) economics, geography, history, and political science; (c) anthropology, philosophy, religious studies, and sociology. Students who prefer to use Asian Studies 2510-20 for Triad or elective credit may, with permission of the program chairperson, substitute 8 additional upper-division hours in acceptable courses for that required sequence in the concentration.

The Asian studies minor consists of 24 quarter hours: Asian Studies 2510-20 plus 16 additional credits from Asian studies or approved departmental courses. The latter should include a minimum of one course (3 or 4 hours) from each of the following areas: (a) art, Asian culture, literature, and music; (b) economics, geography, history, and political science; (c) anthropology, philosophy, religious studies, and sociology. Students who prefer to use Asian Studies 2510-20 for Triad or elective credit may, with permission of the program chairperson, substitute 8 additional upper-division hours in acceptable courses for that required sequence in the minor.

It is strongly recommended that students planning to attend graduate school take an appropriate Asian language through the intermediate level. Further information may be obtained from the chairperson of the Asian Studies Committee, Dr. Eric Gangloff.
1431-32 Spoken Arabic (4,4) Must be taken in sequence. Direct entry varies on instructor. Class meetings and two laboratory periods. May be repeated once for credit.

2431-32-33 Elementary Modern Standard Arabic (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—Films 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.

3310 Indian Culture (4)

3320 Chinese Culture (4)

3330 Japanese Culture (4)

3340 Islamic Culture (4)

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

3531-32-33 Intermediate Chinese (4,4,4) Taped language program. Prereq: 2531-32 or equivalent or consent of instructor. Must be taken in sequence.

3610 The Literatures of India in English Translation (4) A survey of some of the major genres and masterpieces of Indian literature—epic poetry, drama, court poetry, modern novels. Major concentration is on the ancient and classical periods of Indian literary history.

3631-32-33 Intermediate Japanese (4,4,4) Prereq: 2631-32 or equivalent or consent of instructor. Must be taken in sequence.

3670 Islamic Literature in English Translation (4) Survey from origins to modern period of major Islamic literatures, especially Arabic, Persian, and Turkish. Readings include The Arabian Nights, The Rubaiyat of Omar Khayyam, and Gibran's The Prophet. Available for graduate credit.

3731-32-33 Intermediate Persian (4,4,4) Taped language program. Prereq: 2731-32 or equivalent or consent of instructor. Must be taken in sequence.

3831-32-33 Intermediate Modern Hebrew (4,4,4) Taped language program. Prereq: 2831-32 or equivalent or consent of instructor. Must be taken in sequence.

4010-20-30 Readings in Asian Literature (4,4,4) Prereq: Mastery of intermediate-level of Japanese, Chinese, Arabic, or Persian and consent of instructor.

4012 Selected Topics in Asian Studies (4) Content varies. May be repeated Maximum credit 12 hours.

4631-32-33 Advanced Japanese (4,4,4) Reading in Japanese in graded primer with attention paid to finer points of grammar. Class will include conversation, drill, and composition practice with native speaker. Must be taken in sequence. Prereq: 3631-32 or equivalent.

4740-50-60 Elementary Sanskrit (4,4,4) (Same as Religious Studies 4940-50-60.)

4770-80-90 Intermediate Sanskrit (4,4,4) (Same as Religious Studies 4770-80-90.)

Asian Language and Literature

ARABIC (127)
(See Romance Languages)

1510-20 Spoken Arabic (4,4)

2110-30 Elementary Modern Standard (3,3,3)
independent, and off-campus study to foster knowledge of the Black experience through a traditional academic approach as well as experiential learning. Black Studies 2010-20 are prerequisites to the concentration which consists of 36 hours from the Black studies curriculum. A minimum of 24 hours must be in upper-division credit. Every student's program must include some individualized work under Black Studies 4102, 4103, and 4310, the nature of which should be negotiated with the program director. A maximum of 8 hours of 4102 and 4103 combined can be applied to a major and a maximum of 4 hours in 4102 and 4103 combined can be applied to a minor. In addition, courses from at least two other departments must be selected.

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

Black Studies (195)

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

2010-20 Introduction to Black Studies (4,4)

3140-50-60 Directed Readings in Black Studies (1,1,1) Designed for students who are interested in doing intensive reading in some area of Black studies which is not offered by the student and the instructor. Prereq: 2010 (or 2020) and consent of instructor.

3330 Prejudice and Racism in the United States (4) (Same as Sociology 3330.)

3340 Sociology of Poverty and Inequality (4) (Same as Sociology 3340.)

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

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

3560 Black Religion in America (4) (Same as Religious Studies 3560.)

3630-40 The Education of Black People (4,4)

4102 Off-Campus Study (1-16)

4103 Independent Study (1-16) See page 184.

4200 Senior Seminar on Pan-Africanism (4) Explores concepts and philosophers of Pan-Africanism and implication of the ideology for various societal institutions.

4300 Resource Materials in Black Studies (4) Introduction to basic references such as bibliographies, indices, and listings of audiovisuals in Afro-American history, African history, and children's literature. Prereq: 2010 or 2020 or consent of instructor.

4400 Research in Black Studies (4) Deals with black experience and research studies.

4500 Current Issues and Topics in Black 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.

4810 Afro-American (4) As Child and Family Studies 4610.

4830 Black Women in American Society (4) Historical and contemporary sociocultural-political factors in American society as they relate to the Black woman. History 1950-60 recommended. Prereq: Consent of instructor.

4860 Afro-American Psychology (3) (Same as Psychology 4860.)

Approved Area Courses

Anthropology 3530 Peoples and Cultures of Africa (3)

Anthropology 3930 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)

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

Music 3350 Introduction to Afro-American Music (4)

Music 4270 Evolution of Jazz (3)

Political Science 3615-16 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 Black Religion in America (4)

Sociology 3330 Race, Class, and Power (4)

Sociology 3340 Sociology of Poverty and Inequality (4)

Sociology 4820 American Minority Ethnic Groups (4)

Speech 4582 Black Rhetoric (4)

Recommendations for the concentration and the minor:

(a) Those with a concentration in Black studies are encouraged to take a second major, with which an individually designed program in Black studies can be correlated.

(b) Students should seek academic advising from the Chair of Black Studies for courses for the concentration of the minor which relate to career plans, preparation for graduate study, and relationships to the second major.

(c) Those with a concentration and a minor are strongly encouraged to combine classroom and experiential learning through a careful selection of courses, e.g., Human Services 4400 and/or Black Studies 4102.

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 chairperson of the Cinema Studies Committee, Dr. Ferdinand A. Hilenski.

Approved Area Courses

Art 3935 Film Design (4)

Broadcasting 3670 TV Film News (3)

Broadcasting 4030-40 Television Production (3,3)

Comparative Literature 4032 Topics in Film and Literature (3)

English 3233 Film and American Culture (3)

English 3440 Literature and Film (3)

English 4090 Topics in Film Study (3)

Italian 3340 The Italian Cinema (3)

Comparative Literature (260)

A concentration in comparative literature consists of 36 hours including Comparative Literature 4010, 4012-22-32, 9 hours of literature in a foreign language in courses numbered 3000 and above, and one classics course selected from Classics 4010, 4230, 4510. The remaining 12 hours should include literature courses, either in English or in a foreign language, numbered 3000 and above, from at least two of the following departments: English, Germanic and Slavic Languages, Religious Studies, Romance Languages (certain courses in Philosophy and Speech and Theatre may be substituted with the approval of the chairperson of the Comparative Literature Program). Students concentrating in comparative literature are strongly encouraged to acquire a working knowledge of a second foreign language, especially if they hope to pursue comparative 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 (4010, 4230, 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 chairperson 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.

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

4010 Methodology of Comparative Literature (3)

Research and writing of comparative literature. Major project will be preparation of seminar paper in comparative literature. Prereq: 2010 and one course from 4012-22-32 or consent of instructor.

4012-22-32 Special Topics in Comparative Literature (3,3,3) Content varies; may be repeated for credit.

5012 Comparative Theories of Literature (3)

5022 Approaches in Comparative Literature (3)

5032 Studies in Comparative Literature (3)

Approved Area Courses

Classics 3210-20-30 Greek and Roman Mythology (3,3,3)
Latin American Studies (600)

Concentration consists of 36 hours including Spanish 3710-20 or Portuguese 3510-20, History 3870-80-90, Political Science 3625-26, and Geography 3890 or 3790 and 7 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.

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

Minor: Consist of 24 quarter hours selected from Geography 3890 or 3790, History 3870-80-90, Political Science 3625-26, Spanish 3710-20 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, Dr. H. E. Lewald.

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 periods through independence era; 2520—Latin American and the Modern period.

4010 Independent Research in Latin American Studies (3-9) Directed research in any topic fully related to Latin American Studies to be undertaken by a student off campus. Approval normally in Latin American countries. The research must be approved and evaluated by the Latin American Studies Committee and directed by a faculty member involved in the study of the Latin American area. Credit to vary according to the scope and length of the project.

4870 Senior Seminar (3-4) Selected topics in Latin American studies. May be repeated with consent of instructor.

Linguistics (625)

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 emphasizing 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 the coursework in the study of the Latin American area. Credit to vary according to the scope and length of the project.

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.

Consists of 24 quarter hours selected from Geography 3890 or 3790, History 3870-80-90, Political Science 3625-26, Spanish 3710-20 or Portuguese 3510-20, and the Latin American studies sequence 2510-20 or Independent Research 4010.

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

Minor: Consist of 24 quarter hours selected from Geography 3890 or 3790, History 3870-80-90, Political Science 3625-26, Spanish 3710-20 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, Dr. H. E. Lewald.
A concentration in Medieval studies consists of Medieval Studies 2010 and 4010 and 28 hours of upper-division courses concerned primarily with the Medieval experience, divided among the following three categories: (1) history, philosophy, political science, and religious studies; (2) language and literature; (3) the arts—history of art, architecture, music, and speech and theatre. Courses should not be selected at random but should either form a related pattern (for example, courses in the literature and history of Medieval England or Italy, etc.), or should revolve around a particular discipline, or two closely related disciplines (for example, courses in the history of art and architecture). A minor 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. Paul Barrete.

It is strongly recommended that students selecting the Medieval studies concentration choose a foreign language option for the Triad requirement (Options 1 or 2). Latin is the most appropriate language for students and is essential for those who plan to continue their studies in graduate school. In addition, students planning to go on to graduate school are strongly advised to supplement their Medieval studies concentration with extensive work in one of the traditional disciplines.

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.

4010 Seminar in Medieval Studies (4) interdisciplinary treatment of selected topics.

Upper-division courses for the concentration in Medieval studies may be chosen from the list of courses below.

Category #1

History, Philosophy, Political Science, and Religious Studies.

History 301 History of Western Religious Thought and Institutions (4)
History 3411 Renaissance (3)
History 3710 History of Germany (3)
History 3790 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 4710-20-30 Medieval History (3,3,3)
Philosophy 4430 Medieval Philosophy (4)
Political Science 3802 Studies in Political Thought (4)
Religious Studies 3011 History of Western Religious Thought and Institutions (4)
Religious Studies 3411 Renaissance and Reform (4)
Religious Studies 3713 Religion in the Middle Ages

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)
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 4410 Introduction to Study of English Language (3) (no language requirement)
English 4420 History of English Language (3) (no prerequisites)
English 4910-20 Chaucer (3,3) (Readings in Middle English)
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 3240 Old Norse Literature in English Translation (3)
German 4510 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)
Spanish 4050-60-70 Hispanic-Arabic Literature and Culture (3,3,3) (in English translation)

Category #3 The Arts

Architecture 4130 Seminar in Medieval Architecture (4)
Art 3074 History of Medieval Art (4)
Art 3075 French Manuscript Painting, 1450-1600 (4)
Art 3160 Early Italian Renaissance Art, 1300-1600 (4)
Music 4200 Independent Study in Music History and Literature (1-3) (when subject is part of medieval culture and society)
Music 4200 The Mass to 1600 (3)
Music 4200 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 2640-50. (It is suggested that students planning to major in Russian and East European Studies satisfy Option 2 of the Language, Literature and Arts section of the Triad. Russian 2110-20-30 can be used to satisfy part of that Option. Russian 2640-50 can be used to satisfy Part A of the History and Society section of the Triad.) 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, 3796, 4815, 5370, and 5380; 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 Fienie.

4010 Selected Topics in Russian and East European Studies (5) 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 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 Policy (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).

4900 Aspects of Urban Environment (4) (Same as Architecture 4900).

Urban Studies Curriculum: For the concentration and minor, courses may be selected to fulfill the respective requirements from the following:

Anthropology:

3450 Community Studies in Complex Culture (3)
4440 Urban Anthropology (3)

Architecture:

2000 Man-Environment Systems I (4)
3930 Behavioral Approaches to Environmental Design (6)
4800 Aspects of Urban Environment (4)

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:
Women's Studies (544)
Minor: Consists of Women's Studies 2010-20 and 16 hours of appropriate courses numbered 3000 or above. Courses approved for 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, Alumni Hall, 974-2409, or in the Philosophy Department, 807 McClung Tower, 974-3196 or 974-3252.

4101 Foreign Study (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. See pages 185 and 198.

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 185 and 198.

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 185 and 198.

4104 Independent Study (1-12)

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

Ecology (278)
J. Frank McCormick, Director.

Basic Faculty:

The graduate program in ecology offers Master of Science and the 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 to prepare students for academic 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 advisers and research facilities.

The Great Smoky Mountains, Cumberland Plateau, valley and ridge topography, TVA lakes, and wild rivers provide locally a spectrum of natural habitats and consequent biological diversity which is truly unique. In addition, faculty research programs provide opportunities for student research elsewhere on this continent and abroad with an emphasis upon tropical environments.

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

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

 COURSES ACCEPTABLE IN PROGRAM
Agricultural Biology
4010 Biology of Soil Microorganisms (4)
4330 Land Economics (3)
5420 Advanced Land Economics (3)
Anthropology
4360 Field Work in Physical Anthropology (3-9)
4640 Zoogeography (3)
4960 Primate Paleontology (3)
4970 Human Paleontology (4)
5970 Emergence and Early Evolution of Man (3)
Botany
4310 Plant Ecology (4)
5340 Plant Geography (4)
5350 Analysis of Plant Communities (4)
5510-20-30 Systems Ecology (3,3,3)
5830 Field Methods in Plant Ecology (4)
6320 Ecosystems of the World (3)
Ecology
5000 Thesis
5100 Special Problems in Ecology (1-3)
5210-20-30 Principles of Ecology (2,2,2)
5310 Ecology for Planners and Engineers (3)
5320 Implementation of Environmental Policy (3)
5610 Environmental Toxicology (3)
5640 Techniques in Environmental Toxicology (3)
6000 Doctoral Research and Dissertation
6100 Special Topics in Ecology (3)
6110 Seminar in Animal Behavior (2)
6120 Seminar in Aquatic Ecology (2)
6130 Seminar in Physiological Ecology (2)
6140 Seminar in Community Ecology (2)
6150 Seminar in Radiation Ecology (2)
6160 Seminar in Systems Ecology (2)
6431 Current Topics in Environmental Toxicology (1)
Economics
4260 Economics of Resources and Environmental Policy (3)
Environmental Engineering
4240 Animal Ecology (4)  
4860-70 Limnology (4,4)  
4700 Arachnology (4)  
5570 Animal Populations (3)  
5860 Geographic Distributions of Animals (4)  

Economics (283)  
See faculty list, page 89.

UNDERGRADUATE  
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 90 for description of the courses available.

Requirements for a major in economics consist of: (1) Economics 2110, 2120, and 2130 or equivalent honors courses, and (2) a minimum of 33 additional hours in upper-division economics courses. Economics 3110 (or the sequence 3111 and 3112) plus 3120 are required as part of the upper-division work and should be taken as early in the upper-division program as possible. A minor consists of (1) Economics 2110, 2120, 2130, and (2) 15 additional hours in economics at the upper-division level. Minors are encouraged to include Economics 3110 and 3120.

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

GRADUATE  
See pages 88-89 in the College of Business Administration. The department offers the following degrees:

M.A., MACS, M.S., and Ph.D. Also, the MBA division offers an MBA degree with a concentration in economics.

English (339)  
Professors:  

Associate Professors:  
J. M. Amstature, Ph.D. Duke; L. S. Burghardt, Ph.D. Chicago; D. A. Carroll, Ph.D. North Carolina; D. R. Cox, Ph.D. Missouri; B. K. Dumas, Ph.D. Arkansas; J. E. Gill, Ph.D. North Carolina; D. F. Gossel, Ph.D. Yale; N. M. Gossel, Ph.D. Yale; T. J. A. Heffernan, Ph.D. Cambridge; M. A. Lafaro, Ph.D. Maryland; R. B. Miller, Ph.D. Brown; M. P. Richards, Ph.D. Wisconsin; F. K. Robinson, Ph.D. Texas.

Assistant Professors:  
K. H. Adams, Ph.D. Florida; M. Kallet, Ph.D. Rutgers; M. L. Keene, Ph.D. Texas; I. Leki, Ph.D. Illinois; C. J. Maland, Ph.D. Michigan; M. Newfield, M.A. Cornell; M. L. Pryse, Ph.D. California (Santa Cruz).

Instructors:  
P. S. Adams, M.A. Tennessee; W. J. Curtis, M.A. Tennessee; D. L. Fineill, M.A. Tennessee; D. E. Francisco, M.A. Tennessee (Knoxville); P. G. Hammond, M.A. Tennessee; C. M. Hoffman, M.A. Iowa; M. S. Lewis, R. A. Jordan, M.A. New Mexico; M. A. Johns Hopkins; D. M. Marion, Ph.D. Florida; E. D. Overby, M.A. Virginia; D. G. Nevell, Ph.D. SUNY; M. H. Simpson, M.A. Oregon; P. A. Tschantz, M.A. New Mexico State; D. J. Walter, Ph.D. Tennessee.

Young Professor  
John C. Hodges Professor

UNDERGRADUATE  
General Prerequisites and Co-requisites: 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 (2510-2660) 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 (3220-37), Forms of Popular Literature and Culture (323334), Literature and Other Fields (3230-31), and Technical Writing (414050).

For prerequisites and other advice, consult specific courses descriptions below and departmental advisers.

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

Concentration in Literature: Twelve English courses at the 30004000 level including:

(1) English 3042;
(2) at least three courses in major figures of periods before 1800;
(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 or ideas;
(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: Twelve English courses at the 30004000 level including:

(1) one of the 3000-level creative writing courses followed by the corresponding 4000-level course in the same genre;
(2) two courses in distinct forms of creative writing at either the 3000 or 4000 level;
(3) two courses in non-fiction writing, film, or English language;
(4) four courses in literature.

Concentration in the English Language: Twelve English courses at the 30004000 level including:

(1) English 3330;
(2) five courses in linguistics and the English language selected from among those offered by the English adviser approval, from Psychology 4660, Anthropology 3500, or Linguistics 4050;
3000-level writing course. A, B, C, I, NC, W grading. Scale and workload the same as regular sequence.

1018-28-38 Honors: English Composition (3,3,3) 2

Poetry. 1032-Writing and language: how we are in literature: 20th-century novels, short stories, plays, and may be taken for credit. 1031-Writing about modern practice of research writing; individual conferences. Prereq: 1010. Based on study of great themes in literature; practice in documentation; individual conferences. Emphasis on invention, organization, style, or above cutoff point (currently 13) set by the English Department. Emphasis on the more advanced structures of English grammar and on paragraph writing. Required during the first quarter of residence of all foreign students (graduates, undergraduates, and transfer students) who are not excused from it on the basis of the English Proficiency Examination or credit obtained for the full sequence of freshman composition with a grade of C or better at a college or university in the United States which is accredited by a regional association. A, B, C, I, F, W grading. Students registered for this course are permitted to register only for two other courses.

3261 English Pronunciation for Foreign Students (3) Sounds andintonation patterns of American English and relation of spelling to sound. Designed to improve students' ability to speak and understand English. May be repeated. Maximum credit 6 hours. S/N. (Same as Audiology and Speech Pathology 1261.)

4131 English Composition for Foreign Students (3) Prerequisite: admission to the university. English proficiency needed for this course. A, B, C, I, NC, W grading.

111 English Composition (4) Expository writing recommended for students who lack the ACT English score needed for 1010 or who have previously failed 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, and composition. Emphasis on invention, organization, and paragraph development. A, B, C, I, NC, W grading. Students may not receive credit for both 1010 and 1011.

111 English Composition (4) Expository writing recommended for students who lack the 1010 English score needed for 1010 or who have previously failed 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, and composition. Emphasis on invention, organization, and paragraph development. A, B, C, I, NC, W grading. Students may not receive credit for both 1010 and 1011.

111 Writing Workshop (1) Self-paced laboratory course in which students work on their own or with individual composition. Subject to performance designated by English Composition teachers. Individual instruction in grammar, mechanics, sentence patterns, and composition 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 once for credit; may not be taken for credit concurrently with 1011. S/N grading.

210 English Composition (3) Critical reading and writing assignments encountered by college students. English 1441 replaces English 1010 for undergraduate foreign students. Prereq: 1221 or recommendation based on study of great themes in literature; practice in documentation; individual conferences. Emphasis on the more advanced structures of English grammar and on paragraph writing. Required during the first quarter of residence of all foreign students (graduates, undergraduates, and transfer students) who are not excused from it on the basis of the English Proficiency Examination or credit obtained for the full sequence of freshman composition with a grade of C or better at a college or university in the United States which is accredited by a regional association. A, B, C, I, F, W grading. Students registered for this course are permitted to register for only two other courses.

4141 English Composition for Foreign Students (3) Prerequisite: admission to the university. English proficiency needed for this course. A, B, C, I, NC, W grading.

1451 English Composition for Foreign Students (3) For students whose native language is not English. English proficiency required for this course. A, B, C, I, NC, W grading.

1451 English Composition for Foreign Students (3) For students whose native language is not English. English proficiency required for this course. A, B, C, I, NC, W grading.

2510-20 English Masterpieces (4,4) 2510—To the mid-18th century. 2520—Since the mid-18th century. 2530 American Masterpieces (4)
movements, or other topics. May be repeated with consent of department. Maximum credit 6 hours.

4101 Foreign Study (1-16) See page 185.

4102 Off-Campus Study (3-12) See page 184.

4103 Independent Study (1-12) See page 184.

4118-28-38 Honors: Senior (0,0,9) Admission by consent of department. 4118-29 graded S.

4140-50 Technical Writing (3,3) 4140—For students planning careers in physical, life and health sciences, engineering, agriculture, and forestry. Writing of proposals, laboratory and progress reports, abstracts, and journal articles. 4140—Writing of scientific text. Articles in which data are marshalled and analyzed for human interest.

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) Instruction and writing cover entire crime field—sus- pense, police procedural, private eye, spy, and adventure fiction. Prereq: 3450-60-70 or consent of instructor.

4256 Writing Science Fiction and Fantasy (3) Survey of genre development and basic texts of science fiction, speculative fiction, and fantasy. Exercises in writing in genres, in accordance with techniques learned in basic writing fiction course.

4270 Advanced Poetry Writing (3) Further development of skills acquired in basic writing poetry course. Prereq: English 3470 or consent of instructor.

4310-20-30-40 The British Novel (3,3,3,3) 4310—Dello; 4320—Scott to Thackeray; 4330—George Eliot to Galsworthy; 4340—James Joyce to present.

4440 Sociolinguistics (3) Exploration of language patterns in terms of correlations between them and their social context. Examination of effects of language upon culture, and vice versa. Prereq: English 3350 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.)

4555 Varities of English (3) Theories, methodologies, and findings of English and American dialectology and emphasis on implications for cultural pluralism. Prereq: English 3330 or consent of instructor.

4600 Special Topics in English Linguistics (3) May be repeated for credit with consent of department. (Same as Linguistics 4460.)

4711-81 English as a Second or Foreign Language (3,3,3) 4711—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, and lexical) between English and another language. Prereq: Second year of a foreign language. 4811—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 teaching with an experienced member of the staff. Prereq: 4471. (Same as Linguistics 4471-81.)

4810-20-30 Black Literature (3,3,3) Trends and developments.

4851 Southern Literature through the Nineteenth Century (3) Southern literature from colonial period to end of 19th century, including frontier humorists and local color writers.

4852 Southern Literature in the Twentieth Century (3) Modern Southern literary renaissance, Fugitives and Agrarians, Faulkner, and more recent writers such as Welty, O'Connor, and Porter.

4860 Emerson and Thoreau (3)

4880 American Humor through Mark Twain (3)

4871-31-41 Ballard and Folktales (3,3,3) 4721—Study of traditional English and Scottish popular ballads and their North American variants; 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 to Marvell.

4850-40 Chaucer (3,3) (4930—The Canterbury Tales; 4940—Trovof and Chisey and early poems.)
Problems or situations of contemporary interest are available which emphasize cartography and economy of a particular area. A useful interdisciplinary themes such as natural of geography itself or might develop major and by appropriate selection of electives departmental undergraduate adviser. Through geography are strongly urged to consult with a under.

Geography (415)

Professors: S. R. Jumper (Head), Ph.D. Tennessee; C. S. Aiken, Ph.D. Geology; E. H. Hammond, Ph.D. California (Berkeley); R. G. Long (Emeritus), Ph.D. Northwestern; C. W. Minick (Dean for Graduate Studies), Ph.D. Syracuse; T. H. Schmudde, Ph.D. Wisconsin.

Associate Professors: T. L. Bell (Assistant Dean for Research), Ph.D. Iowa; L. W. Brinkman, Jr., Ph.D. Wisconsin; J. R. Carter, Ph.D. Georgia; J. B. Bender, Ph.D. Louisiana State. T. L. Bell (Assistant Dean for Research), Ph.D. Iowa; L. W. Brinkman, Jr., Ph.D. Wisconsin; J. R. Carter, Ph.D. Georgia; J. B. Bender, Ph.D. Louisiana State.

UNDERGRADUATE

Major: Eight hours in courses numbered at the 1000 or 2000 level are recommended as an introduction to a major which consists of Geography 3700, 4010, and 4990, and 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, and D below:

A. Physical Geography: 3510, 3520, 3530, 4550
B. Economic Geography: 3410, 3430, 3490, 4075, 4610, 4630
C. Cultural Geography: 3450, 3600, 3610, 3660, 4240
D. Regional Geography: 3790, 3800, 3810, 3830, 3840, 3870, 3880, 3910, 3920, 3930, 3940

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 adviser. Advising 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.

Asian Studies. See Cultural Studies.
Latin American Studies. See Cultural Studies.
Russian and East European Studies. See Cultural Studies.

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 not covered in Geography 4680. Not open to students who have taken 1110 and 1120, respectively.

1810-20 Geographical Environment (4,4) Characteristics and processes of earth's surface and lower atmosphere as they interact to produce world patterns of distinctive environments significant to man. Must be taken in sequence. 1810 not open to students who have taken 1710.

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

2110-20 Economic Geography (4,4,4) The significance of location, pattern, and environment in economic activities. Emphasizes: 2110—agriculture; 2120—energy, minerals, and manufacturing; 2130—transportation and trade. Need not be taken in sequence.

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 pattern of human use of earth's surface.


3420 Urban Geography (4) Concepts and theories concerning development and significance of systems of cities and internal morphology of cities. Not open to students who have taken 4680.

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

3460 Geography of Resources (4) Study of factors related to 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 atmosphere and resulting weather events. Nature of individual weather elements, their measurement, and analysis over time and space.

3520 Climatology (4) Overview of general circulation systems 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 evauser 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 among nations; spatial implications of political decision-making processes; geography of administrative units.

3660 Cultural Geography (4) Basic concepts of culture, methods and background of cultural geography, world patterns of cultural phenomena.

3700 Maps and Aerial Photographs (4) Introduction to scales, sources, uses, design, and production of maps, aerial photos, and other forms of spatial images.

3750 Geography of Middle America (4) Covers Mexico, Central America, and the West Indies. Not open to students who have taken 3740, 3770, or 3780.

3800 Geography of North America (4) Not open to students who have taken 3730, 3750, or 3760.

3810 Geography of Europe (4)

3830 Geography of Africa (4) Survey of major physical, cultural, and economic characteristics of Africa, with particular emphasis on the area to the south of the Sahara.

3840 Geography of Australia and Oceania (4) Survey of major physical, economic, and social characteristics of Australia, New Zealand, and of impact of western civilization on selected island groups of South-west Pacific.

3870 Geography of Asia (4) A survey of the physical, cultural, and economic characteristics of the countries of Asia, excluding the Soviet Union. Not open to students who have taken 3820, 3890, or 3960.

3880 Geography of the Soviet Union (4)

3910 Regional Geography of the United States and Canada (4) Major physical, economic, and social distributions as they interrelate to give distinctive character to regions of United States and Canada. Not open to students who have taken 3710 or 3720.

3920 Geography of the American South (4) Geographical appraisal of southeastern United States, including physical environmental and human resources. Origin and development of contemporary economic and cultural traits of the area.

3930 Geography of Tennessee (4)

3940 Geography of Appalachia (4) Interrelation of physical, economic, and social patterns to give distinctive character to particular sections of the southern Appalachia. Appalachia in perspective in the current American scene.

4075 Geography of Transportation (4) Geographic examination of transportation systems, emphasizing transport of people and goods and their effects on the environment. Study of the interaction of these systems to changing geography of cities and urban hinterlands.

4100 Quantitative Methods in Geography (4) Geographical applications of statistical techniques, point pattern analysis, and analysis of areal units. Prereq: Mathemat ics 3000 or consent of instructor.

4101 Foreign Study (1-16) See page 185.

4102 Off-Campus Study (1-16) See page 184.

4103 Independent Study (1-16) See page 184.

4210 Problems in Geographical Method (4) Examples of problems in physical and statistical techniques, point pattern analysis, and analysis of areal units. Prereq: Mathemat ics 3000 or consent of instructor.

4240 Historical Geography of the United States (4) Survey of changing human geography of United States during four centuries of settlement and development. Emphasis upon changing population patterns, development of agricultural resources, and patterns of urban development. Not open to students who have taken 4250-60.

4510 Principles of Geomorphology (4) (Same as Geology 4510.)

4550 Geography of Soils (4) Soils as physical systems and their relationship to environments. Investigation of specific cases of role of soil in management of environmental systems.

4610 Industrial Geography (4) Factors affecting location of manufacturing activities, with emphasis on the United States. Prereq: 3410 or consent of instructor.

4630 Geography of Agriculture (4)

4710 Cartographic Design and Production (4) Introduction to principles of design, construction, and reproduction of maps. 3700 recommended. 2 hours and 2 labs.

4720 Data Mapping (4) Automated techniques of representing surfaces using geographic information systems. 3700 and knowledge of a computer language recommended.

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 and uses of aerial photography and other remote sensing techniques. Emphasis upon value of various types of imagery for geographic interpretation and simple mapping. Prereq: Consent of instructor.
North Carolina.

K. R. Walker (Head), Ph.D. Yale; H. J. Klepser

6710 Seminar in Physical Geography (3,3)
6410 Seminar in Regional Geography of United States (3)
6310 Seminar in Rural Geography (3,3)
6240 Seminar in Historical Geography (3,3)
6220 Seminar in Urban Geography (3,3)
6110 Seminar in Economic Geography (3,3)
5915 Regional Geomorphology (4)

GRADUATE

The general requirements for the master's and doctoral degrees are given in the Graduate Catalog.

5000 Thesis
5100 Colloquium in Geography (1)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5150 Introduction to Geographical Research (3)
5160 Research Design and Field Problems (4-6)
5170 Geographic Concept and Method (3)
5200 Special Problems in Geography (2-6)
5250 Topics in Historical Geography (3)
5260 Advanced Cultural Geography (3)
5310 Topics in Regional Geography of United States (3)
5320 Topics in the Geography of the American South (3)
5410 Advanced Topics in Economic Geography (3)
5520 Advanced Urban Geography (3)
5550 Topics in Geography of Land-Surface System (3)
5610 Topics in Climatology (3)
5710 Seminar in Geography (3)
5720 Topics in Quantitative Geography (3)
5740 Advanced Topics in Remote Sensing (3)
5790 Topics in Cartography (3)
5915 Regional Geomorphology (4)
6000 Doctoral Research and Dissertation
6110-20 Seminar in Economic Geography (3,3)
6120-20 Seminar in Urban Geography (3,3)
6240-50 Seminar in Historical Geography (3,3)
6260-70 Seminar in Cultural Geography (3,3)
6310-20 Seminar in Rural Geography (3,3)
6410-20 Seminar in Regional Geography of United States (3,3)
6610-20 Seminar in Regional Geography of Latin America (3,3)
6810-20 Seminar in Physical Geography (3,3)

Geological Sciences

Associate Professors: M. Clark, Ph.D. Pennsylvania State; K. C. Misra, Ph.D. Western Ontario.
Assistant Professors: T. W. Broadhead, Ph.D. Iowa; D. W. Byerly, Ph.D. Tennessee; F. Delcourt, Ph.D. Minnesota; H. Y. McSweeney, Ph.D. Harvard; N. J. Woodward, Ph.D. Johns Hopkins.

The Department of Geological Sciences provides training for (1) those who plan a career as a professional geologist in industry, federal and state surveys, 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 adviser. A list of advisers is available in the departmental office.

GEOPHYSICS

1000 Frontiers in Earth and Planetary Sciences (4)
1050 Geophysical Oceanography (3,3)
1070 Geology of National Parks (4) Not intended for geology majors.

GRADUATE

1400-20 General Geology I, II, III (4,4,4)

1410-20 General Geology I, II (4,4) 1410—Introduction to study of the earth, its composition, structure, and processes which change it. Emphasizes development of life and physical events through Mesozoic Era. Must be taken in sequence. 3 hours and 1-2 hour lab per week.

1420-20 Geology of the Earth's Crust (4) Origin and evolution of continents, atmosphere, oceans, and organisms with emphasis on physical and historical North America. Prereq: 1450. 3 hours and 1 lab per field period.

2100 History of Life on Earth (4) Chronological account of origin and evolution of life, its environment, and societal patterns. Not intended for geology majors. 3 hours and 1 lab per field period.

3100 Resources—Minerals and Energy (4) Evaluation and estimation of reserves and resources. Discussion of geology, economics, and public policy of mineral resources. Not intended for geology majors. 3 hours and 1 lab per field period.

2110 Fundamentals of Economic Geology (4) Economic geology and mineral deposits. Not intended for geology majors. 3 hours and 1 lab per field period.

2300 Oceanography (4) Introduction to study of oceans and their formation and processes which act on them. Not intended for geology majors.

2200 Stratigraphy—Depositional Environments (4) Introduction to basic principles and processes of sedimentary environments and interrelations of depositional environments. Prereq: 1420 and 3180. 3 hours and 1 lab per field period.

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 0150 or/and 1500 prior to enrolling in Math 1840-50. Consult mathematics section of this catalog or the Department of Mathematics for details.

1430-20 Material Science of Rocks (4,4) Origin and evolution of continents, atmosphere, oceans, and organisms with emphasis on physical and historical North America. Prereq: 1450. 3 hours and 1 lab per field period.

2210 History of Life on Earth (4) Chronological account of origin and evolution of life, its environment, and societal patterns. Not intended for geology majors. 3 hours and 1 lab per field period.

2220 Oceanography (4) Introduction to study of oceans and their formation and processes which act on them. Not intended for geology majors. 3 hours and 1 lab per field period.
Introduction to the Generation and Nature of X-Ray as
4307 Introduction to X-Ray Methods (1) An introduction to general X-ray techniques and applications. Prerequisite: or consent of instructor. 2 hrs and 1 lab.

4310 Geologic Mapping (4) Interpretation of maps and methods of geologic mapping. 3 lectures and 1 lab or field period. Prerequisite: 12 hours of geology

4331 Quaternary Geology of North America (4) Quaternary geologic processes, stratigraphy, sedimentology, and geomorphology of glaciated and unglaciated North America and oceans. Prerequisite: 1410 or consent of instructor. Two 2-hour lectures.

4332 Quaternary Paleocology (4) Study of pollen and plant macrofossils of characteristic vegetation and climate change during Quaternary. Prerequisite: Consent of instructor. Two 2-hour lectures.

4333 Quaternary Field and Lab Techniques (4) Techniques for environmental characterization and reconstructions, including pollen and plant macrofossils, identification, description of site stratigraphy, and sedimentology. Prerequisite: 1410 or consent of instructor. 2 lectures and 2 labs.

4370 Tectonic Styles (4) Elements, habitats, and geotectonic causes of basic styles of tectonic deformation presented on maps, sections, aerial photographs, and fabric diagrams. 3 lectures and 1 seminar or lab. Prerequisite: 3370 or consent of instructor.

4440 Field Geology (8) Five weeks' field course, first term summer quarter. Advanced undergraduates or first-year graduate students in geology. Employed entire time of students. A report is required to be submitted no later than end of fall quarter. Prerequisite: 12 hours of geology and consent of instructor.

4460 Geologic Photography and Photogrammetry and Remote Sensing (4) Principles of terrestrial and aerial photography, and principles of photonic remote sensing systems. Prerequisite: 1420. 3 hours and 1 lab.

4520 Process Geomorphology (4) Gradational processes operating at earth's surface and landforms produced. Prerequisite: 1410-20-30. 3 hours and 1 lab.

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 behavior of elements in the earth's crust. Prerequisite: Chemistry 1110-20 or equivalent required. Recommended: 3310.

4670 Exploration Methods (4) Principles of geophysical and geochemical exploration methods. Computation of grades and reserves. Application of different types of mineral deposits. Prerequisite: 4610 or consent of instructor.

4700 Uranium Deposits (4) Distribution, characteristics, and origin of different types of uranium deposits. Prospecting and evaluation of uranium deposits, with special reference to domestic potential resources. Prerequisite: 4110 or consent of instructor. 3 hours and 1 lab/field/seminar period.

4810 Special Problems in Geology (1-4) Prerequisite: Consent of instructor. May be repeated. Maximum credit 4 hours.

GRADUATE

The general requirements for master's and doctoral degrees are given in the Graduate Catalog.

5000 Thesis

5050 Geochemistry of Ore Mineral Deposits (3)

5069 Experimental Geochemistry Laboratory (1-3)

5120 Geophysics—Gravity and Magnetic Methods (4)

5130 Geophysics—Sediment Exploration Methods (4)

5210-20-30 Special Problems in Geology (1-4, 1-4, 1-4)

5290 Quaternary Problems (4)

5310 Depositional Environments and Models for Exploration (4)

5340 Seminar in Local Stratigraphy (1)

5350 Selected Topics in Geology (1)

5370 Mesofabric Analysis (4)

5460 Photogeologic Interpretation (4)

5470 Plate Tectonics and Orogeny (4)

5520 Igneous Petrology (4)

5530 Metamorphic Petrology (4)

5540 Terrigenous Clastic Sedimentary Petrology (4)

5550 Carbonate Sedimentology (4)

5635 X-Ray Diffraction: Single Crystal Techniques (3)

5640 Clay Mineralogy (4)

5650 Thermochemistry for Geologists (3)

5680 Cathodoluminescence Petrology (3)

5710 Advanced Paleontology (4)

5720 Paleontological Nomenclature and Techniques (4)

5750 Petrography (3)

5820 Strata-bound and Stratiform Sulfide Deposits (4)

5830 Magmatic Mineral Deposits (4)

5840 Ore Petrology (4)

5850 Regional Studies in Geology (4)

5860 Coal Depositional Environments (4)

5915 Regional Geology (4)

6000 Doctoral Research and Dissertation

6110 Seminar in Stratigraphic Geology (3)

6210 Seminar in Paleontology (3)

6310 Seminar in Structural Geology (3)

6410 Seminar in Mineralogy (3)

6610 Seminar in Economic Geology (3)
Germanic and Slavic Languages

Professors: H. Kretz (Head), Ph.D. Ohio State; J. E. Eilen, Ph.D. Pennsylvania; H. W. Fuller, Ph.D. Wisconsin; E. T. Hankamer (Emeritus), Ph.D. Bonn (Germany); R. L. Hiller (Emeritus), Ph.D. Cornell, R. L. Norddeick (Emeritus), Ph.D. Ohio State; C. L. Osborne, Ph.D. Northwestern; M. P. Rice, Ph.D. Vanderbilt.

Associate Professors: J. S. Elliott, Ph.D. Michigan; D. M. Fiene, Ph.D. Indiana; N. A. Lauckner, Ph.D. Wisconsin; D. E. Lee, Ph.D. Stanford; C. J. Mellor, Ph.D. Chicago.

Assistant Professors: M. H. Harris, M.A. Illinois.

Instructor: U. C. Ritzenhoff, Ph.D. Connecticut.

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 B 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 programs and junior 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 German 4090 on the Foreign Office Study Program and Russian 4010 Foreign Study. See page 185. Students should consult the department before registering for the foreign study course.

German

Major: Majors or minors in German should carefully prepare their programs in consultation with a departmental faculty adviser. German 2110-20-30 or the equivalent is a prerequisite to the major. The major shall consist of at least 36 hours of German in courses numbered above 3000, usually including German 3110-20-30 (or 3410-20), 3810-20-30, 9 hours of German literature in courses numbered above 3000, excluding 301020-30 and courses in English translation.

It is recommended that German majors also take History 1510-20 or 3710-20 and 8 hours major or minor in the humanities. 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 3010-20-30 courses in English translation.

Russian

Major: Russian majors should carefully prepare their programs in consultation with the departmental faculty adviser. Russian 2110-20-30 is prerequisite to the major. Russian 2640-50 is a corequisite to the major. The major consists of 36 hours of Russian courses, including Russian 3110-20-30, 3610-20-30, 9 hours from Russian 3210-20-21-30-40-5060, and 9 hours numbered 2640-50 and above. It is recommended that majors also take History 3470-80-90 and 9 hours of more advanced courses. Majors are urged to consider a minor in some other area of the humanities.

Minor: Russian 2110-20-30 is prerequisite to the minor. The minor itself consists of 27 hours of Russian courses, including 9 hours from Russian 2640-50 and/or 3210-20-21-30-40-50-60 and 18 hours to be taken from Russian 3110-20-30, 3610-20-30, and courses numbered 4000 and above.

Russian and East European Studies. See Cultural Studies.

Certification for Teaching German and Russian in Tennessee
Consult Certification Clerk, Room 212 Claxton Education Building.

German (433)

1110-20-30 Elementary German (3,3,3) Must be taken in sequence.

1510-20-30 Elementary German (4,4) Must be taken in sequence.

1518-2518-28 Honors: Elementary and Intermediate German (6,6,6) Honors course for students of superior aptitude. Freshmen are admitted on the basis of high school average and performance on the American College Testing Program. Upperclass students must have a B average. A grade of C or above must be achieved in 1518 in order to continue with German 2518. A student obtaining a grade of D or better in 1518 may continue with German 1520. This sequence is equivalent to 1510-20 or 1110-20-30 and 2110-20-30 and its completion allows the student to enter all 3000-level German courses.

1530 Elementary German through Individualized Instruction (1-6) Same materials as in German 1510-20, but student may proceed at own pace, with a minimum of one credit hour per quarter. With completion of four hours student has option of transferring to 1520. May be repeated. Maximum credit 8 hours.

2110-20-30 Intermediate German (3,3,3) Must be taken in sequence.

3010-30-30 Elements of German for Upper-Division and Graduate Students (3,3,3) Elements of language, elementary and advanced readings. Open to graduate students preparing for language examinations, and upperdivision students desiring reading knowledge of the language. Undergraduate credit only. No credit for students having completed 1510-20 or 1110-20-30.

3040 Elementary Dutch (3) Prereq: Reading knowledge of German. Primarily for graduate students in German. No graduate credit allowed.

3110-20-30 Introduction to German Literature (3,3,3) Prereq: 2110 or equivalent.

3810-20-30 Conversation and Composition (3,3,3) Prereq: 2130 or equivalent.

ADVANCED UNDERGRADUATE AND GRADUATE

4101 Foreign Study (1-16) See page 185.

4102 Off-Campus Study (1-16) See page 184.

4103 Independent Study (1-16) See page 184.

4110-20-30 Studies in Classical and Modern Writings (3,3,3) Content varies with consent of department. Prereq: 9 hours of 3000 courses (exclusive of 3010-20-30, or courses in English translation) or equivalent.

4140-50 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.

4160 Studies in German Authors (3) Life and works of a single outstanding German literary figure limited to 24 credit hours. May be repeated for credit. 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.

4210-20-30 Studies in German Literary Types (3,3,3) 4110-11-20 Lyric poetry, 4250 Drama, 4230 Narrative prose. Prereq: 9 hours of 3000 courses (exclusive of 3010-20-30, 3210-20-30, 3510) or equivalent.

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

4260 Introduction to Historical and Comparative Linguistics (3) Linguistic change, proto-languages, phonological and morphological change. Cultural, historical, sociological influences upon the development of language. Semantic change. Lexicography. All topics copiously illustrated by selected examples from Indo-European languages. Prereq: 9 hours of upper-division courses in a modern or ancient language (exclusive of German and French 3610-20-30, courses in literature in translation, and general courses in Latin and Greek requiring no knowledge of the language) or consent of department. (Same as Russian, French, Spanish, and Linguistics 4260.)

4310-20 History of German Language (3,3)

4610-20-30 German Civilization (3,3,3) Prereq: 2130 or equivalent.

4618-28-38 Honors: Senior German (3,3,3) Intended to give student of special aptitude greater opportunity to do independent study than is possible in ordinary courses. Prereq: Senior standing, with a record of A in half of German courses taken as prereq to the 4000 courses; average of B in remainder, and consent of department.

4810-20-30 Advanced Conversation and Composition (3,3,3) Prereq: 3810-20-30 or equivalent or consent of department.

4850 Business German (3) Survey of German used in fields of business and economics for students wanting to major in minor in business or economics. Prereq: 3110-20-30.

GENERAL COURSES

2610-20-30 Culture of German-Speaking Peoples (3,4, 3, 4, 3, 4) Studies in culture and life style of German-speaking peoples from their first contact with Romans to the present. Readings in English. Students opting for 4 hours credit will be expected to present an appropriate amount of extra work above that required for 3 hours.

3210-20-30 German Literature in English Translation (3,4, 3, 4, 3, 4) No foreign language credit. No change in credit hours after add deadline. Students opting for 4 hours credit will be expected to present an appropriate amount of extra work above that required for 3 hours.

3240 Old Norse Literature in English Translation (3,4) Prose readings of sagas of Norwegian kings, great Icelandic family sagas, and Vinland sagas, narrating discovery of America around the year 1000. Mythological and heroic poems of the Edda. No foreign language credit.

3260 German drama in English Translation (3) From Lessing to present. No foreign language credit.

2270 Modern German Novel in English Translation (3) From 1900 to present. Remarque, Hesse, Mann, Kafka, Frisch, Bolt, Grass. No foreign language credit.

GENERAL COURSES

2640-50 Background and Main Currents of Russian Culture (4) A broad interdisciplinary approach to the appreciation of the language, religion, literature, art, music, history, geography, and social problems of Russia. No knowledge of Russian required. May not be taken in foreign language credit.

3210 Nineteenth-Century Russian Literature in English Translation (3-4) Realism and the novel; selection from works of Pushkin, etc.

3220 Works of Leo Tolstoy in English Translation (3-4) War and Peace, Anna Karenina, and other works.

3221 Works of F. M. Dostoevsky in English Translation (3-4) Crime and Punishment, Brothers Karamazov and other works.

3230 Twentieth Century Russian Literature in English Translation (3-4) Russian modernism and literature under the Soviets.

3240 The Russian Drama in English Translation (3-4) Selections from works of Fontovin, Grisoedov, Pushkin, Gogol, Ostrovsky, Turgeniev, Chekhov, and others.

3250 The Works of Ivan Turgenev and Anton Chekhov in English Translation (3-4)

3260 Russian Folklore in English Translation (3-4)

3270 Russian Philosophical and Theological Thought (4) A survey of the development of philosophical and theological thought in Russia from the Middle Ages to the Revolution. Special emphasis on the expression of this thought in Russian literature and literary criticism. No knowledge of Russian required. (Same as Philosophy 3270 and Religious Studies 3270.)

3280 Special Topics in Russian Literature in English Translation (4) Topics vary and are announced in advance. Student suggestions for topics are welcome. No foreign language credit. May be repeated.

3281 Contemporary Slavic Literature in English Translation (3-4) Survey of Polish, Czech, Yugoslav, and Russian fiction since 1960, with emphasis on first three years.

Greek

See Classics.

Hebrew

See Religious Studies.

History (462)

Professors: P. H. Bergerson, Ph.D. Vanderbilt; E. V. Cinelli, Ph.D. Harvard; R. E. Duncan, Ph.D. California (Berkeley); L. P. Graf, Ph.D. Harvard; Y. P. Hao, Ph.D. Harvard; A. G. Haas, Ph.D. Chicago; R. W. Haskins (Emeritus), Ph.D. California (Berkeley); C. O. Jackson (Associate Dean, Liberal Arts College), Ph.D. Emory; M. M. Klee (Emeritus), Ph.D. Columbia; G. L. Landen (Dean, Liberal Arts College), Ph.D. Princeton.


Assistant Professors: T. W. Barnett-Robisheaux, Ph.D. Virginia; S. D. Becker, Ph.D. Case-Western Reserve; J. Bohstedt, Ph.D. Harvard; W. W. Farris, Ph.D. Harvard.

Instructor: D. B. Morrow, M.A. UTK.
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For honors, students interested in undertaking an honors program should consult with the department's honors coordinator.

(a) EUROPEAN: 3060-70-80; 3140-50-60; 3411-12-13; 3421-22-23; 3431-32-33; 3454-45; 3460-50-60; 3710-20-30; 3740; 3760-70, 4011; 4250-60-70; 4280; 4360; 4410-20-30; 4470; 4480; 4500; 4510-20; 4551; 4570; 4580; 4710-20-30; 4741; 4770-80; History 4015 when subject matter is appropriate.

(b) UNITED STATES: 3120; 3131-21; 3610-20; 3630-40-50; 3670; 3680; 3911-21-31; 4012; 4290; 4310-20-30; 4360; 4370; 4510-20-30; 4640-50-60; 4670; 4910-20-30; 4950-60; History 4015 when subject matter is appropriate.

(c) OTHER: 3751-52; 3780-90; 3795; 3800; 3810-20-30; 3870-80-90; 410-410-420-30; 4590; 4791; 4792; 4811-21; 4840; 4850; 4870-90-90; History 4015 when subject matter is appropriate.

Minor: History 1510-20 (for honors equivalent) is prerequisite to a minor which consists of 24 hours of courses numbered above the 2000 level of which at least 8 hours must be in United States history.

Honors (509)

1118-28-38 Honors: First Year—Inquiry and Modes of Thought (2-4,2-4) 1115—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) 2118—The humanities; 2128—The natural sciences; 2138—The social sciences. These seminars focus on selected problems in the respective disciplines. Specific topics vary from year to year. May be repeated.

3118-28-38 Honors: Junior—Colloquium (2-4,2-4,2-4) Small group studies of selected topics. May be repeated.

4101 Honors: Foreign Study (1-16) See page 185 and Director of Special Programs. Primarily for College Scholars Students.

4102 Honors: Off-Campus Study (1-16) See page 184 and Director of Special Programs. Primarily for College Scholars Students.

4103 Honors: Independent Study (1-16) See page 184 and Director of Special Programs. Primarily for College Scholars Students.

4118-28-38 Honors: Senior—Colloquium (2-4,2-4,2-4) 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 problem. May be repeated for a total of 24 credit hours.

Human Services (532)

The program in Human Services was established in 1971 for the purpose of providing education, training, and experience, at the undergraduate level, for individuals interested in working to enhance and increase the well-being of our society through the intervention of specific individuals. The course of study provided by the faculty is also appropriate for individuals who wish to improve their understanding of themselves and of the society in which they live.

Graduates of the program are at work in a wide variety of settings, ranging from nursery schools to nursing homes, and are confronted with the human consequences of problems such as poverty, alcoholism, child abuse, and discrimination. Many of our graduates enter graduate and professional schools, seeking advanced degrees in fields as diverse as guidance counseling, physical therapy, hospital administration, law, medicine, and social work.

The curriculum of the program includes required courses, elective courses, advising, and supervised experience in one or more human service agencies or organizations. Students pursuing a major in Human Services will take 2690, 3100, 3530, 4220, 4229, and 4400; and in the order given—and one course from each of the four lists of courses given below; total hours' credit for the major will vary from 48 to 52, due to differences in the number of hours' credit awarded for different courses on these four lists.

I. Culture and Personality American Studies 3010; Anthropology 3410, 3800, 3930, 4420, 4430, 4740; Audiology & Speech Pathology 4250, 4650; Child and Family Studies 3010, 3220, 4120, Educational Psychology 4110, 4800, Geography 3610; Psychology 3120, 3550, 3650, 4510; Sociology 3130, 4820; Speech 3021, 3031.

II. Complex Organizations Geography 3610; Political Science 3565, 3566, 4665, 4666; Psychology 4520; Religious Studies/Sociology 4940; Sociology 3610, 3620, 4030, 4690.

III. Research and Statistics Computer Science 3010; Philosophy 3720, 4720; Psychology 3150; Sociology 3910, 3920.

IV. Community and Society Economics 3220, 3410; Anthropology 3070, 3450; Child and Family Studies 3515, 3520, 4610; Geography 3000, 3430; Home Economics 3110; Human Services 4900; Philosophy 3320, 3440, 3611; Political Science 3710, 3720, 3730, 3760, 4530, 4900; Public Health 3330; Religious Studies 3550, 3600, 3610; Rural Sociology 3420; Sociology 3160, 3220, 3330, 3530, 3420, 3510, 3690, 4330, 4390, 4930, 4940, 5300, 5620. Total Credit Hours: 48-52.

2890 Introduction to Human Services (4) General field of human services with focus on related societal values; contemporary issues in human services.

3100 Social Welfare as a Social Institution (4) Specific social welfare institutions examined in depth in relation to human needs, structure, program, and service approaches. 2890 recommended.

3200 Peoples and Problems of Appalachia (4) Course designed to provide better understanding of Appalachian people, by exploring their life style and institutions from contemporary human services point of view. Special emphasis placed on political and economic structures of region. Recommended: Anthropology 4740.

3300 Thinking about People (4) Intended to facilitate development of thoughtful, informed, and empathic attitudes toward human beings—those providing service as well as those receiving service.

4100 Deviant Behavior as a Product of Labeling (4) Course designed to show how human services workers play the role they plan in maintaining the deviance or deviant role of client or clients being served. Settings considered will include crime, delinquency, health, and blindness.

4101 Foreign Study (1-16) Foreign Study (1-16) Application filed not later than the first week of the quarter prior to the quarter of enrollment. For additional information, see page 185.

4102 Off-Campus Study (1-16) Off Campus Study (1-16) Application filed no later than the first week of the quarter prior to the quarter of enrollment. For additional information, see page 185.

4103 Independent Study (1-16) Independent Study (1-16) Application filed no later than the first week of the quarter prior to the quarter of enrollment. For additional information, see page 184.

4130 Social Work Practice III (4) Essential theory, values, and skills of professional social work practice. To be taken in sequence. Prerequisites: Social Work 4100, 4105.

4140 Social Work Practice III (4) Essential theory, values, and skills of professional social work intervention. Emphasis on direct social work practice with individuals, groups, and families. Specific focus on professional work with clients characterized by social and economic deprivation. To be taken in sequence. Prerequisite: Social Work 4100, 4105.

4150-4200 Social Work Practice IV (4) Essential theory, values, and skills of professional social work intervention. Emphasis on direct social work practice with individuals, groups, and families. Specific focus on professional work with clients characterized by social and economic deprivation. To be taken in sequence. Prerequisite: Social Work 4100, 4105.

4160-4210 Social Work Practice V (4) Essential theory, values, and skills of professional social work intervention. Emphasis on direct social work practice with individuals, groups, and families. Specific focus on professional work with clients characterized by social and economic deprivation. To be taken in sequence. Concurrent labs to accompany these courses. Prerequisite: Full acceptance into major.

4170 Social Work Practice VI (4) Essential theory, values, and skills of professional social work intervention. Emphasis on direct social work practice with individuals, groups, and families. Specific focus on professional work with clients characterized by social and economic deprivation. To be taken in sequence. Prerequisite: Full acceptance into major.

4200 Social Welfare Policies and Issues (4) Specific social welfare policies and issues in relationship to human needs, structure, program, and service approaches. Special focus on developing an analytical framework and social change efforts. Prerequisite: Full acceptance into major.

4500-50 Field Practice in Social Work II, IV (4,4) Eight hour per week supervised agency field practicum in which students can study aspects of social work practice which are not emphasized in the classroom. Prerequisites: Consent of instructor. Only for social work majors.

4500-50 Field Practice in Social Work III, IV (4,4) A sixteen hour per week supervised agency field practicum in which students learn how to integrate theory
and practice and critically examine use of self as a professional helping person. Weekly faculty directed seminars. Prerequisite: Full acceptance into major. Corequisite: Social Work 412030.

Italian
See Romance Languages.

Japanese
See Cultural Studies (Asian Studies).

Latin
See Classics.

Latin American Studies
See Cultural Studies.

Linguistics
See Cultural Studies.

Mathematics (641)

Professors: J. S. Bradley (Head), Ph.D. Iowa; G. E. Albert (Emeritus), Ph.D. Wisconsin; J. H. Carruth, Ph.D. Louisiana State; R. E. Cline, Ph.D. Purdue; R. J. Dervan, Ph.D. Wisconsin; D. J. Dessart, Ph.D. Maryland; D. E. Dobbe, Ph.D. Cornell; E. D. Eves (Emeritus), Ph.D. Toronto; H. Eves, Ph.D. Illinois; R. T. Gregory, Ph.D. Illinois; M. D. Gunzburger, Ph.D. New York; T. G. Hallasm, Ph.D. Missouri; D. B. Hinton, Ph.D. Florida State; J. A. Herriot, Ph.D. (Emeritus), Ph.D. Chicago; L. S. Husch, Ph.D. Florida State; H. T. Mathews, Ph.D. Tulane; R. M. McCollin, Ph.D. Duke; D. D. Miller (Emeritus), Ph.D. Michigan; R. J. Plemmons, Ph.D. Auburn; B. S. Rajput, Ph.D. Illinois; K. R. Reddy, Ph.D. Indian Institute of Technology; P. W. Schaefer, Ph.D. Maryland; F. W. Stallman, Ph.D. Giessen (Germany); W. R. Wade, Ph.D. California (Riverside); C. G. Wagner, Ph.D. Duke.

Associate Professors: C. E. Clark, Ph.D. Louisiana State; G. S. Jordan, Ph.D. Wisconsin; K. R. Kimberl, Ph.D. Ohio State; G. A. Klassen, Ph.D. Nebraska; Y. Kuo, Ph.D. Pennsylvania; W. H. Row Jr., Ph.D. Wisconsin; R. J. Rowlett, Ph.D. Virginia; S. M. Serrin, Ph.D. Cornell; J. W. Smith, Ph.D. California (Berkeley); G. A. Soet, Ph.D. California (Berkeley); K. Soni, Ph.D. Oregon State; R. Sornarajah, Ph.D. Oregon State; J. W. Waletz, Ph.D. SUNY (Binghamton).

Assistant Professors: V. A. Alexiadis, Ph.D. Delaware; D. F. Anderson, Ph.D. Chicago; M. Adseri, Ph.D. Princeton; L. Bal, Ph.D. Florida State; J. Cohen, Ph.D. Washington; V. A. Dougalis, Ph.D. Harvard; S. Eliner, Ph.D. Cornell; L. J. Gross, Ph.D. Cornell; G. Karakitsos, Ph.D. Harvard; J. Ludvig, Ph.D. Oregon; S. Lenhart, Ph.D. Kentucky; M. Miller, Ph.D. Illinois; 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; M. S. McLean, M.S. Purdue; D. P. Nash, M.A. Colorado.

1Space Institute, Tulahoma.

UNDERGRADUATE

Placement Information for Freshman Courses: Students who need more than one year of mathematics should plan to take 1840-50-60 (or 1842-52-62 or 1848-58-68). The prerequisites for 1840 (and 1842) are two years of high school algebra, one year of geometry, and a course in trigonometry or equivalent. Students who present an ACT score below 18 in mathematics may take 1840 but are advised to take Math 0110 in the Evening School (or equivalent elsewhere), and make at least a B, or to make a passing grade in Math 0110 and 0120 in the Evening School (or equivalent elsewhere). Students who have taken two years of high school algebra and one year of high school geometry and who present an ACT score in mathematics of at least 26 (or those who earned a B in high school algebra and geometry, and present an ACT score in mathematics of at least 24) are encouraged to omit 1540 and begin with 1550.

Students who have a deficiency in algebra or geometry must remove the deficiency by taking the appropriate courses. If a satisfactory grade is made on a proficiency examination for one or more of these courses, credit will be awarded for the examination(s), credit will be awarded for the examination(s), credit will be awarded for the examination(s), credit will be awarded for the examination(s). Students who have taken two years of high school algebra and one year of high school geometry, and present an ACT score in mathematics of at least 26 (or those who earned a B in high school algebra and geometry, and present an ACT score in mathematics of at least 24) are encouraged to omit 1540 and begin with 1550.

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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." Students who have taken two years of high school algebra and geometry, and present an ACT score in mathematics of at least 26 (or those who earned a B in high school algebra and geometry, and present an ACT score in mathematics of at least 24) are encouraged to omit 1540 and begin with 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." Students who have taken two years of high school algebra and geometry, and present an ACT score in mathematics of at least 26 (or those who earned a B in high school algebra and geometry, and present an ACT score in mathematics of at least 24) are encouraged to omit 1540 and begin with 1550.

Proficiency Examinations: Students who have taken calculus in high school are encouraged to take the Mathematics Office, Ayres 121, about the possibility of taking a proficiency 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 3960 and all courses numbered 3140 or above, except 3220, 3510, 3861, and 4710. Major: To major in mathematics, a student must complete the following four requirements:

1. 2840-50-60 (2848-58-68) and 3810. Students who complete 2868 may substitute any 3 hour advanced mathematics course for 3810.
2. Two-one-quarter sequence (9 hours) starting with 3840 and one two-quarter sequence (6 hours) selected from a different area:
   a. Combinatorial mathematics: 3780-90;
   b. Topology: 3790-20;
   c. Algebra: 4050-60, or 4120-50, or 4150-60;
request at the department office, room 121, Ayres Hall. Prospective students are invited to write for copies.

1050 Trigonometry (0) Plane trigonometry with emphasis on identities and other analytic aspects used in calculus, with deficiency in high school trigonometry. 3 hours per week. No college credit.

1020 Mathematics: A Philosophical Approach (4) Mathematics as a universal language and "language game," nature of mathematics truth; strengths and limitations of the axiomatic method; the infinite and the infinitesimal; mathematics and the mathematical thought in particular and on civilization in general. Prereq: Math 140 or equivalent. 1550-60, 2130-40.

1540 College Algebra (4) Sets, real and complex number systems, exponents and radicals, fundamental algebraic operators, theory of equations, polynomial inequalities, relations, functions, graphs. No student who has received credit for Math 1640 with a grade of C or better may subsequently receive credit for Math 1540 or 1700. 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) Equations of straight lines, conics, derivatives of algebraic functions, applications of derivatives, maxima and minima, related rates, antiderivatives, integration of algebraic functions, applications. Prereq: Math 1540 or equivalent. 1560-70, 2160-70.

1600 Selected Topics (4) Applications of definite integrals; integration by parts; partial fraction decompositions; arc length; areas and volumes of revolution; improper integrals; infinite series; Taylor's formula and infinite series; uniform and pointwise convergence. This course is recommended for those preparing for graduate school. Prereq: Math 1640.

2012 Basic Concepts of Elementary Mathematics (4) Sets, theory of arithmetic operations, elementary probability and statistics. Basic geometrical concepts, elementary analytical geometry. This course may not be taken for credit after or concurrently with Math 1540, 1550, 1700, 1640, 1648, 2110, 2540.Primarily for secondary education students.

2020 Great Ideas in Mathematics (4) Course for non-majors designed to expose the student to ideas which have had a significant impact on direction of mathematics as a discipline in particular and on civilization in general. Selected topics may include: the Greeks and mathematics as logical reasoning; irrational numbers; Descartes and coordinate geometry; Newton and Leibniz and the mathematics of motion; non-Euclidean geometry; the infinite. Prereq: High school algebra and geometry and an interest in cultural mathematics.

2110-20-30 Structure of the Number System (3, 3, 3) 2110—Sets, numbers, and operations, whole numbers, integers, rational numbers. 2120—Elementary number theory, rational and irrational numbers. Euclidean algorithm and continued fraction sequence. Prereq: 1 year of high school algebra and at least one additional year of high school algebra or geometry. 2540. Prereq: Two years of high school algebra or one year of algebra and one year of geometry.

2540-50-60 Calculus (4, 4, 4) Calculus sequence for students who have completed 1650 or students who have had a significant introduction to calculus in high school. Definition of a derivative; derivatives of algebraic functions, the chain rule, differentials, continuity, applications. Prereq: Math 1550 or 1700. Prereq: Two years of high school algebra, one year geometry, and one semester of trigonometry or equivalent.

3040 The Ideas of Calculus (4) Study of basic ideas and theory behind differential and integral calculus. This course is designed for students whose course of studies does not involve the use of calculus. Emphasis on the historical framework of which calculus was developed and its influence on subsequent philosophical and scientific thought. Prereq: One year of high school algebra. May be taken after or concurrently with high school calculus. Does not satisfy the requirements of a major or minor in mathematics.

3050 Elementary Probability and Statistical Analysis (4) Elementary probability and statistics. Emphasis on applications to problems. Prereq: Math 1540 or 1700. Does not satisfy the requirements of a major or minor in mathematics.

3090 Polynomials and Rings (3) An introduction to abstract algebra, beginning with study of integers followed by more general notions on rings, integral domains, and fields. Emphasis is given to certain ring theoretic properties shared by integers and polynomial rings over fields. Prereq or coreq: Math 3100 or consent of instructor.

3100 Logic and Sets (3) Elements of mathematical logic; elementary algebra of sets. Primarily for students in the College of Education. Prereq: 1 year of calculus and or instructor.

3110 Real Number System (3) Laws of arithmetic, rational and irrational numbers; fields. Primarily for students in the College of Education. Prereq: 1 year of college mathematics. Does not satisfy the requirements of a major or minor in mathematics.

3140 Mathematical Modeling (3) Survey of construction and development of mathematical models used in such areas as biology, economics, and social sciences. Prereq: 1 year of college mathematics. Does not satisfy the requirements of a major or minor in mathematics.

3220 History of Mathematics (3) Survey of development of various branches of mathematics, from ancient to modern times. Not acceptable for satisfying requirements for a major or minor in mathematics. Prereq: Math 1860 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 in Euclidean geometry. Classification of geometry, and one semester of trigonometry or equivalent.
statistical approximations; symmetries of a polygon; inversions. Prereq: One year of college mathematics.

3510 Intermediate Analysis for Teachers (3) Primarily for teacher certification. Course covers elementary calculus from advanced viewpoint with emphasis on proofs of basic theorems. Topology of real numbers, sequences, series, continuity, functions, derivatives, definite integrals, and fundamental theorem of integral calculus. Prereq: 1550-50 or 1600. Does not satisfy the requirements for a major or minor in mathematics.


3715 Discrete Structures (3) (Same as Computer Science 3715.)


3725 Advanced Discrete Structures (3) (Same as Computer Science 3725.)

3780-90 Introduction to Combinatorial Theory (3,3) Introduction to problems of arrangement and selection with emphasis on problems that can be reduced to counting functions and relations and generating functions, graph theory, finite geometries and finite fields, partitions, block designs. Prereq: Math 2660 or consent of instructor.

3810 How to Prove It (3) Course is designed to improve understanding of nature and methods of mathematical proof by means of practice and participation in seminars. Course will include certain standard topics such as elementary set theory, relations and functions, and mathematical induction. Coreq: 2660. Prereq: Math 2660 or consent of instructor.

3861 Mathematical Models in the Life Sciences (3) Introduction to difference equations and differential 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.

3900 Topology of Euclidean Spaces (3,3) Topics will include topology of line and plane, separation properties, compactness, connectedness, completeness, continuity, functions, homeomorphisms, continuity, topological invariants. Must be taken in sequence. Prereq: 3810 or 2668 or consent of instructor.

3990 Studies in Mathematics (1-4) Credit determined at registration. May be repeated for credit with consent of department head. Maximum credit 9 hours. Prereq: Consent of instructor.

4050-60 Matrix Algebra and Applications (3,3) Vector spaces, linear transformations, eigenvalues and eigenvectors, similarity and unitary transformations, singular value decomposition and the least squares problem, vector and matrix norms. Jordan canonical forms, evolution of discrete and continuous systems. Prereq: Math 1841-51 or consent of instructor. Does not satisfy the requirements of a major or minor in mathematics.

4070 Matrix Algebra and Applications (3) Topics to be chosen at the discretion of instructor.

4102 Off-Campus Study (1-16) See page 194. This course is designed to improve understanding of nature and methods of mathematical proof by means of practice and participation in seminars. Course will include certain standard topics such as elementary set theory, relations and functions, and mathematical induction. Coreq: 2660. Prereq: Math 2660 or consent of instructor.


4150-60 Abstract Algebra (3,3) Equivalence relations and partitions, properties of integers, elementary theory of groups and rings, polynomial rings, integral domains, divisibility, unique factorization domains, fields. Must be taken in sequence. Prereq: 2660.


4250-60 Introduction to Complex Analysis (3,3) Complex numbers; Cauchy-Riemann equations, Cauchy's theorem, Taylor and Laurent series, residues and their applications. Complex analysis and its applications. SchwarzChristoffel transformations, the Dirichlet problem, applications (steady temperatures, electrostatics, fluid flow), additional topics in complex function theory. Must be taken in sequence. Prereq: Math 2660; one 4000level mathematics course recommended.

4510-30-30 Introduction to Analysis (3,3,3) Real number system, fuctions, sequences, limits, continuity, uniform continuity, differentiation, integration. Functions of several variables, implicit function theory. Multiple integrals, infinite series, sequences and series of functions, uniform convergence, Taylor series. Should be taken in sequence. Prereq: Math 2660.

4540 Infinite Series and Functions of Several Variables (3) General theory, power series and Taylor's formula, uniform convergence. Partial differentiation and maxima and minima for functions of several variables. Lagrange multipliers. Prereq: Math 2660.

4550 Partial Differential Equations (3) Fourier series; Fourier integral; orthogonal functions; the vibrating string; solution by series; heat flow, Bessel functions. Prereq: Math 2660; 4610 or 4710 recommended.


4640 Calculus of Finite Differences (3) Real difference equations, application to problems in engineering and physics. Prereq or coreq: 4610.

4650-60-70 Introduction to Mathematical Statistics (3,3,3) Introduction to probability; discrete and continuous distributions; correlation, regression, and statistical independence; foundations of sampling theory; significance tests. Must be taken in sequence. Prereq: Math 2660.

4710 Vector Analysis (3) Fundamental operations, basis vectors, dot and cross products, directional derivatives, divergence and curl of vector fields, line and surface integrals, divergence theorem of Gauss, and Stokes theorem. Prereq: Math 2660. Does not satisfy the requirement for a major or minor in mathematics.

4780-90-70 Introduction to Probability Theory (3,3,3) 4780-90-70 Elementary probability; the principles of discrete sample spaces, conditional probability and stochastic independence, binomial, Poisson, hyper-geometric, and normal distributions. 4780-Expectation, conditional expectation, and characteristic function of random variables; moments of random variables, the weak and strong laws of large numbers, and the central limit theorem. 4770—Markov chains: limiting probabilities; steady-state and stationary distributions; stochastic processes; Poisson, birth and death processes; Kolmogorov equations. Prereq: Math 2640-50-60.

4810 Elementary Number Theory (3) Divisibility; congruences; theorems of Fermat and Wilson, primitive roots; indices, quadratic reciprocity. Prereq: Math 2660 or consent of instructor.

4910 Senior Seminar (1-2) Credit determined at registration. May be repeated for credit with consent of department; student may earn a maximum of 4 credit hours from 4910 and 4920 combined. Prereq: Senior standing.

4920 Senior Seminar (1-2) Credit determined at registration. May be repeated for credit with consent of department; student may earn a maximum of 4 credit hours from 4910 and 4920 combined. Prereq: Senior standing.

4980 Readings in Mathematics (1-3) Open to superiors or students with consent of department head. Independent study with faculty guidance. May be repeated. Maximum credit 9 hours.

4990 Studies in Mathematics (1-4) Credit determined at registration. May be repeated for credit with consent of department; maximum credit 9 hours. Prereq: Recommendation of member of mathematics professorial staff and consent of department.

GRADUATE
The Department of Mathematics offers four advanced degrees. In order to become a candidate for any one of these the student must first be admitted to the Graduate School. The Masters of Art and Master of Science degrees programs presuppose a bachelor's degree in mathematics. The Master of Mathematics degree is intended primarily for teachers of high school mathematics. Applicants for admission to this program must take the Graduate Record Examination and must have either (a) certification for teaching secondary mathematics, or (b) successful elementary or secondary school teaching experience. The Doctor of Philosophy degree program presupposes a bachelor's or master's degree with a strong major in mathematics. This program is intended to train professional mathematicians for a career of teaching and scholarly work in colleges and universities or work in industry. Further details on all of these programs are in the Graduate Catalog.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5011 Elementary Functions from an Advanced Standpoint for Teachers (3-4)

5012 Differential Geometry for Teachers (3-4)

5013 Geometry for Teachers (3-4)

5014 Analysis for Teachers (3-4)

5015 Probability and Statistical Inference for Teachers (3-4)

5050-60-70 Mathematical Logic (3,3,3)

5051 Introductory Business Mathematics (3)

5052 Mathematics for Business Decisions (3)

5110-20-30 Theory of Functions of Complex Variables (3,3,3)

5150-60-70 Foundations of Analysis (3,3,3)

5210-30-30 Theory of Functions of a Real Variable (3,3,3)

5250-60 Applied Linear Algebra (3,3,3)

5270 Stability Theory and Liapunov's Direct Method (3)

5310-30-30 Introduction to Higher Geometry (3,3,3)
Medieval Studies

See Cultural Studies.

Microbiology

Professors:
A. Brown (head), Ph.D. Chicogo, R. W. Beck, Ph.D. Wisconsin, J. M. Becker, Ph.D. Cincinnati, R. J. Courtney, Ph.D. Syracuse, T. C. Montel, Ph.D. Maryland, J. D. Mundl (emertus), Ph.D. Michigan State, W. S. Rappley, Ph.D. Yale, B. T. Roque, Ph.D. Guelph (Canada), B. W. Scott, Bristol (England); J. M. Woodward, Ph.D. Kansas; C. J. Wuest, Ph.D. Indiana.

Associate Professors:
D. A. Brain, Ph.D., D. M. V. Ph.D. Michigan State; G. S. Sayler, Ph.D. Idaho.

Assistant Professors:
D. A. Bemis, Ph.D. Cornell; R. N. Moore, Ph.D. Texas-Austin; K. M. Sistran, Ph.D. Michigan State; G. Stacey, Ph.D. Texas-Austin.

UNDERGRADUATE

Major: Consists of Biology 3110, 3120, Biochemistry 4110, 4120, Microbiology 3200, 3519, 3700, and 13 hours of upper-division courses in microbiology of which 4 hours must be laboratory courses. Prerequisites to the major are Biology 1210-20-30 and Chemistry 1110-20-30. Corequisites are Chemistry 3211-21-31, 3219-80-90, and Mathematics 1841-51 or 1540-50-60. Students intending to do postgraduate work should take Mathematics 1841-51 and Physics 2210-20-30.

Microbiology (684)

2110 Microbiology for Student Nurses (4) Introductory course offered only to student nurses in diploma program of hospitals affiliated with The University of Tennessee. Microbiological principles as they apply to nursing care of the patient, epidemiology of infection, and principles of immunity and allergy. 3 hours and 1 lab.

2910 General Microbiology (3) General properties of bacteria, viruses, and fungi including study of pathogenesis, immunity, and applied bacteriology. The combination of 2910-2911 or 2910-2919 meets the needs of prospective microbiology major. 4 hours as a quarter course in microbiology. Coreq: 2911 or 2919.

2911 Bacteriology Laboratory (2) Discussion, demonstrations, and films relating to the subject matter of 2910. Students do not receive credit for 2911 if 2919 has been taken. Prereq or coreq: 2910.

2919 Laboratory in General Microbiology (3) Laboratory exercises designed to accompany 2919. Open only to students in the College of Nursing, pre-veterinary medicine, food technology, food science, nutrition, or food systems administration. Only by consent of instructor. Students do not receive credit for 2919 if 2919 has been taken. Prereq or coreq: 2910.

2910 General Microbiology (3) General properties of bacteria, viruses, and fungi including study of pathogenesis, immunity, and applied bacteriology. The combination of 2910-2911 or 2910-2919 meets the needs of prospective microbiology major. 4 hours as a quarter course in microbiology. Coreq: 2911 or 2919.

2911 Bacteriology Laboratory (2) Discussion, demonstrations, and films relating to the subject matter of 2910. Students do not receive credit for 2911 if 2919 has been taken. Prereq or coreq: 2910.

2919 Laboratory in General Microbiology (3) Laboratory exercises designed to accompany 2919. Open only to students in the College of Nursing, pre-veterinary medicine, food technology, food science, nutrition, or food systems administration. Only by consent of instructor. Students do not receive credit for 2919 if 2919 has been taken. Prereq or coreq: 2910.

3200 Medical Microbiology (3) Disease producing microorganisms including bacteria, viruses, and fungi; basic principles and mechanisms involved in resistance 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.


3810 Food Bacteriology (3) Standard methods for examination, cultivation, and identification of bacteria associated with food fermentation and food spoilage. Prereq: 2910 or 2919 and Chemistry 2230 or 3031. 2 hours and 2 labs.
Courses in this major are open only to qualified students who have completed the first three years of the Science-Medical Technology Curriculum, described on page 179, 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 feces and methods of identification of protozoa and helminth parasites of man.

4021-22 Clinical Chemistry (6,6) Clinical aspects of biochemical research, 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 radiomunnsay, 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 quantitative and qualitative evaluation of cellular elements of blood and other body fluids; factors of hemostasis, qualitative and quantitative analysis of urine, and renal function studies. Emphasis is placed on microscopic identification of cells and the significance and correlation of laboratory data.

4041-42 Immunohematology (4,4) Theory and practice in the study of blood antigens and their normal and abnormal immunology. Standard technical practices used in evaluation blood typing, cross-matching, antibody detection, and preparation of blood components for transfusion. Safety control methods standard to an efficient blood bank.

4043 Clinical Serology and Immunology (2) Preparation 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 students from campus to hospital community and clinical laboratory. Introduction to medical terminology, ethics, and health team concepts. Orientation to basic techniques of methods of study include procedures for collection and handling of specimens, principles of operation of many laboratory instruments, required sample preparation and 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 theories and methods. Comprehensive examination covers entire course.

Music (690)

Professors:

Associate Professors:


Assistant Professors:

Instructors:

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 whose interests are strong but essentially non-professional. Information regarding requirements for the B.M. degree may be found on page 180. The requirements for a major and minor are as follows:

Major:
(a) Concentration in Applied Music—Consists of Music 2000, 2111-21-31, 213-23-33, 2310-20-30-40 and 27 hours in applied music at the 2000-3000-4000, and levels (9 hours each), and junior and senior recitals. Prerequisites are Music 1111-21-31, 1113-23-33, and three quarters of study in applied music at the 1000 level.
(b) Concentration in Music History and Literature—consists of Music 2111-21-31, 213-23-33, 2310-20-30-40, and 27 upper-division hours in music history and literature. Prerequisites are Music 1111-21-31, 1113-23-33, and 1340.

Minor:
(a) Concentration in Applied Music—consists of Music 2000, 2111-21-31, 2310-20-30-40, and 18 hours in applied music at the 2000-3000-4000, and levels (6 hours each). Prerequisites are the same as those for the major.
(b) Concentration in Music History and Literature—consists of Music 2111-21-31, 213-23-33, 2310-20-30-40 and 16 upper-division hours in music history and literature. Prerequisites are the same as those for the major.

The Bachelor of Science in Music Education, designed for preparation for institutional teaching, is administered by the Department of Music Education. See page 107 for requirements.

GENERAL

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

1010-20-30-40-50-60 Class Piano (1,1,1,1,1,1) 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) Prereg. Consent of instructor. May be repeated for credit.

1085-95 Class Guitar (1,1) Must be taken in sequence. Prereg. Consent of instructor.

1900 Solo Class (0)

2010 Introduction to Musical Theatre Technology (3) Stage technology unique to lyric stage.

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and interpretation; program building. Prereq: Consent of instructor.

2056-65-75 Diction for Singers (2,2,2) Sounds by phonetic symbols. Opera and art songs used for examples. Performance practice.

2071-1-11-1 Church Service Planning (1,1,1) Practical skills applicable to the use of the organ in church services, including keyboard harmony, improvisation, hymnology, and accompanying on the organ. Prereq: Consent of instructor.

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.

2810-20 Jazz Piano (1,1) Harmonic language of jazz: interpretation of chord symbols, formulation for voicing chords, chord progressions, and fundamental melody-playing and improvisation for right hand. Must be taken in sequence. Prereq: Consent of instructor.

3000 Junior Recital (0)

3012-32-32 Song Literature (2,2,2) Study of literature from 1750 to present with emphasis on performance practices. 3012—Classical and Romantic German art song; 3032—French and Russian songs; 3052—Late German opera and operatic songs. Prereq: Consent of instructor.

3014-24 Windwood 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 hours. Prereq: Consent of instructor.

3018 Introduction to Styles in Jazz Drumming (2) Examination and study of major composers and performers who have contributed significantly to creation of principal styles of jazz drumming.

3041 Keyboard Harmony (2) Melody harmonization, figured bass realization, and improvisation. Prereq: Consent of instructor.

3052-63 Jazz Impressionism (2,2) Study and application of principles of improvisation, including nomenclature, chord progressions, chord-scales, patterns, melodic development, and free form devices. Prereq: Consent of instructor. 2 hours and 1 lab.

3044-54 Brass Literature (2,2) Prereq: Consent of instructor.

3071 Opera Production (1-3) Supervised work on opera productions. May be repeated for credit. Prereq: Consent of instructor.

3071-81-91 Church Service Planning II (1,1,1) Continuation of Music 2071-1-11. Prereq: Consent of instructor.

3111 Fundamentals of Music Composition (3) Materials of music with emphasis on literature of Baroque, Classic, and Romantic periods. Exercises in writing an analysis. Must be taken in sequence. Prereq: Consent of instructor.

3113 Analysis I (3) Study and practice in analysis of structures of music in smallest structural units to large compound forms. Emphasis on macroanalytic techniques. Prereq: Consent of instructor.

3122 Orchestration (3) Advanced techniques in instrumental writing with emphasis on scoring for the concert orchestra. Prereq: Consent of instructor.

3123 Analysis II (3) Continuation of Analysis I with emphasis on micro and linear analytic techniques. Prereq: Consent of instructor.

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 185.

4111-21-31-34 Analysis of Music Literature (3,3,3,3) Detailed examination of musical compositions by historical period with emphasis on harmony, thematic material, form, and structure. Traditional and contemporary analytical techniques. Prereq: Consent of instructor. Prereq: Consent of instructor.

4114 Stage Band Arranging (3) Analysis of scores and writing of arrangements for concert and marching band. Prereq: Consent of instructor.

4115 Variation (3) Study and application of variation procedures. Prereq: Consent of instructor.

4116 Set Structure in Musical Composition (3) Theory of sets and its application to analysis of music. Prereq: Consent of instructor.

4117 Choral Arranging (3) Arrangement of scores and writing of arrangements for men's, women's and mixed choruses. Prereq: Consent of instructor.

4124 Marching Band Arranging (3) Study and application of techniques employed in scoring for marching band. Prereq: Consent of instructor.

4150 Survey of Music Theory (3) Theory of music with emphasis on harmonic practice of Baroque, Classic, and Romantic periods. Exercises in writing and analysis. Recommended as review course for graduate students. Prereq: Consent of instructor.

4155 Jazz Composition (3) Prereq: Music 4114 and consent of instructor.
MUSIC HISTORY AND LITERATURE

2120-20 Orientation in Music Appreciation (3,3)
1210—Developing perceptive listening skills through study of materials of music, musical styles, and musical aesthetics. Illustrative examples selected from 4th through the 20th centuries. 2120—Introduction to masterworks of music from 1600 to present. For non-music majors. Prereq: 1210 for 1220 or consent of instructor.

1230 History of Rock (3) Study and appreciation of rock music's origin, blues, rock and roll, and its relationship with other popular music-countries, gospel, jazz, and folk.

1340 Introduction to Music Literature (3) Acquaintance with basic terms of music and accepted masterworks through chronological approach. For music majors and minors only.

2130-20-30-40 History of Music (3,3,3,3) 2310—1600; 2320—1600—1600; 2330—1600-1900; 2340—1900 to present. Requires musical background. Prereq: Consent of instructor.

3120 Orientation in Music: Germany from 1750 (3) Historical study of German composers and their music from death of Bach to present. Prereq: 1210 or consent of instructor.

3111 Orientation in Music: The Twentieth Century (3) Examination of study of various, popular, folk, and ethnic music of the 20th century. Prereq: 1210 or consent of instructor.

3121 Orientation in Music: Music for the Theatre (3) Study of selected representative music composed for Broadway stage, films, opera, and opera. Prereq: 1210 or consent of instructor.

3230 The Concerto (3) Survey of literature from 17th century to present.

3240 The Symphony (3) Survey of symphonic literature from precursors of classical symphony to present.

3260 Chamber Music (3) Survey of chamber music from 1750 to present.

3271-81 History of Opera (5,3) Dramatic, vocal, and orchestral elements in opera from Italian, French, and German School. 3271—1600-1800. 3281—1800-present.

3340 Oratorio (3) Choral works other than those appropriate for use in church.

3350 Introduction to Afro-American Music (3) History of African music, blues, gospel music, and jazz with emphasis on Black artists and their contributions.

3950 Evolution of Jazz (3) Study of origin, development, and styles of jazz music and its exponents.

4003-04-05 The Organ and Its Literature (3,3,3) The development of the organ and organ literature from the Middle Ages to the present; problems of style and interpretation; pedagogical literature and methods; organ design. Prereq or coreq: 2310 or consent of instructor.

4200 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 400 to 1950. Recommended as a review course for graduate students. Prereq: Consent of instructor.

4210 Music in the Romantic Period (3) Survey of music from Beethoven through post-Romantic instrumental and vocal styles.

4230 Contemporary Music: 1945 to Present (3) Survey of new and avant-garde music in Europe and America since World War II.

4241 American Music (3) American music from colonial times to present. Emphasis on 20th century. Includes folk and cultivated traditions. Prereq: 1210-20 or equivalent.

4261-71 Introduction to Ethnomusicology (3,3) Basic attitudes and techniques of ethnomusicology.


4290 Gregorian Chant (3) Chants of Latin rite. Masses and Offices examined as functional music as well as by type.

4310 History of Art Song (3) Survey of art song from 19th century to 1930.

4315 Wind Chamber Music (3) Study of wind chamber music from 18th through 20th century. Emphasis placed on style interpretation, rehearsal techniques, programming, and musical significance, both historical and theoretical.

4340-50 Works on Bach (3,3) Detailed examination of sonatas, chamber, keyboard, and orchestral works; cantatas, motets, Passions, and oratorios. 4340—Instrumental works; 4350—vocal works.

APPLIED MUSIC

Applied study is classified as Principal or Secondary.

Students studying their principal (major) instrument register for credit appropriate to their program, 2-4 credit hours; students studying a secondary instrument register for 1 hour of credit. Study at the principal level receives one hour of private instruction per week or a one-hour class lesson plus a half-hour private lesson. Determination of the mode of instruction rests with the department. Study at the secondary level receives one-half hour private instruction per week or its equivalent in class instruction. Applied music courses do not permit non-credit registration nor may students elect non-conventional grading.

Non-music students will be accepted at the secondary level if they meet audition requirements established by area faculty (piano, voice, violin, etc.) and instruction time is available.

Undergraduates seeking entrance to applied music courses must be concurrently registered for no less than nine credit hours in academic courses. Graduate students must be concurrently registered for no less than six credit hours in academic courses. Exclusions to these regulations made with the approval of the department head if applied music registration is necessary to completion of degree requirements.

Advancement in applied music is measured by proficiency (Jury) examination. Students who do not meet proficiency requirements at any level may be required additional study at that level. Course level and credit hours will be determined by the applied faculty.

All students studying applied music at the principal level are required to register for Music 2000 Solo Class. The requirements for this course are to attend scheduled concerts, recitals, master, repertoire, and solo classes, and to perform at least once each quarter as partial fulfillment of applied music credit requirements.

Applied Music Fees: $20 per quarter for half-hour lesson (1 credit hour) $40 per quarter for hour lesson (2-4 credit hours)

Computer registration and applied music fee payment must be verified in the Department of Music office no later than the end of the second day of classes of the fall, winter, and spring quarters and the first day of the summer terms in order to be accepted for applied music study.

Applied music fees are not refundable after lessons have been scheduled.

1500-2500-3500-4500-5500 Flute (1-4) May be repeated for credit.

1505-2505-3505-4505-5505 Oboe (1-4) May be repeated for credit.

1510-3510-4510-5510 Bassoon (1-4) May be repeated for credit.

1515-2515-3515-4515-5515 Clarinet (1-4) May be repeated for credit.

1520-2520-3520-4520-5520 Saxophone (1-4) May be repeated for credit.

1525-2525-3525-4525-5525 Horn (1-4) May be repeated for credit.

1530-2530-3530-4530-5530 Trumpet (1-4) May be repeated for credit.

1535-2535-3535-4535-5535 Trombone (1-4) May be repeated for credit.

1540-2540-3540-4540-5540 Baritone (1-4) May be repeated for credit.

1545-2545-3545-4545-5545 Tuba (1-4) May be repeated for credit.

1550-2550-3550-4550-5550 Percussion (1-4) May be repeated for credit.

1555-2555-3555-4555-5555 Voice (1-4) May be repeated for credit.

1560-2560-3560-4560-5560 Violin (1-4) May be repeated for credit.

1565-2565-3565-4565-5565 Viola (1-4) May be repeated for credit.

1570-2570-3570-4570-5570 Cello (1-4) May be repeated for credit.

1575-2575-3575-4575-5575 String Bass (1-4) May be repeated for credit.

1577 Electric Bass (1-4) May be repeated.

1580-2580-3580-4580-5580 Piano (1-4) May be repeated for credit.

1585-2585-3585-4585-5585 Harpsichord (1-4) May be repeated for credit.

1590-2590-3590-4590-5590 Organ (1-4) May be repeated for credit.

1595-2595-3595-4595-5595 Guitar (1-4) May be repeated for credit.

2577 Electric Bass (1-4) May be repeated.

2599-3599-4599-5599-5599 Composition (1-3,1-3,1-3,1-3) May be repeated for credit. Prereq: Consent of instructor.

2577 Electric Bass (1-4) May be repeated.

2597-3597-4597-5597 Composition with Electronic Media (1,3,1,3,1-3) May be repeated for credit. Prereq: 3199 and consent of instructor.

2577 Electric Bass (1-4) May be repeated.

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 Chorale.

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 Small Ensemble (1,1) May be repeated for credit.

3601-5601 Woodwind Choir (1,1) May be repeated for credit.

3602-5602 Brass Choir (1,1) May be repeated for credit.

3604-5604 Jazz Ensemble (1,1) May be repeated for credit.

3606-5606 Trombone Choir (1,1) May be repeated for credit.

3601-5601 Woodwind Choir (1,1) May be repeated for credit.

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

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

3654-5654 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.

3686-5686 Men's Glee Club (1,1) May be repeated for credit.

3687-5687 Women's Chorale (1,1) May be repeated for credit.

3699-5699 Accompanying (1,1) May be repeated for credit.

5684 Campus Chorus (1) May be repeated for credit.

GRADUATE

The Department of Music offers the Master of Music degree in performance, composition, music theory, choral conduction, and Suzuki cello techniques, and the Master of Arts degree in musicology and music theory. See the Graduate Catalog for admission and degree requirements.

5000 Thesis

5001 Choral Conducting Document (3)

5002 Non-Thesis Graduation Completion (3-15)

5010 Organ Literature Seminar (3)

5012-22-32 Pedagogy of Voice (2,2,2)

5020 Piano Literature Seminar (3)

5030 Choral Literature Seminar (3)

5040 Vocal Literature Seminar (3)

5050 Graduate Recital (3)

5051 Opera Performance (3)

5052 Vocal Chamber Music Performance (3)

5053 Choral Conducting Performance (3)

5054 Lecture-Recital (3)

5103-56 Practicum for Instrumental Conductors (1-1)

5057 Instrumental Conducting Seminar (3)

5060 Seminar in Choral Performance (3)

5061 Choral Conducting (3)

5200 Opera Production (1-3)

5202 Instrumental Conducting Performance (1)

5200 Special Topics in Performance (1-3)

5100 Independent Study in Music Theory (1-3)

5111 Advanced Harmony (3)

5114 History of Music Theory (3)

5116 Musical Styles (3)

5121 Analytical Techniques (3)

5205 Practicum in Computers and Music Research (3)

5150 Seminar in Music Theory (3)

5200 Independent Study in Music History and Literature (1-3)

5210 Introduction to Music Research (3)

5220 Music Bibliography (3)

5270 Seminar in Musicology (3)

5315 Band Literature (3)

5350 Music in the Middle Ages (3)

5352 Music in the Renaissance (3)

5353 Music in the Baroque Period (3)

5355 Music in the Classical Period (3)

5400 Musical Aesthetics (3)

5597 Composition with Electronic Media (1-3)

5611 Marimba Choir (1)

Organizational Psychology Program

See Graduate School.

Philosophy (745)

Professors:
J. W. Davis (Head), Ph.D. Emory; L. B. Cebik, Ph.D. Nebraska; R. B. Edwards, Ph.D. Emory; M. H. Moore (Emeritus), Ph.D. Chicago; D. Van de Vate, Ph.D. Yale.

Associate Professors:

Assistant Professors:
H. P. Hamlin, Ph.D. Georgia; E. R. Jones III, Ph.D. Chicago; J. E. Nott, M.A. Ohio State; D. E. Oett, Ph.D. Texas; S. J. Reaven, Ph.D. California (Berkeley).

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 those preparing for careers as writers (whether journalistic or literary), lawyers, ministers, teachers, in various types of political and government service, and in non-technical positions in business and 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

Major: 36 hours in courses numbered 2000 and above. Majors should discuss their program with a member of the philosophy faculty.

Minor: 24 hours in courses numbered 2000 and above. It is suggested that minors discuss their program with a member of the philosophy faculty.

American Studies. See Cultural Studies.

Russian and East European Studies. See Cultural Studies.

1510 Introduction to Philosophy: Human Nature and Values (4)

1520 Introduction to Philosophy: Consciousness and Reality (4) May be taken before 1510.

1600 Topics in Philosophy (4) May be repeated once for credit.

2310 Elementary Ethics (4) Theories of ethical values.

2410 Art and Experiences (4) Introduction to various understandings of art.

2510-20 Elementary Logic (4,4) 2510—Traditional or modern deductive logic, informal fallacies, uses of language, definitions. (510 is recommended as introductory for students with mathematical aptitude.) 2520—Inductive reasoning, elements of scientific method, and statistical inference.

3111 Ancient Western Philosophy (4)

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.
3330 Philosophy of History (4) Speculative and critical aspects of philosophy of history.

3410 Philosophical Ideas in Literature (4) Philosophic assumptions and implications in major literary works.

3420 Philosophy of Literature (4) Study of the nature, functions, value, and epistemological principles of literary arts.

3430 Concepts of Woman (4) Examination of some of the theoretical functions of feminism and antifeminism.

3440 Social Ethics (4) Ethical theory as related to politics, economics, education, law, religion, and the family.

3510 Existentialism (4)

3550 Marxism as Philosophy (4)

3570 Social and Political Philosophy (4) Philosophical problems relating to nature and justification of social policies and institutions.

3590 Business Ethics (4) Ethical problems as they concern both business as a social institution and individuals in business.

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 (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 to be 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.

4101 Foreign Study (1-16) See page 185

4102 Off-Campus Study (1-16) See page 184

4103 Independent Study (1-16) See page 184

4111-21 Modern Religious Philosophies (4,4) (Same as Religious Studies 4111-21.)

4310 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 of 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.

4460 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.

4610 Philosophical Analysis (4) Prereq: 8 hours of philosophy or consent of instructor.

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

5000 Thesis

5050 Symbolic Logic (4)

5080 Philosophy of Logic (4)

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5103 Independent Study (1-12)

5110-20-30 Studies in Value and Normative Theories (4,4,4,4)

5250 Studies in the History of American Philosophy (4)

5310-20-30 Studies in Value and Normative Theories (4,4,4)

5355 Orientation to Medical Ethics (2)

5365 Applied Ethical Theory (4)

5370 Topics In Medical Ethics (4)

5375 Clinical Medical Ethics (1)

5410 Philosophy of History (4)

5430 Philosophy and Literature (4)

5450 Problems of the Self (4)

5460 Philosophy of the Mind (4)

5510-20 Studies in Epistemology (4,4)

5550-60 Philosophy of Science (4,4)

5610 Recent Developments in Philosophy of Religion (4)

5710 Studies in Metaphysics (4)

5810 Social and Political Philosophy (4)

5940 Lakeshore Clinical Residence (6)

5950 Clinical Practicum in Medical Ethics (4-12)

6000 Doctoral Research and Dissertation

6110-20-30 Seminars in History of European Philosophy (4,4,4)

6150 Seminar in History of American Philosophy (4)

6250 Seminar in Philosophy of Religion (4)

6310 Seminar in Axiology (4)

6370 Advanced Topics in Medical Ethics (4)

6510 Seminar in Epistemology (4)

6550 Seminar in Philosophy of Science (4)

6950 Advanced Residence in Medical Ethics (4-12)

Physical Sciences

Major: None offered.

Minor: Consists of the following courses: Physics 2210-20-30, Chemistry 2140-49, 3211-21, 3219-20-30, 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 1640-50 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


Assistant Professors: M. J. Brenig, Ph.D. Oregon; S. B. Eston, Ph.D. Massachusetts; T. H. Hander, Ph.D. Rutgers.

Research Associate Professors: A. H. Rogers, Ph.D. Massachusetts Institute of Technology.

Research Assistant Professors: S. J. Daunt, Ph.D. Queen's; D. L. McCorkle, Ph.D. Tennessee; S. E. Nave, Ph.D. Tennessee.
Astronomy (150)
2110-20-30 Introductory Astronomy (4,4,4) Surveys astronomical data and theories. 2110-20 concentrates on the solar system. 2120 introduces stellar astronomy into the study of our solar system. 2130 is designed for students majoring in physics and other natural sciences. It is recommended that the courses be taken in sequence. 4 hours including demonstration lab.

2118-28-38 Honors: Introductory Astronomy (4,4,4) Observation and theories of matter and space in the universe. Planets, stars, and the interstellar medium. Must be taken in sequence. 3 hours lecture, discussion; 2 hours lab per week. Coreq: Math 1840-50-60. 3 hours of lecture, 2 hours of lab.


1318-28-38 Honors: Fundamentals of Physics: Mechanics and Heat (4,4,4) Honors course designed for physics majors and for qualified students from other disciplines. Must be taken in sequence. Coreq: Math 1840-50-60. 3 hours of lecture, 2 hours of lab.

2140-20-30 Nature of the Physical World (4,4,4) Introduction to the nature of scientific problem-solving. Discussion of how laws apply to physical systems. 3 hours of lecture and 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, kinematics, linear and angular motion, forces, work, and energy. 4 hours lecture and demonstration.

1810 Physics of Music (4) Production, transmission, and reception of sound waves. Frequency, intensity, timbre. Basic acoustics of instruments and voice. 4 hours lecture and demonstration.

2210-20-30 Elements of Physics for Architects (4,4,4) Corequisites: three semesters of calculus. 3610-20, 3620-20, 4230-20. 4 hours lecture and demonstration.

2240-50-60 Elements of Physics for Architects (4,4,4) Corequisites: three semesters of calculus. 3610-20, 3620-20, 4230-20. 4 hours lecture and demonstration.

3120-20-30 Fundamentals of Physics: Electricity, Waves and Optics, Modern Physics (3,3,3) Required of all engineering students. 3210—Electricity. 3220—Waves and Optics. 3230—Modern Physics. Must be taken in sequence. Prereq: 1310-20-30 or Basic Engineering 1310-20-30, or Physics 3150-20-30, or Physics 1310-20. 3 labs. 3 hours of lecture, 3 hours of lab.

3130-20-30 Fundamentals of Physics: Electricity, Waves and Optics, Modern Physics (3,3,3) Required of all engineering students. 3210—Electricity. 3220—Waves and Optics. 3230—Modern Physics. Must be taken in sequence. Prereq: 1310-20-30 or Basic Engineering 1310-20-30, or Physics 3150-20-30, or Physics 1310-20. 3 labs. 3 hours of lecture, 3 hours of lab.

3210-20-30 Statics, kinematics, Newton's laws, momentum, energy, rotation. 4 hours of lecture-recitation, 3 hours of laboratory-problem sessions. 3 hours of lecture, 2 hours of laboratory.

3250-20-30 Mechanics (3,3,3) Statics, kinematics, Newton's laws, momentum, energy, rotation. 4 hours of lecture-recitation, 3 hours of laboratory-problem sessions. 3 hours of lecture, 2 hours of laboratory.

3260-20-30 Modern Physics (3,3,3) Statics, kinematics, dynamic of a particle, 3220-Statics, kinematics, and dynamics of systems of particles and rigid bodies; 3250—Lagrangian and Hamiltonian equations of motion. Must be taken in sequence. Prereq: 2220 and Math 2860.

3320 Heat and Thermodynamics (3) Concepts of temperature and heat; laws of thermodynamics; applications of laws to simple physical and chemical problems. Prereq: Physics 2210 or 2220 and 2320 and calculus. 3210-20 or instructor's consent.


3510-20-30 Physical Measurements (3,3,3) Laboratory measurement of some physical quantities. Theory supplied where necessary. Prereq: 2110-20-30 or 2210-20-30, and calculus; 3510 for 3520 and 3530. 3 labs.

3610-20 Electronics (3,3,3) Electronic components and circuits of interest to physicists. Prereq: 2310-20-30 or 2210-20-30 and calculus. 3 labs.

3650 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: 361020.

3710-20-30 Introduction to Atomic and Nuclear Physics (3,3,3) 3710-28-38 Special relativity and early quantum mechanics. Prereq: Physics 3150-20-30, or Physics 2210 or Physics 2220 or Physics 3120. 3 labs.

3990 Junior Seminar (1-3) Topic of current interest. May be repeated for credit with consent of department.

4040 Foundation of Physics (3) Selected topics from history and philosophy of classical and modern physics. Prereq: One year of general physics and consent of instructor. Required of M.A.C.T. candidates.


4140 Elementary Nuclear Physics (3) General properties of nuclei, transmutation systems, nuclear forces, nuclear models, nuclear reactions, nuclear disintegration and beta-decay, nuclear spin and magnetism. Preqro: 3730 or 4120.

Or equivalent, honors courses.

4180 Physical Acoustics (4) Considerations fundamental to detailed investigation of any branch of acoustics; propagation of sound in inhomogeneous, the audiosonic, the ultrasonic, and the hyperersonic ranges of frequencies. 3 hours and 1 lab. Prereq: 3210-20.

4210-20-30 Electricity and Magnetism (3,3,3) Intermediate level electrostatics; steady and alternating currents; laws of electromagnetism; Maxwell's equations; radiation of electromagnetic waves; reflection and refraction; electromagnetic fields of moving charges. Must be taken in sequence. Prereq: 3230 or 2220 and Math 2860.

4230-40 Modern Optics (4,4) 4230-40 Geometrical optics; reflection and transmission of light at a dielectric interface; paraxial theory of interfaces, lenses, and mirrors; thick lenses, lens systems, ray tracing; polarization; imaging; laser light. 4540-Physical Optics: mathematics of wave motion, superposition of waves; interference; Fraunhofer and Fresnel diffraction. Fourier optics; holography. Preq: 4210 or consent of instructor. 3 hours of lecture and 3 hours of lab.

4510-20 Atomic Physics Laboratory (3,3,3) Experiments in fundamental particle properties, photometry, determination of energy of electrons through gases, atomic and molecular spectroscopy, X-ray. Preq or coreq: 3710-30-30, 3 labs.

4540-50 Experimental Nuclear and Radiobiology Physics (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 tech-
ment. State government's role in formulating, enacting, and implementing state policy.
3750 The Urban Policy Process (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.
4410 Law and the Administrative Process (4) Power of, procedures of, controls over administrators.
4535-36 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.
4545-46 The Judicial Process (4,4) 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 for 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 (3) Development of the merit system in government, career systems, public personnel management functions, organization for personnel management.
4740 Political Parties and Elections (4) Analysis of party systems and electoral process.
4750 Political Campaigns (4) Coverage includes all aspects of campaign process.
4940 Politics and the Environment (4) Examination of formulation and implementation of public policies relating to physical environment with emphasis upon water and air pollution control.

Comparative Government and Politics
3605 Political Change in Developing Areas (4) Changing politics and political problems of political changes with primary focus on developing areas.
3615-16 Dynamics of Black African Politics (4,4)
3821 Contemporary China and Japan (4)
3822 Contemporary South and Southeast Asian States (4) Analysis of selected states, with emphasis on problems of development.
3825-26 Latin American Government and Politics (4,4)
3831-32 Government and Politics of the Soviet Union (4,4)
3835-36 Politics in Western Democracies (4,4) Political culture, patterns, and institutions of Western democratic systems.
3841 Government and Politics of Middle East and North Africa (4)
3795 Contemporary Middle East (4) (Same as History 3795.)
4060 Revolution (4) Examination of characteristics, theories, and consequences of revolution, with particular focus on left-wing revolutions and movements.
4665-66 Policy Making in Democracies (4,4) Comparative approach to theory and process of making public policies.
4675 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 on 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.

Political Theory and Methodology
3800 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) Theoretical and political thought of the 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 graduate study and entering graduate students who have not had such a course.
4876 Special Topics in Political Thought (4) May be repeated up to a maximum of 8 credit hours with consent of department.

Other
3918-28-38 Junior Honors Seminar (4,4,4) Required of honors majors; admission with consent of Department.
4101 Foreign Study (1-16) See page 185.
4102 Off-Campus Study (1-16) See page 184.
4103 Independent Study (1-16) See page 184.
4918-28-38 Senior Honors Thesis and Seminar (0-12) Required of honors majors; admission with consent of Department. Maximum credit 12 hours.
4975 Prospective in Political Science (4) Selected research for seniors; primarily for majors. May be repeated up to a maximum of 8 hours with consent of department.

GRADUATE
General requirements for the master's degree and doctoral degree are found in the Graduate Catalog.
of laboratory, field, or practicum courses
(2520-30-40) Mathematics 1540-50-60 or 1840-
work in the scientific, professional, and
upper-division psychology courses.
4150, at least 4 hours of laboratory, field, or
psychology recommended.

Eligibility: Selection of participants is
determined by departmental Undergraduate Honors Committee. The interested student
should apply to the psychology department. Successful applicants usually have a G.P.A. of
at least 3.0. Requirements: Psychology 2500
2518 and one other 2000-level course in
psychology, 3150, and one quarter of
laboratory or field experience. Honors students
will complete Psychology 4948-58-68 and
Psychology 4950, at least 24 credit hours may be earned in courses 4103, 4107, 4109, 4110 combined.

4103 Independent Study (1-16) May be repeated.
Maximum credit 16 hours. See page 184.
4107 Experience in Individualized Instruction (1-6)
May be repeated. Maximum credit 12 hours. Graded by letter grade only. Prereq: Consent of instructor.
4109 Undergraduate Research (1-16) May be
repeated for credit to a maximum of 16 hours. Prereq: Consent of instructor.
4110 Undergraduate Participation in Community
Research (1-16) May be repeated. Maximum credit 16 hours.
4115 Psychology of Sex Role Development (3)
(Same as Educational and Counseling Psychology 4110).
4120 Topics in Social Psychology (4) Intensive
analysis of selected research topics. Prereq. 3120 or Sociol-
gy 3130. (Same as Sociology 4120.)
4150 Probability Models in Psychology (4) Introduc-
tion to use of probability and statistical
principles in research. Includes the
study of probability distributions, statistical
inference, and regression analysis. Prereq.
2500 or consent of instructor.
4230 Sensory Processes and Perception (4) Survey
of sensation and perceptual processes with emphasis on
audition and vision. Prereq: 3150; 2520 recommended.
4239 Laboratory in Sensory Processes and Per-
ception (2) Prereq or coreq: 4230.
4460 Organizational-Industrial Psychology (3)
Cannot be taken for credit by students who have credit for Management 3460. (Same as Management 4460.)
4510 Personality Theories (4) Prereq: 3650.
4520 Personality and Social Systems (4) Prereq:
2540.
4610 Group Processes (3) Study and experience of
teaching and techniques of group processing and facilita-
tion. Those participating in 4610 are expected to con-
tinue into 4620 and 4630. Prereq: 3616-26 and consent of instructor.
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<td>Didactic and laboratory experience for those qualified for further training as group facilitators.</td>
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<td>Seminar In Mental Health Administration (3)</td>
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<td>6650</td>
<td>Assessment of Human Services Organizations (3)</td>
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**Religious Studies (863)**

**Professors:**
C. H. Reynolds (Head), Ph.D. Harvard; F. S. Lusby, B.D. Colgate (Rochester); D. L. Dungan, Th.D. Harvard; W. L. Humphreys, Th.D. Union; D. E. Linge, Ph.D. Vanderbilt; R. V. Norman, Jr. (Associate Vice Chancellor for Academic Affairs), Ph.D. Yale.

**Assistant Professors:**

**UNDERGRADUATE**

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

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

The student-initiated option is to be specified in an individual program defined in consultation between each student and the Department of Religious Studies. At least 36 hours of courses at the 3000 level or above (including 4850) are required for this major. Students whose educational goals would best be served by such a major are encouraged to construct their own plans of study as early as possible. The student-initiated option is recommended for persons who plan to pursue graduate study in religion or a closely related field. Further details are available in the department office, located at 501 McClung Tower, or from any member of the religious studies faculty.

**History and Literature of Religions**

2600-70-80 History of Western Religious Thought and Institutions (3,3,3) 3900—First century to 5th century. 3070—6th century to 15th century. 3060—16th century to 1900. (Same as History 3060-70-80.)

3110 Ancient Israel's Historical and Religious Traditions (4) Political, religious, and cultural history and traditions of ancient Israel from earliest period to Exile.

3120 The Rise of Judaism (4) Political, religious, and cultural history and traditions of exilic and post-exilic Israel and early Judaism through 135 A.D. Later literature of Old Testament, Apocrypha, and Dead Sea Scrolls.

3121 Religious Traditions of Ancient Egypt (4) Religious and cultural traditions of ancient Egypt from Old Kingdom to Hellenistic period.

3131 Religious Traditions of Ancient Mesopotamia (4) Religious and cultural traditions of ancient Sumerians, Babylonians, and Assyrians.

3210 Early Greek Mythology (3) (Same as Classics 3210.)

3220 Greek Mythology in the Classical Period (3) (Same as Classics 3220.)

3230 Roman Mythology (3) (Same as Classics 3230.)

3270 Russian Philosophical and Theological Thought (4) (Same as Russian 3270 and Philosophy 3270.)

3311-12 Images of Jesus (4,4) Introduction to ancient and modern portrayals of Jesus, understood within their cultural milieu. Must be taken in sequence.


3340 Judaism in the Common Era. (3) Survey of literature and traditions of Judaism in the Common Era.

3411-12 The Reformation (3,3) 3411—Renaissance. 3412—Reformation, Counter Reformation, and Wars of Religion, 1517-1618. (Same as History 3411-12.)

3440 Religion of Primitive Peoples (3) (Same as Anthropology 3440.)

3490 African Religions (4) Examination of religions of the indigenous peoples of Africa, including a study of functions of myth, rites, and symbols and an inquiry into how certain political movements in Africa have been and are informed by religious sensibilities. (Same as Anthropology 3490 and Black Studies 3490.)

3510-20 Religion in America (4,4) Not a survey but a representative profile of religion in America, past and present, organized each quarter around theme or problem. May be taken independently.

3550 Religion and Racism in America (4) Historical and critical survey of role played by religion in supporting and justifying American racial injustice. (Same as Black Studies 3550.)

3560 Black Religion in America (4) Historical and critical examination of formation and development of black religious thought and institutions in America. (Same as Black Studies 3560.)

3600-10 Religious Ethics (4) (Same as Philosophy 3600.)

3650 Philosophy and Religion in India (4) (Same as Philosophy 3650.)

3660 Buddhist Philosophy and Religion (4) (Same as Philosophy 3660.)

3671 Religion and Philosophy in China (4) (Same as Philosophy 3671.)

3672 Religion and Society in Japan (4) (Same as Sociology 3672.)

3680 Islam (4) Origin and early history, rapid spread as a world faith, development of Muslim theology and culture, interaction with modern cultures.

3710 Literature of the English Bible (3) (Same as English 3710.)

3711 Literature of the English Bible (3) (Same as English 3711.)

3770 Zen Buddhism (3) Examination of historical, philosophical, and meditational materials of Zen. Special emphasis upon Zen theories of emptiness, no-mind, sudden enlightenment, and the Koan.

4200 Classical Indian Systems of Philosophy: The Moksha Tradition. Basic writings and philosophical problems of the traditions of Samkhya, Yoga, and Vedanta. Prerequisite: Religious Studies/Philosophy 3650 or 3660. (Same as Philosophy 4200.)

4210 Topics in Ancient Israelite and Ancient Near Eastern Religions (4) Prereq: 3110-20 or consent of instructor. May be repeated once for credit.

4310 Jesus and Paul Compared (4) Jesus' teaching and activity in context of first-century Palestinian Judaism; analysis of what Apostle Paul made of the tradition of and about Jesus. 2610 or 2611 recommended.

4450 Topics in American Religion (4) Prereq: One of the following: 3510, 3520, 4410, or consent of instructor. May be repeated. Maximum credit 12 hours.

4670 Topics in Eastern Religions (4) Selected figures, issues, and institutions. Seniors and graduate students only, except by consent of department. Prereq: 3650/50-70. May be repeated. Maximum credit 12 hours.

4810-30 Readings and Research in Religious Studies (3-4,3-4,3-4)

**PROBLEMATIC OF RELIGION**

3011 Phenomenology of Religion (4) Examination of recurrent forms, themes, and patterns in history of religions, such as high gods, cultural heroes, initiations, and ascetics.

3021 Religious Myth, Symbol, and Ritual (4) Study of interrelation of myths, symbols, and rituals among preliterate peoples through a specific myth, such as solar, lunar, and communal.

3600-10 Religious Ethics (4,4) Historical and critical survey of religious ethics, basic theories and their application in social problems.

3611 Medical Ethics (4) (Same as Philosophy 3611.)

3620 Topics in Religious Ethics (4) Examination of particular theoretical issues and social problems from perspectives of religious ethics. May be repeated once for credit.

3690 Philosophy of Religion (4) (Same as Philosophy 3690.)

3715 Religious Thought in the Nineteenth Century (4) Major problems and themes in American and European religious thought between 1800 and the beginning of World War I.

3720 Contemporary Religious Thought (3) Major themes, issues, and thinkers.

3740 Issues in Science and Religion (3) Relation of religion to history, methods, and theories of science.
2650 Readings In Hellenistic Greek (4) (Same as Classics 2650).

3140-50-60 Elementary Classical Hebrew (3,3,3)
3140—Basic elements of Hebrew, phonology, script, morphology, syntax. 3150—Continued grammar study and selected reading and translation. 3160—Continued reading and translation. Introduction to basic elements of text, literary form, historical, and traditional criticism.

3170-80-90 Intermediate Classical Hebrew (4,4,4)
3170—Torah and Former Prophets. 3180—Prophets. 3190—Writings and Apocryphal Hebrew. Prereq: 3151 or consent of instructor.

4740-50-60 Elementary Sanskrit (4,4,4) Introduction to grammar of classical Sanskrit and reading of annotated selections of epic and classical Sanskrit. (Same as Asian Studies 4740-50-60.)

4770-80-90 Intermediate Sanskrit (4,4,4) Advanced grammatical constructions and reading of epic and classical religious and narrative materials (e.g. Bhagavad Gita, Mahahadharma, Ramayana, Kathasaritsagara). Prereq: 4760 or consent of instructor. (Same as Asian Studies 4770-80-90.)

4840 Readings in Selected Language Related to Religious Studies (3-4) Prereq: Consent of instructor. May be repeated. Maximum credit 12 hours.

**Romance Languages**

**Professors:**
E. P. Barrette, Ph.D. California (Berkeley); C. W. Cobb, Ph.D. Tulane; J. C. Elliott, M.A. Illinois; T. B. Irving (Emeritus), Ph.D. Princeton; H. E. Lewald, Ph.D. Minnesota; F. M. Culmo (Emeritus), Ph.D. Columbia; M. Petrovska, Ph.D. Kentucky; J. O. Swan (Emeritus), Ph.D. Illinois; A. M. Yagnouli (Emeritus), Ph.D. Minnesota; G. E. Wade (Emeritus), Ph.D. Ohio State; A. H. Wallace, Ph.D. North Carolina.

**Associate Professors:**
W. F. Byess (Emeritus), Ph.D. Wisconsin; R. M. E. Defeytke, Ph.D. Illinois; W. H. Heflin, Jr. (Head), Ph.D. Florida State; K. D. Levy, Ph.D. Kentucky; C. R.-M. Pinsky, Ph.D. California (Berkeley); Y. M. Washburn, Ph.D. North Carolina.

**Assistant Professors:**
A. S. Allen, Ph.D. California (Berkeley); T. R. Arrington, Ph.D. Kentucky; E. J. Campion, Ph.D. Yale; M. H. Haeflman, Ph.D. Florida.

**Instructors:**
C. G. Cox; M.A. Tennessee; D. M. DiFuccio, M.A. Kansas; M. T. Rabot, Cert. de Lic. Poitiers; B. S. West, M.A. Louisiana; P. A. Wilson, M. A. Tufts.

**Placement Examination:**
Students who have had one or more years of work in French, Italian, or Spanish are encouraged to take the same year’s work in another college who should register in French or Spanish 2110 or in French, Italian, or Spanish 2510. 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 French, Italian, or Spanish through private study, tutoring, residence in foreign countries, or the like should initiate a request for a proficiency test in the Office of the Dean of Admissions and Records. 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.

**Note to Majors and Minors in French, Italian, or Spanish:**
Students who have completed nine hours of upper-division courses in French, Italian, or Spanish literature at The University of Tennessee, or equivalent work at other institutions, must either (1) have a minimum grade point average of 2.0 in French, Italian, or Spanish before being accepted for a major's program, or (2) pass, by demonstrating, during the first week of the quarter, not less than a minimum ability equivalent to a grade of middle C on the current examination in French or Spanish 2130 or French, Italian, or Spanish 2530.

All majors must take upper-division courses under more than one instructor, and must have an acceptable pronunciation and an adequate reading knowledge of the language.

**Latin American Studies.** See Cultural Studies.

**Certification for Teaching French or Spanish in Tennessee.** Consult Certification Clerk, Room 212 Claxton Education Building.

**French (405)**
Major: Consists of 36 hours in courses numbered 3110 or above. Students whose primary interest is literature must have the following courses (or their equivalent, with consent of the department): 3110-20-30 or 3810-20-30 (aspects of French literature), 9 hours; 3410 or 3420 or 3430 (intermediate composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 4220 or 4240 (advanced grammar, 3 hours); 9 hours of literature at the 4000 level; 9 additional hours selected from courses in literature, language, or civilization. Students whose primary interest is language must have the following courses (or their equivalent, with consent of the department): 3110-20-30 or 3810-20-30 (aspects of French literature, 9 hours); 3410 or 3420 or 3430 (intermediate composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 4220 or 4240 (advanced grammar, 3 hours); 6 hours selected from courses 3410-20-30 (intermediate composition and conversation), 4220-30 (advanced grammar), or 4250-60-70 (linguistics); 6 hours of literature at the 4000 level; 6 additional hours selected from courses in literature, language, or civilization. With either of the above options, students may substitute Foreign Study (4101) for certain courses; students with special interests, such as comparative literature, may make certain substitutions with consent of the department.

Minor: Consists of 24 hours in courses numbered 3110 or above, including the following: 3110-20-30 or 3810-20-30 (aspects of French literature, 9 hours); 3410 or 3420 or 3430 (intermediate composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 4220 or 4240 (advanced grammar, 3 hours); 9 additional hours selected from courses in literature, language, or civilization. Students pursuing a minor are strongly advised to consult with a departmental adviser.

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

1110-20-30 Elementary French (3,3,3) This sequence strongly recommended for students intending to take upper-division courses in French. Must be taken in sequence. 3 hours.

1118-28-38 Honors: Elementary French (3,3,3) Honors course for students of superior ability. 1118 not for students who have taken French in high school. Freshmen admitted to 1128 and 1138 on basis of diagnostic test or conference with instructor, high school average, and performance on ACT.

Class held to maximum of 15 for individual attention. Class covers normal elementary French program for first year, but is enriched. Students expected to spend normal amount of preparation time. Students finding course too
difficult may easily transfer to regular classes. Potential majors and minors in French are urged to take this course. Students passing 1110 with grade of B or higher are eligible for 1128 rather than 1120. Students passing 1120 with grade of B or higher are eligible for 1138 rather than 1130.

1510-20 Elementary French (4,4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.

2110-20-30 Intermediate French (3,3,3) This sequence strongly recommended for students intending to take upper-division courses in French. Must be taken in sequence. 3 hours and 2 labs.

2118-28-38 Honors: Intermediate French (3,3,3) Honors course for students of superior ability in French. Incoming freshmen admitted on basis of diagnostic test, high school average, and performance on ACT. Class held to a maximum of 15 for individual attention. Students follow enriched program which emphasizes speaking, ability and reading, including literary selections. Students passing 2110 with a grade of B or higher are eligible for 2128 rather than 2120. Students passing 2120 with a grade of B or higher are eligible for 2138 rather than 2130. Students earning a grade of A or B in 2138 are eligible to take a proficiency exam for 2128. No foreign language credit. No credit toward a major or a minor.

2510-20 Intermediate French (4,4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.

2610-20 Panorama of French Culture (4,4,4) 2610—Cultural forces which produced the French nation; art, literature, architecture under Franks, Burgundians, and Clans of classicism; and the culture. 2620—Arts in Age of Reason and trends in French culture during the Revolution, Romanticism, in bourgeois art of 19th century, and in modern movements of surrealism, dadaism, and existentialism.

3000 French Translation (3) Development of linguistic skills necessary for satisfactorily work in courses above 2130. Recommended for students who feel they would benefit from additional training beyond 2130 or 2520 in basic skills of reading, speaking, and writing French.

3100-20-30 Elements of French for Upper-Division and Graduate Study (3,3,3) Elementary reading, speaking, and writing. No auditors.

3110-20-30 Aspects of French Literature (3,3,3) Survey of French literature from Classical to modern times; the period, the literary movement, and its leading figures. Senior elective. Prerequisite: 2130, 2520, or equivalent.

3210-30 French Literature in English Translation (3,3,3) From the origins through the Renaissance: Life of St. Augustine, Song of Roland, Romance of the Rose, B tales, Du B beau. The classical period and the end of Age of Reason: The great dramatics, La Princesse de Cleves, Voltaire, Rousseau, Stendhal; the 19th and 20th centuries: Bazerac, Flaubert, Proust, Camus. No change in credit hours after add deadline. Option of 4 hours credit must present appropriate amount of extra work above that required for 3 hours.

3240 Women in French Culture (4) Influential role of women in shaping French history and culture. Feminists (Gandolfini, Stendhal, Royalty, Rabelais, Du B beau), Intelectuais (Mme de Stael); actresses (Sarah Bernhardt); scientists (Marie Curie) will be among the important figures studied.

3250 Masterpieces of French Fiction in English Translation (4) Texts studied are Ronsard, La Bataille de la Bataille, and La Bataille of wandering and travel; exercises in free composition. Prerequisite: 2130 or 2520.

3450 Composition and Conversation for Careers in Business (3) Analysis of contemporary French language as it applies to business transactions. Understanding and composing business letters; oral communication and elements of French Culture related to good business practices. Students will work in simulated business transactions. Only one of the courses, 3430 or 3450, may be applied toward the major. Prerequisites: 3410, 3420, or permission of instructor.

3810-20-30 Survey of French Literature (3,3,3) Chronological study of various genres (poetry, novels, drama) by periods, from medieval period to the present. May be taken in place of 3160-20-30. Prerequisite: 2130, 2520 or equivalent.

4001-02-03 Introduction to Consecutive and Simultaneous Translation (3,3,3) 4001—Oral Translation into English; 4002—Consecutive Translation to and from English; 4003—Simultaneous Translation to and from English. Training of students with intermediate or advanced knowledge of French for consecutive and simultaneous oral translation from French into English, and vice versa, on a variety of practical subjects such as business; economics; politics; and sciences. The course will be given mainly in the language lab with additional classroom supervision by the instructor. Prerequisite: 3430 or equivalent. Must be taken in sequence.

4010 Masterpieces of French Literature in English Translation (3) No foreign language credit.

4011 Foreign Study (1-16) See page 185.

4110-20-30 French Literature of the Seventeenth Century (3,3,3) Prerequisite: 2130, 2520, or equivalent.

4150 Theatrical French (1-3) Performance in one or more French plays. May be repeated for credit with consent of department. Prerequisite: 2130, 2520 or equivalent, and consent of instructor.

4160-70-80 Advanced Conversation (2,2,2) Intensive training in prepared and spontaneous conversations. Subjects range from travel and current events to literature and aspects of national culture. Prerequisite: Completion of 9 hours of courses on 3000 level.

4210 Phonetics (3) Prerequisite: 2130, 2520, or equivalent.

4220-30 Advanced Grammar (3,3) Prerequisite: 2130, 2520, or equivalent.

4250 Introduction to Descriptive Linguistics (3) Principles of phonetics, morphology and syntax. Types of languages, linguistic groups, dialects, and dialect geography. Application of descriptive linguistics to French literature; its practical use in learning languages and in language teaching. Introductions to transformational grammar. Prerequisite: 9 hours of upper-division English or 9 hours of upper-division courses in a modern or ancient language (exclusive of German and French 3010-2030, courses in literature in translation, and general courses in Latin and Greek requiring no knowledge of these languages), or consent of department. (Same as German, Russian, Spanish, and Linguistics 4250.)

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

4270 Romance Linguistics (3) Development of classical Latin through vulgar Latin in major Romance languages. (Same as Spanish and Linguistics 4270.)

4310-20-30 French Literature of Eighteenth Century (3,3,3) Prerequisite: 2130, 2520, or equivalent.

4350-60-70 Medieval French Literature (3,3,3) Medieval works in modern French texts. Prerequisite: 2130, 2520, or equivalent.

4410-20-30 French Civilization (3,3,3) Prerequisite: 2130, 2520, or equivalent.

4420-30 French Literature of Nineteenth Century (3,3,3) Prerequisite: 2130, 2520, or equivalent.

4460-30 Readings in French Literature (3,3,3) For students who have completed 3130 or equivalents and have at least a 3.0 on all university work. No credit for grade less than B.

4460-50-60 French Literature of Sixteenth Century (3,3,3) Prerequisite: 2130, 2520, or equivalent.

4710-20-30 French Literature of Twentieth Century (3,3,3) Prerequisite: 2130, 2520, or equivalent.

GRADUATE

General requirements for the master's program are given in the Graduate Catalog.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-16)

5011 Techniques in Literary Analysis (3)

5041 Foreign Study (1-12)

5042 Off-Campus Study (1-12)

5013 Independent Study (1-12)

5110-20-30 Old French (3,3,3)

5121 College Teaching of Romance Languages (3)

5151-61-71 Bibliography and Methods of Research (1,1,1)

5210-20-30 French Literature of Sixteenth Century (3,3,3)

5211-21-31 Seventeenth Century French Literature (3,3,3)

5241 French Theatre of the 18th and 19th Centuries (3)

5310-20-30 French Directed Readings (3,3,3)

5350-60-70 The Philosophes (18th Century) (3,3,3)

5410-20-30 The French Novel (3,3,3)

5450-50 Lyric Poetry of Nineteenth Century (3,3,3)

5470 Baudelaire and the Symbolists (3,3,3)

5610-20-30 Trends in Contemporary French Literature (3,3,3)

5650-60 Advanced Syntax and Stylistics (3,3,3)

5670 Problems in Roman Linguistics (3)

5710-20-30 Seminar in French Literature (3,3,3)

5910 Literary Criticism: Foundations of Romance Criticism (3)

Italian (584)

UNDERGRADUATE

Major: Consists of 36 hours of courses numbered 3110 or above, to include the following (or equivalents, with consent of the department): 3410-20-30 (advanced grammar, composition, and conversation, 9 hours); 3110-20-30 or 3510-20 (aspects of Italian literature, at least 8 hours); 9 hours of literature at the 4000 level; 10 additional hours selected from courses in literature, language, or civilization. Students may substitute Foreign Study (4101) for certain courses; students with special interests, such as comparative literature, may make certain substitutions with consent of the department.

Minor: Consists of 24 hours in courses numbered 3110 or above, to include the following: 3410-20-30 (advanced grammar, composition, and conversation, 9 hours); 3110-20-30 or 3510-20 (aspects of Italian literature, at least 8 hours); 7 additional hours selected from courses in literature, language, or civilization. Courses in Italian literature in English translation may not be counted toward either a major or a minor.
1110-20-30 Elementary Italian (3,3,3) Must be taken in sequence. Three class meetings and 2 laboratory periods.

1510-20 Elementary Italian (4,4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.

2110-20-30 Intermediate Italian (3,3,3) Must be taken in sequence. Three class meetings and 2 laboratory periods.

2510-20 Intermediate Italian (4,4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.

2610-20 Panorama of Italian Culture (4,4) 2610—Survey of Italian culture from Roman era through the 17th century; 2620—Survey of Italian culture in the 18th, 19th, 20th centuries.

3000 Italian Transition (3) Development of linguistic skills necessary for satisfactory work in courses above 3000. Recommended for students who feel they would benefit from additional training beyond 2130 or 2520 in basic skills of reading, speaking, and writing Italian.

3110-20-30 Aspects of Italian Literature (3,3,3) Prereq: 2130, 2520, or equivalent. Recommended for literature majors.

3310-30 Italian Literature in English Translation (3,4,4,4) 3310-Sicilian School, the Florentine School, Dante, Petrarch, Boccaccio, Machiavelli, Ariosto, Tasso. 3320—From the Baroque through 19th century, commendare dell’arte, Vico, Leopardi. 3330, 20th century. Caracciolo, Prandelli, Massimo D’Annunzio, Croce, Moravia. No change in credit hours after deadline. Option of 4 hours credit must present appropriate amount of extra work above that required for 3 hours.

3340 The Italian Cinema (3) Italian film masterpieces of such directors as Rossellini, DeSica, Fellini, Visconti; literary and socio-political relations; the Italian image in America.

3410-20-30 Advanced Grammar, Composition, and Conversation (3,3,3) Laboratory work, drills, and tapes. Prereq: 2130, 2520, or equivalent. Recommended for literature majors.

3510-20 Aspects of Italian Literature (4,4) Prereq: 2130, 2520, or equivalent. Recommended for literature majors.

4010-50 Italian Drama in English Translation (3,4,4) 4010—La commedia dell’arte and major works of Machiavelli, Metastasio, Alfieri, Goldoni, 4020—18th-century theatre: operatic drama, the Grottesco, Pirandello, De Filippo, Frati. No change in credit hours after add deadline. Option of 4 hours credit must present appropriate amount of extra work above that required for 3 hours.

4050-60-70 Dante and Medieval Culture (3,3,3) Readings and lectures in English for students majoring or minoring in other departments. Readings, reports, and term papers in Italian for students majoring or minoring in Italian. (Same as Comparative Literature 4050-60-70.)

4101 Foreign Study (1-16) See page 185.

4200 Petrarch (3) Prereq: 3130, 3520, or equivalent.

4230 Boccaccio (3) Prereq: 3130, 3520, or equivalent.

4330 History of Italian Language (3) Prereq: 3130, 3520, or equivalent.

4410-20-30 Literature of the Rinascimento (3,3,3) From Pulp to Tasso, the Quattrocento and the Cinquecento. Prereq: 3130, 3520, or equivalent.

4530 The Modern Novel (3) Prereq: 2130, 2520, or equivalent.

4540 The Modern Theatre (3) Prereq: 2130, 2520, or equivalent.

4610 Contemporary Theatre (3) Prereq: 2130, 2520, or equivalent.

4620 Contemporary Poetry (3) Prereq: 2130, 2520, or equivalent.

4630 Contemporary Prose (3) Prereq: 2130, 2520, or equivalent.

4760 Italian Folklore (3) Folk arts, music, traditions, rituals, and lore of Italy from Middle Ages to present. (Same as Anthropology 4760.)

GRADUATE

See Graduate Catalog for requirements.

5011 Techniques in Literary Analysis (2)

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5161-61-72 Bibliography and Methods of Research (1,1,1)

5610-20-30 Readings in Italian Literature (3,3,3)

5710-20-30 Seminar in Italian Literature (3,3,3)

Portuguese (811)

UNDERGRADUATE

Minor: A minor only is offered in Portuguese, consisting of 8 hours in the 3510-20 sequence (aspects of Portuguese literature) and 18 hours in the 4310-20-30 sequence (directed readings in Brazilian and Portuguese literature, a course of variable content which may be repeated for credit). Students may substitute Foreign Study (4101) for any of the above courses.

1510-20 Elementary Portuguese (4,4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.

2510-20 Intermediate Portuguese (4,4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.

3000-41 Advanced Portuguese (3,3) An accelerated class for beginning students of Portuguese who already have a strong background in Spanish, French, or Italian. Conversation and reading with a quick survey of grammar. Introduction to the culture and literature of Portugal and Brazil. Prereq: Permission of instructor.

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

4101 Foreign Study (1-16) See page 185.

4310-20-30 Directed Readings in Brazilian and Portuguese Literature (3,3,3), May be repeated with consent of instructor.

GRADUATE

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5103 Independent Study (1-12)

Spanish (924)

UNDERGRADUATE

Major: Consists of 56 hours in courses numbered 3310 or above. Students whose primary interest is literature must have a minimum of 8 hours chosen from the following sequences: 3110-20-30 (aspects of Spanish American literature, 9 hours); 3310-20-30 (aspects of Spanish American literature, 9 hours); or 3610-20 (survey of Spanish literature, 8 hours); 3410 (composition and conversation, 3 hours); 4210 (phonetics, 3 hours); sufficient additional hours selected from courses in literature, language, or civilization to fulfill the major requirement. With either of the above options, students may substitute Foreign Study (4101) for certain courses; students with special interests such as comparative literature, may make certain substitutions with consent of the department.

Minor: Consists of 24 hours in courses numbered 3110 or above, including a minimum of 8 hours chosen from the following sequences: 3110-20-30 (aspects of Spanish literature, 9 hours); 3310-20-30 (aspects of Spanish American literature, 9 hours); or 3610-20 (survey of Spanish literature, 8 hours); 3410 (composition and conversation, 3 hours); 4210 (phonetics, 3 hours); sufficient additional hours selected from courses in literature, language, or civilization to fulfill the minor requirements. Students pursuing a minor are strongly advised to consult with a departmental advisor.

Courses which may substitute for any of the foregoing may be substituted with consent of the department; but courses in Spanish literature in English translation may not be counted toward either a major or a minor.

1110-20-30 Elementary Spanish (3,3,3) This sequence strongly recommended for students intending to take upper-division courses in Spanish. Must be taken in sequence. 3 hours and 2 labs.

1510-20 Elementary Spanish (4,4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.

1515-28 Honors: Elementary Spanish (4,4) Honors course for students of superior ability. 1515-20 open only to students who have taken Spanish in high school. Freshmen are admitted on the basis of a diagnostic test or conferences with the instructor, high school placement, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular class. Potential majors or minors in Spanish are urged to take this course. Students who pass 1510 with a grade of B or higher may take 1528 instead of 1520.

2110-20-30 Intermediate Spanish (3,3,3) This sequence strongly recommended for students intending to take upper-division courses in Spanish. Must be taken in sequence. 3 hours and 2 labs.

2510-20 Intermediate Spanish (4,4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.

2515-28 Honors: Intermediate Spanish (4,4) Honors course for students of superior ability in Spanish. Incoming freshmen are admitted on the basis of a diagnostic test, high school average, and performance on the ACT. Class held to a maximum of 15 so that each student may receive more attention. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular class. Potential majors or minors in Spanish are urged to take this course. Students who pass 1510 with a grade of B or higher may take 1528 instead of 1520.

2610-20 Panorama of Hispanic Culture (4,4) 2610—Peninsular Spain from Roman invasion through 19th century, including Colonial period in Latin America. 2620—Highlights of 20th-century culture in both Latin America and Spain.

3000 Spanish Transition (3) Development of linguistic skills necessary for satisfactory work in courses above 3000. Recommended for students who would benefit from additional training beyond 2130 or 2520 in basic skills of reading, speaking, and writing Spanish.

3010-20-30 Spanish and Spanish American Literature in English Translation (3,4,4,4) 3010—Mas-
terpieces of classical Spanish literature; Cervantes, relationship and the picaresque novel, religious mystics, Golden Age Theatre. 3020—Masterpieces of 20th cen-
tury Spanish literature: Unamuno, Lorca, Baroja, Or-
tega, 3030—Contemporary Spanish American fiction: Marquez, Borges, Fuentes, Asturias. No change in credit hours after add deadline. Option of 4 hours credit
must present an appropriate amount of extra work
above that required for 3 hours.

3110-20-30 Aspects of Spanish Literature (3,3,3)
3110—Introduction to Spanish literature, using selec-
tions from prose, drama, and poetry of the modern
period; 3120—Aspects of Golden Age literature, includ-
ing the mystics, Cervantes, and Lope de Vega; 3130—
aspects of modern Spanish literature, including Unamu-
no, Ortega y Gasset, and Garcia Lorca. Prereq: 2130,
2520 or equivalent. Recommended for literature maj-
ors. Not offered for graduate credit.

3310-20-30 Aspects of Spanish American Litera-
ture (3,3,3) Study (not usually chronological) of various
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 equiva-
 lent.

3410-20-30 Intermediate Composition and Conver-
sation (3,3,3) Not offered for graduate credit.

3610-20 Survey of Spanish Literature (4,4)
Chronological study of the various genres (poetry,
novel, drama) by periods from the medieval period to
the present. May be taken in place of 3110-20-30 or
3310-20-30. Prereq: 2130, 2520 or equivalent.

4210 Phonetics (3) Prereq: 2130, 2520, or equivalent.

4220-30 Advanced Grammar (3,3) Prereq: 2130,
2520, or equivalent.

4250 Introduction to Descriptive Linguistics (3)
(Grams as French, German, Russian, and Linguistics
4250.)

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

4270 Romance Linguistics (3) (Same as French and
Linguistics 4270.)

4410 Spanish Civilization (3) Prereq: 2130, 2250, or
equivalent.

4420-30 Latin American Civilization (3,3) Prereq:
2130, 2520, or equivalent.

4450-70 Studies in Modern Spanish Style (3,3)
Prereq: 3410-20-30 or consent of instructor.

4510 Special Topics in Spanish: Spanish American
Literature (3) Prereq, poetry and theatre of Spain in the
Nineteenth Century. This course may focus on a genre,
movement, or combination of several literary aspects.
Course may be repeated with consent of department.
Maximum credit 9 hours. Prereq: Intermediate Spanish
or equivalent.

4618-38 Honors: Readings in Literature (3,3)
Prereq: 3130, 3230, 3520, or equivalent and at least
3.0 on all university work. No credit for grade less than
B.

4710-20-30 Spanish Literature of the Twentieth Cen-
tury (3,3) 4710—Nondramatic Prose: 4720—Drama.
4730—Lyric Poetry. Prereq: 2130, 2520, or equivalent.

4810-20-30 Topical Survey of Spanish American
Literature (3,3,3) 4810-Prose fiction: major examples
of the short story and novel. 4820—Poetry: landmark
figures of past and present. 4830—Drama and essay:
the modern period.

GRADUATE

The Master's Program

See Graduate Catalog for requirements.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5011 Techniques in Literary Analysis (3)

5070-80-90 Hispano-Arabic Literature and Culture
(3,3,3)

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5103 Independent Study (1-12)

5110-20-30 Old Spanish (3,3,3)

5121 College Teaching of Romance Languages (3)

5151-61-71 Bibliography and Methods of Research
(1,1,1)

5211-21 Don Quijote (3,3)

5212-32 Golden Age Prose (3,3)

5250-60 The Generation of '98 (3,3)

5270 The Contemporary Novel (3)

5310-20 Directed Readings (3,3)

5311-21 Special Topics in Spanish or Spanish
American Literature (3,3)

5340 Problems in Hispanic Culture (3)

5510 Special Topics in Spanish Theatre after the
Golden Age (3)

5550-60 The Golden Age Theatre (3,3)

5610 Spanish American Prose to 1900 (3)

5611-21 Spanish American Lyric Poetry (3,3)

5620-30 The Modern Novel in Spanish America
(3,3)

5631 Spanish American Essay (3)

5632 The Spanish American Short Story (3)

5633 Twentieth-Century Latin American Theatre
and Film (3)

5640 Latin American Women Writers (3)

5650-60 Advanced Syntax and Stylistics (3,3)

5670 Problems in Romance Linguistics (3)

5680-20-30 Spanish Lyric Poetry (3,3,3)

5910 Literary Criticism: Foundations of Romance
Criticism (3)

6000 Doctoral Research and Dissertation

6210-20-30 Seminar in Latin American Literature
(3,3,3)

6310-20-30 Seminar in Latin American Literature
(3,3,3)

Russian

See Germanic and Slavic Languages.

Russian and East European Studies

See Cultural Studies.

Sociology (915)

Professors:

D. R. Ploch (Head), Ph.D. North Carolina; J. A. Black,
Ph.D. Iowa; D. J. Champion, Ph.D. Purdue; L.

Eberwine (Vice Chancellor for Planning and
Administration), Ph.D. Pennsylvania; D. W. Hastings,
Ph.D. Massachusetts; W. B. Jones (Emeritus), Ph.D.
Vanderbilt; N. E. Shover, Ph.D. Illinois (Urbana); S. E.
Wallace, Ph.D. Minnesota.

Associate Professors:

D. M. Beitz, Ph.D., Michigan State; D. Geiss, Ph.D.,
Michigan State; T. C. Hood, Ph.D. Duke; R. G. Perin,
Ph.D. British Columbia.

Assistant Professors:

S. P. Hite, Ph.D. California (San Diego); S. Kurth,
Ph.D. Illinois (Chicago); K. D. Van Liere, Ph.D.

Instructor:

D. Harris, M.A. Tennessee.

UNDERGRADUATE

Major: Consists of 36 upper-division hours in
sociology. Eight lower-division hours in sociology
are prerequisite to a major. The minor shall consist of
24 upper-division hours. Eight lower-division hours in
sociology are a prerequisite to a minor.

Social Work. Students contemplating
entrance into the field of professional social
work will have an opportunity to plan their
upper-division programs to this end.

Suggested course offerings for students
planning a social work career can be obtained from
the Graduate School of Social Work catalog.
The address and general information
on the School are given on page 55.

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

American Studies. See Cultural Studies.

Latin American Studies. See Cultural
Studies.

1510 General Sociology (4) Social origins, structures,
forces, processes, and products.

1520 Sociology of Social Problems (4)

3010 Collective Behavior (4) Analysis of collective
phenomena emphasizing crowd behavior, responses
to disaster, popular crazes, mass movements, and
social protests.

3015 Resource Scarcity and Social Change (4) The
relationship between scarcity of natural resources and
changes in societal beliefs and social structure. Topics
include social and physical limits to growth and collec-
tive action problems.

3030 Political Sociology (3) Sociological analysis
of American political system. Attention given to considera-
tion of concept of power, elitist/pluralist controversy,
end-of-ideology debate, and related topics.

3130 Social Psychology (4) Social psychological
analysis of social behavior emphasizing its acquisition,
its enactment and its dynamic nature.

3140 Deviance and the Social Order (4) Examination
of relations between deviance and social order.
Various types of social deviance considered, with focus on
their structure, social factors related to process of becoming
deviant, and consequences of deviant conduct.

3150 Gender in Society (4) Exploration of gender in
society utilizing various sociological perspectives with
special focus on the relationships between social struc-
tures, social roles and gender identities.

3160 Sociology of Medicine (4) Introduction to sociological
approach to study of health and medicine. Emphasis on
relationship of demographic charac-
teristics to the prevalence of disease, organization of
health care facilities, and staff-patient relationships.

3220 The Family (4) Examines theoretical frameworks
and socio-economic dimensions of communication and of con-

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Spanish
See Romance Languages.

Speech and Theatre

Professors:

Associate Professor:

Assistant Professors:
R. S. Ampler, Ph.D. Ohio State; M. L. Ambrester, Ph.D. Ohio; L. J. DeCuir, M.F.A. Tulane; M. E. Hampton, M.F.A. Yale; C. M. Kaseta, M.F.A. Brandeis; D. K. Sorensen, Ph.D. Louisiana State.

UNDERGRADUATE

Major: The major, speech and theatre, offers two areas of concentration as follows:

Concentration in Speech: Eight hours from Speech 1211-21, Speech and Theatre 1441 are prerequisite to a concentration which consists of two courses from Speech 2001, 2351 or 3551 by permission, 2351, 2351, and 30 additional hours in speech courses numbered 2000 and above, 12 hours of which may be cognate areas approved by the department and 24 of which must be in courses numbered 3000 and above.

Concentration in Theatre: Theatre 1320-30-40 is prerequisite to a concentration which consists of Theatre 101, 111, 211-21, 2211, 3251-53-54, 19 additional hours of theatre courses numbered 2000 or above, 12 hours of which may be cognate areas approved by the department. At least one-half of the hours in the concentration must be earned at the 3000 level or above. Corequisite: nine hours from courses listed in the Dramatic Arts option of the Language, Literature, Arts Triad.

Minor: Two minors are offered: speech and theatre. Speech 1211-21 is prerequisite to a minor in speech which consists of 24 hours in speech courses numbered 3000 and above. Theatre 1320-30-40 is prerequisite to a minor in theatre which consists of 24 hours in theatre courses numbered 3000 and above, 6 hours of which must be in history and criticism.

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

GRADUATE

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

Speech (943)

1211 Communication and Society (4) Study of communication media (posters, speeches, songs, plays, demonstrations, film) and social change.

1221 Introduction to Speech Communication (4) Fundamental theories and practices with particular reference to interpersonal communication, persuasion, semantics, psycholinguistics; legal and ethical dimensions of communication.

2021 Voice and Diction (4) Voice production; attention to individual speech problems.

2311 Public Speaking (4) Basic principles of speech preparation and delivery.

2331 Argumentation and Debate (4) Recommended: 2311.

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

2351 Interpersonal Communication (4) Communications theory in its application to informal, face-to-face situations.

2361 Business and Professional Speaking (4) Basic principles of oral communication within organizations. Listening skills, interviewing techniques, formal presentation (including technical papers and reports), reference planning, selecting and employing visual aids, informal communication systems, communicating corporate image, and other aspects of business and professional communicating.

2410-20-30 Intercollegiate Forensics (1,1,1) Supervised work in tournament debate and individual events. Prereq: Consent of instructor.

3011 Persuasion (4) Persuasive theory; psychological, sociological, and cultural dimensions.

3021 Group Communication (4) Communication theory in its application to small groups, especially discussion groups; communication barriers, non-verbal communication, business communication.

3031 Non-verbal Communication (4) Exploration of non-verbal communication from human communication perspective; origins and research, usage and coding of non-verbal behavior, research strategies and theoretical approaches.

3041 Communication Projects (1-4) Intensive applied communication of theory covered in other Speech Communication courses. Includes the areas of persuasion and interpersonal communication. May be repeated. Maximum 4 credit hours.

3361 Fundamentals of Organizational Communication (4) A study of communication behavior, theory and skills in organizational settings; upward, downward and lateral communications in dyads and groups.

3410-20-30 Intercollegiate Forensics (1,1,1) Continuation of 2410-20-30. Prereq: Consent of instructor.

3551 Persuasive Speaking (4) Speech forms; principles and practice of speech composition.

422 Advanced Argumentation and Debate (4) Prereq: 2331 or consent of instructor.

4461 Quantitative Research Methods in Speech Communication (4) Designing experiments; planning field studies; using statistical analysis.

4541 Rhetorical Theory and Criticism (4) Survey of Western and contemporary approaches to criticism of public address.

4560 Rhetoric of the Women's Rights Movement (4) Historical and critical study of public address in campaign for women's rights from the 1830s to present.

4671 British Oratory (4) Historical and critical study of British public address.

4691 Persuasive Uses of Imaginative Literature (4) Topics in social and political uses of novels, plays and poems.

4811 Advanced Phonetics (4) Phonetic aspects of contemporary dialects of the English language. Prereq: Consent of instructor.

4930 Studies in American Public Address (4) May be repeated. Maximum credit 12 hours.

4999 Colloquium in Speech Communication (1) May be repeated for credit.

GRADUATE

5140 Communications Theory (3)

5210 Topics in Group and Interpersonal Communications (3)

5220 Quantitative Projects in Speech Communications (3)

5440 Organizational Communication (3)

5550-60-70 Studies in Persuasion (3, 3, 3)

5750-60-70 Studies in Rhetoric (3, 3, 3)

5911 Directing the Forensic Program (4)

Theatre (976)

1310 Introduction to Theatre (4) Theatre as experience; materials and techniques.

1320-30-40 Fundamentals of Play Production (3, 3, 3) 1320-40—Theatre as social institution in its application (acting and directing). 1340—Physical production (technique and design).

2111-21 Acting (4, 4) 2111—Realism: readings, improvisations and scene study. 2121—Extended Realism: voice and movement for the stage, basic rehearsal techniques. Prereq: Consent of instructor for 2121. Production participation required.

2211-21 Stagecraft (4, 4) 2211—Techniques of scenery construction. 2221—Fundamental methods of stage lighting. Production participation required.

2231 Basic Stage Costuming (4) Costume design and construction; basic theory and technique. Participation required.

3121-22 Advanced Acting (4, 4) Historical styles of acting. 3121—Renaissance, 3122—17th and 18th centurys. Prereq: Consent of instructor. Production participation required.

3151 Theatre Practicum: Performance (1-4) Supervised work on departmental productions. Available for credit only to theatre majors or with consent of department. Prereq: Consent of instructor. May be repeated. Maximum credit 4 hours.

3152 Theatre Practicum: Production (1-4) Supervised work on departmental productions. Available for credit only to theatre majors or with consent of department. Prereq: Consent of instructor. May be repeated. Maximum credit 4 hours.

3153 Summer Repertory Productions (1-4) Supervised work on summer repertory productions. Available only to members of summer company by consent of instructor. May be taken in sequence. Prereq: 2211-21 or consent of instructor.

3214-15 Technical Theatre (4, 4) Special techniques in scenery and property construction; stage management problems in technical theatre practice. Must be taken in sequence. Prereq: 2211-21 or consent of instructor.

3221-22 Introductor to Scene Design (4, 4) 3221—Problems in stage design with reference to space and form, mood, and scenic style, rudiments of rendering and ground-plan preparation. 3222—Play interpretation through scenic means; setting as environment for dramatic action; rudiments of model making. Must be taken in sequence.

3252-53-54 History of the Theatre (4, 4, 4) Drama in performance with particular emphasis in theatre architecture, scene design, and acting styles. 3252—Antiquity to the Renaissance. 3253—The European theatre, 1650-1850. 3254—Modern theatre.

3262-63 History of the American Theatre (3, 3) Development of the theatre as social institution in America, 3262—As the growth of the theatre. From 1900 to present.

3321-22 Introduction to Lighting Design (4, 4) Mechanics of stage lighting; elementary theory; problems in basic lighting practice. Must be taken in sequence. Prereq: 2211-21 and consent of instructor.

3451-52 Play Directing (4, 4) May be taken in sequence. Prereq: 2111.

3511-12 Introduction to Costume Design (4, 4) Costume as expression of character on stage; the application of costume history to specific design projects. Prereq: 2111 or consent of instructor.

4133-34 Special Problems in Acting (3, 3) Advanced exercises in voice and movement; preparation of major role under performance conditions. Prereq: 3121-22 and consent of instructor.
3661 Oral Interpretation of Poetry (4) Prereq: 2031 or consent of instructor.

3761 Oral Interpretation of Drama (4) Prereq: 2031 or consent of instructor.

4101 Foreign Study (1-16) See page 185.

4102 Off-Campus Study (1-16) May be repeated for major credit to a maximum of 12 hours. See page 184.

4103 Independent Study (1-16) May be repeated for major credit to a maximum of 8 hours. See page 184.

4170-80-90 Film History and Theory (3,3,3) Analysis of cinematic forms and styles. 4170—Narration. 4180—Exposition and persuasion. 4190-Experimental forms; films and other media.

4640 Group Performance of Literature (4) Oral interpretive techniques of choral reading, readers theatre, and chamber theatre.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110 Introduction to Graduate Research in Speech and Theatre (3)

5120 Directed Reading and Research (3)

5160 Theory and Technique in Oral Interpretation (4)

5610 Projects In Lighting Design (3)

5620 Projects In Lighting Design (3)

5630 Projects In Play Directing (3)

5640 Projects In Scene Design (3)

5650 Projects In Stage Management (3)

5660 Projects In Technical Theatre (3)

5670-71-72-73-74-75 Master Class in Acting (5,5,5,5,5,5)

5680-81-82 Design and Technical Theatre Seminar (1-6,1-6,1-6)

5900 Projects In Technical Theatre (3)

5912 Play Production in Secondary Schools (4)

5950-60-70 Studies in Dramatic Theory and Criticism (3,3,3)

Speech and Theatre (945)

1441 Introduction to Cinema (4) Development of motion pictures as a medium; film aesthetics; analysis and criticism of selected films.

2031 Introduction to Oral Interpretation (3) Art of acting for public performance; development of interpretive techniques and their application to selected passages of prose, poetry, and drama.

2031 Oral Interpretation of Prose Literature (4) Prereq: 2031 or consent of instructor.

2031 Oral Interpretation of Poetry (4) Prereq: 2031 or consent of instructor.

2100 The First Course (4) An introduction to university education as an adventure in personal growth and professional development. A.D., B. C. +, C/RNC.

2010 Technology, Society and the Common Good: The Energy Problem (3) Designed for students of all backgrounds as an exploration of the economic, political, environmental and philosophical implications of the energy issues and debates.

4100 Energy Needs and Our Environment (3) Problems of present and projected energy resources and demands; economic, behavioral, legal, technical, and environmental opportunities and constraints; regional impacts of energy production and consumption. Topics will change from quarter to quarter. May be repeated with approval of instructor.

Women's Studies

See Cultural Studies.

Zoology (995)

Professors:
J. H. Abeles(Head), Ph.D. Brown, R. M. Bagby, Ph.D. Illinois; D. L. Bunting, Ph.D. Oklahoma State; J. G. Carlson (Emeritus), Ph.D. Pennsylvania; A. C. Cole (Emeritus), Ph.D. Ohio State; J. C. Daniel, Ph.D. Cornell; D. A. Ebner, Ph.D. Indiana; R. G. Fraser (Emeritus), Ph.D. Minnesota; B. Hochman, Ph.D. California (Berkeley); J. C. Howell (Emeritus), Ph.D. Cornell; E. T. Howly, Ph.D. Wisconsin; K. W. Jeon, Ph.D. London (England); A. W. Jones (Emeritus), Ph.D. Virginia; J. K. Keeney, J. Ph.D. Iowa; J. N. Liles, Ph.D. Ohio State; E. L. Roth (Visiting Professor for Graduate Studies), Ph.D. Chicago; C. A. Shivers, Ph.D. Michigan State; R. L. Tanner (Emeritus), Ph.D. Cornell; H. G. Welsh, Ph.D. Florida; M. C. Whiteside, Ph.D. Indiana; G. L. Whiton, Ph.D. Iowa.

Associate Professors:
K. D. Bunnam, Ph.D. Iowa; A. C. Eichenrath, Ph.D. Kansas; D. J. Fox, Ph.D. Johns Hopkins; M. A. Handel, Ph.D. Kansas State; J. A. Macabe, Ph.D. California (Davis); M. L. Pan, Ph.D. Pennsylvania; S. E. Pettit, Ph.D. Wisconsin; G. L. Vaughn, Ph.D. Duke.

Assistant Professors:
T. T. Chen, Ph.D. Florida; L. D. Etkin, Ph.D. Indiana; G. F. McCracken, Ph.D. Cornell; N. B. Greenberg, Ph.D. Rutgers.

UNDERGRADUATE

Prerequisites to upper-division courses:
Biology 1210-20-30 or Zoology 1118-20 are prerequisites for all upper-division courses, with the exception of 3090 and 4940. Additional prerequisites are included with course descriptions. Courses numbered in the 4000s are more advanced than those in the 3000s except as may be indicated by prerequisites.

Majors: Consists of Biology 3110, 3120, 3130; 18 hours of upperdivision zoology courses and 3 quarters of chemistry or biochemistry at the 2000 level or above. Of the 16 hours of upper-division zoology courses a minimum of 6 hours must be at the 4000 level, and must include at least one laboratory or field course. 1 to 3 hours of Zoology 3990 must also be included. Prerequisites to this major are: Biology 1210-20-30 or Zoology 1118-20. Mathematics 1841-51, or 1640-50 or 1550-60 (Mathematics 1841-51 is the recommended choice); and a year sequence in physics (except 14-20-30).

Note: Students majoring in zoology are advised to exercise care in fulfilling the science and mathematics Triad requirements. Mathematics 1840-50 or 1841-51 or 1540-50-60 and Chemistry 1110-20-30 or equivalent. (20 or 21 hours altogether) must be completed by all zoology majors.
Minor: Consists of 24 hours of zoology, or zoology and biology, courses. (Zoology courses must be at the upper-division level; but 3000-level biology courses may be used, e.g. Biology 3110, 3120, 3130.) Prerequisites to this minor are Biology 1210-20-30 or Zoology 1110-20-30 or 1118-28 and Chemistry 1110-20-30.

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

Many courses in this department are offered only in specified quarters. Students should plan in advance the proper sequence.

Information on the quarter a course is to be offered is available in the departmental office.

1118-28-38 Honors: Fundamentals of Zoology (4,4,4) Course designed for superior students in any field who are interested in obtaining a solid foundation in zoology. On completing this sequence students may register for core Biology 3110-20-30. Honors zoology is open to all students with a minimum ACT composite score of 27, or with a minimum GPA of 3.2 in college. Students must achieve at least a B in any quarter to be eligible for the next quarter. Students who do not satisfy this requirement may register in non-honors Fortran courses with the appropriate quarters of Biology 1210-20-30. Must be taken in sequence. 1118 (Fall—Processes; Structure and function of the tropical environment. 1119 (Spring—Ecology; independent projects. Each quarter consists of six hours of combined lecture and lab. Students who receive credit for this sequence may not receive additional credit for Biology 1210-20-30 or Botany 1110-20 or 1118-28.

2460-70-80 Human Anatomy and Physiology for Nurses (3,3,3) Fundamentals of basic anatomy and physiology, 2 hours and 1 lab.

2461-71-81 Human Anatomy and Physiology for Nurses (4,4,4) Same as 2460-70-80 except 2 hours and 2 labs.


2920-30 Human Physiology (4,4) Fundamental of biology; principles of human physiology and anatomy. Must be taken in sequence. 2920-30 (Fall—Introduction to the physiology of fishes offered. Prereq: As posted. May be repeated for credit. 2930-30 (Winter—Introduction to the physiology of protozoa in relation to fundamental biological concepts. Required: Biology 3120, 2 hours and 2 labs.

4010-20-30 Undergraduate Research Participation (3,3,3) Experience in active research projects under supervision of staff members. Prereq: Junior or senior standing and prior consent of instructor.

4140 Practicum In Zoology (1-3) Participation in practical application of zoology in community institutions, government organizations, and industry. Open to graduates. May be repeated for credit. Maximum 12 hours.

4190 Mammalogy (4) Classification, evolution, distribution, reproduction, behavior, 2 hours and 2 lab or field periods. (Not open to students with credit for 3190.)

4200 Ichthyology (5) Classification, collection and identification of fishes. Prereq: Biology 2130 or consent of instructor. 2 hours and 2 lab or field periods. (Not open to students with credit for 3200.)

4230 Arachnology (4) Biology of spiders, mites, scorpions, and relatives. Prereq: 3110 or 3150. 2 hours and 2 labs.

4240 Comparative Animal Behavior (4) Methods and principles. (Same as Psychology 4720.)

4270 Comparative Animal Behavior Laboratory (4) Laboratory and field studies Coreq: 4270 (Same as Psychology 4729.)

4810-20-30 Insect Morphology and Taxonomy (4,4,4) 4810—Introduction of both generalized and specialized forms. 4820—Taxonomy of major orders. 4830—Taxonomy of minor orders and immature forms. Prereq: 3110 or consent of instructor. 2 hours and 2 labs.

4890 Physiology of Exercise (4) Functions of body in muscular work; physiological aspects of fatigue, training, and physical fitness. Prereq: 2920-30 or 3080. 3 hours and 1 lab. (Not open to students with credit for 3940.}

3220 Physiology of Reproduction (3) (Same as Animal Science 3220.)

3320 Histology (4) Study of animal tissues. Prereq: Biology 3120. 2 hours and 2 labs.

3410 Bioethics (3) Relationship between biological discoveries in cell biology and interpretation of selected dilemmas arising from new knowledge about medicine, behavior, resources, and technology.

3720 Ethology and Sociobiology (3) Basic concepts of the evolutionary approach to behavior with special reference to controversial issues in applications to psychology, the social sciences, and the arts. (Same as Psychology 3720.)

3920 Human Endocrinology (4) Basic course in human biology; principles of human physiology and anatomy. Three lectures and 2 labs. (Does not carry credit in the Zoology major or minor.)

3990 Zoology Colloquium (1) Weekly discussions of current research projects, new advances, and seniors. Each Zoology major is required to take a minimum of one hour. Grading: S/N/C. May be repeated. Maximum 3 hours.


4050 Developmental Biology (4) Developmental biology; morphology, fertilization, cellular interactions, hormonal effects, and related topics with examples drawn primarily from invertebrates and vertebrates. Prereq: 3050. 2 hours and 2 labs.

4110-20-30 Undergraduate Research Participation (3,3,3) Experience in active research projects under supervision of staff members. Prereq: Junior or senior standing and prior consent of instructor.

4140 Practicum In Zoology (1-3) Participation in practical application of zoology in community institutions, government organizations, and industry. Open to graduates. May be repeated for credit. Maximum 12 hours.

4190 Mammalogy (4) Classification, evolution, distribution, reproduction, populations, and behavior. 2 hours and 2 lab or field periods. (Not open to students with credit for 3190.)

4200 Ichthyology (5) Classification, collection and identification of fishes. Prereq: Biology 2130 or consent of instructor. 2 hours and 2 lab or field periods. (Not open to students with credit for 3200.)

4230 Arachnology (4) Biology of spiders, mites, scorpions, and relatives. Prereq: 3110 or 3150. 2 hours and 2 labs.

4240 Comparative Animal Behavior (4) Methods and principles. (Same as Psychology 4720.)

4270 Comparative Animal Behavior Laboratory (4) Laboratory and field studies Coreq: 4270 (Same as Psychology 4729.)

4810-20-30 Insect Morphology and Taxonomy (4,4,4) 4810—Introduction of both generalized and specialized forms. 4820—Taxonomy of major orders. 4830—Taxonomy of minor orders and immature forms. Prereq: 3110 or consent of instructor. 2 hours and 2 labs.

4890 Physiology of Exercise (4) Functions of body in muscular work; physiological aspects of fatigue, training, and physical fitness. Prereq: 2920-30 or 3080. 3 hours and 1 lab. (Not open to students with credit for 3940.)

GRADUATE

5000 Thesis

5017 Colloquium In Ethology (1)

5075 Zooplankton Ecology (4)

5080 Graduate Research Participation (3)

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

5150 Zoological Bibliography (1)

5180 Fresh-Water Invertebrates (4)

5210 Plant Parasitic Nematodes (4)

5280 Physiology of Hormones (4)

5270 Advanced Neuro muscular Physiology (5)

5280 Insect Physiology (4)

5290 Quaternary Problems (4)
5310-20 Seminar in Teaching of College Zoology (2,2)
5350 Biometry (3)
5360 Isotopic Methods and Techniques: Lecture (2)
5389 Isotopic Methods and Techniques: Laboratory (4)
5410 Advanced Parasitology (4)
5430 Advanced Medical Entomology (3)
5510-20 Advanced Animal Physiology (5,5)
5550 Advanced Ornithology (4)
5570 Animal Populations (3)
5610-20 Foundations of Radiation Biology (4,4)
5630 Methods of Experimentation with Laboratory Mammals (3)
5660 Physiology of Development (3)
5670 Cellular Immunology (4)
5740 Physiological Ecology of Animals (2)
5760 General Vertebrate Neuroanatomy (3)
5780 Radiation Physiology (4)
5790 Transport of Ions Across Epithelia (4)
5820 Methods of Taxonomy (4)
5840 Aquatic Insects (4)
5860 Geographic Distribution of Animals (4)
5870 Insect Synecology (4)
6000 Doctoral Research and Dissertation
6110 Seminar in Cellular Biology (2)
6140 Seminar in Immunobiology (2)
6210 Seminar in Physiology (2)
6310 Seminar in Cytology (2)
6350 Seminar in Developmental Biology (2)
6410 Seminar in Parasitology (2)
6510 Seminar in Genetics (2)
6610 Seminar in Ornithology (2)
6650 Seminar in Aquatic Biology (2)
6710 Seminar in Ecology (2)
6810 Seminar in Entomology (2)
6910 Seminar in Radiation Biology (2)