College of Liberal Arts

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

The curriculum of the College of Liberal Arts reflects this wide-ranging concern with the life of the mind. It emphasizes the breadth of human knowledge, perceived not only in terms of the traditional categories of the humanities and the natural and social sciences but also in broader perspectives which extend across academic fields and reach beyond the boundaries of a college of liberal arts. It also stresses depth of learning, thereby seeking to acquaint the student with the rigors of the intellectual process. Through a study of the liberal arts one thus learns to participate in 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 it rests, the scale of its parts, and its 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 throughout life an ability to 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 talents 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 triad: language, literature, and the arts; history and society; science and mathematics. These three great well-springs of human thought are sources of the programs of study offered students in the College of Liberal Arts.

Programs of Study

Granting the broad, general goals of a liberal education, students come into the College of Liberal Arts 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 preprofessional 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 broad area requirements in the Triad plus intensive study in one or more of the specified departmental or interdepartmental major fields described below.

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

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

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

(2) BACHELOR OF FINE ARTS

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

(3) BACHELOR OF MUSIC

The program leading to the Bachelor of Music degree prepares students for graduate study and for positions in which a professional degree is required. The degree is offered with a major in music which has concentrations in music theory,
composition, music history and literature, piano literature, and applied music (voice—organ—woodwind, brass and percussion instruments—multiple woodwind instruments).

(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 resident 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 quarters of 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 or 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 overestimated. A few students enter the College with firm educational 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 these students 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.

Requirement 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 of Liberal Arts. 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 to a course in the major.) A minimum grade of C must be earned in every course counted as part of a major. Students transferring from other institutions, or completing at least 12 credits at The University of Tennessee, Knoxville in each major awarded on this campus.

Note on 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.

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 sense of 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 experience 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 universal 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 competence in writing and 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 the foundations of earlier civilizations, a clear understanding of the present requires an historical perspective. Such perspective may be developed by a number of courses, including the traditional survey of western civilization and 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 useful in acquiring 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 the rational in scientific 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 beliefs, 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, 1020, and three additional credits drawn from 1031, 1032, or 1033. Students who complete 1020 with the grade of A have the additional option to satisfy the remaining three credits in any 2000- or 3000-level writing course offered by the department. (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 AP Language and Composition 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 UTK) a proficiency examination in writing, administered by the Department of English in cooperation with the Committee on Writing Standards.

(iv) By completing 3 hours of formal English composition courses in which require substantial emphasis on writing. The writing-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 in 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

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

(i) 8 hours of literature in a foreign language in the 3000-level or above. Prerequisite to this option is intermediate-level competence in the language, demonstrated by diagnostic (non-credit) or proficiency (credit) examination or by completing a 2000-level sequence in that language.

(ii) Intermediate-level competence in a foreign language demonstrated by diagnostic (non-credit) or proficiency 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 (or typically 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 modes, genres, or movements. Suggested programs are published by the Committee on Language, Literature, and the Arts and are available in the Liberal Arts Advising Center; students may also propose individual programs to the committee for consideration.

Note: In options (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 satisfied by the examination. Those who take the proficiency examination may earn up to 16 hours of credit toward graduation for previous study of the language, in addition to the credit they may earn as freshmen in the language 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 final quarter of the first year sequence of college level foreign language study, normally in the spring semester, 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 8-hour sequence from the several survey courses offered by the Department of History or in a comprehensive interdisciplinary sequence having a substantial emphasis on history.

(b) 8 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 categories (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:

(a) One of the following two options:

(i) An 8-hour sequence in a biological science; or

(ii) An 8-hour sequence in a physical science.

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

(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. The student should work out a program of study which has a definite design and aims at some overall objective. Guidelines are published by each major department or interdepartmental committee to assist the student in ascertaining goals and to provide a framework within which to develop a particular program. Additional assistance in the form of personal counseling is available in the Liberal Arts Advising Center and from designated faculty advisers in each major department or area.

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

*See Phi Beta Kappa requirements in mathematics, page 39.

Majors available in the Basic Program:

| Anthropology | Italian |
| Art | Latin |
| Art History | Mathematics |
| Audiology | Microbiology |
| Biology | Music |
| Botany | Philosophy |
| Chemistry | Physics |
| Computer Science | Political Science |
| Cultural Studies | Psychology |
| Economics | Religious Studies |
| English | Russian |
| French | Sociology |
| Geography | Speech |
| Geology | Speech & Theatre |
| German | Statistics |
| Greek | Zoology |

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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 that freedom within which total education may be rounded out and enriched. Elective courses should be chosen with care so that they will truly enhance the student’s total program and help in the achievement of well thought-out educational objectives.

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

1. Additional courses in the major field;
2. A related minor in another department or area or in another college of the University (24 or more credit hours in courses numbered 2000 or above; see Note below);
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 truly meaningful academic program limit the choices of supplementary elective courses.

Note: Minors are available in most of the departments and areas in which majors are offered, and also in the following:

- Asian Studies
- Biochemistry
- Black Studies
- Comparative Literature
- Latin American Studies
- Linguistics
- Medieval Studies
- Physical Sciences
- Portuguese
- Women’s Studies

Minors may be developed in other colleges of the University, but they must be approved by petition. Students transferring from other institutions must complete at least 6 of the 24 credit hours required for a minor at UTK.

II. Individualized Program

The Basic Program described above will meet the educational needs of most of the students enrolling in the College of Liberal Arts. 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 will normally satisfy the broad requirements of the Triad, just as those in the Basic Program do, although some latitude is provided for substitutions approved by the student’s adviser and the dean of the college. The point at which the greatest degree of individualization takes place, however, is in the area of concentration. Although the quantitative aspect of the area of concentration is the same as for the major in the Basic Program (i.e., a minimum of 36 hours in courses numbered above 2000), there is no restriction in principle on the choice of courses of which it is comprised. The student may design a program in consultation with an adviser, and submit it for consideration to the Committee on the Individualized Program. The proposed courses of study must have some clear central theme, usually implemented through intensive work in two or three departments; an undirected scattering of courses will not be approved. For further information consult the program director, Dr. Harry Jacobson (Ayres Hall).

III. College Scholars Program

A limited number of freshmen, entering transfer students with less than 60 credit hours, and resident students with less than 90 credit hours are invited each year to enter this distinguished honors curriculum. Selection is based on previous academic record, test scores, recommendations, a written essay, and a personal interview. Provision is made for two quarters; continuation depends upon maintenance of a satisfactory record (normal 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 who, under ordinary circumstances continues to advise the student throughout the college career. Together they determine what kinds of coursework 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 resulting in a senior honors thesis or project report.

Further information and applications may be obtained from the program director, Dr. Harry C. Jacobson, 226 Ayres Hall.

IV. Preparation for the Health Professions

- Pre-Dental
- Pre-Dental Hygiene
- Pre-Medical
- Pre-Medical Record Administration
- Pre-Medical Technology
- Pre-Nursing
- Pre-Pharmacy
- Pre-Physical Therapy
- Other Health Professions

- Pre-health professional programs are available for students who plan a career in one of the health professions. The programs preparing students for the study of medicine, dentistry, pharmacy, include the specified courses required for admission to the respective colleges of Health Sciences at Memphis (UTHCS), as well as those required for the Bachelor of Arts degree in the College of Liberal Arts at UT, Knoxville.*

*Pre-medical technology program prepares students to undertake professional training during the fourth year of study at The University of Tennessee Center for the Health Sciences at Memphis. Other pre-health professional programs—dentistry, medical record administration, nursing, pharmacy, and physical therapy—are for those who are planning to pursue professional training in health professional areas which lead to an undergraduate degree from UTCBS but not to a degree from UTC.

Note: The UT Center for the Health Sciences is a state-supported institution and by legislative intent is required to admit all qualified Tennesseans prior to considering out-of-state applicants. At the present time there are more qualified Tennessee applicants than there are places available; therefore, out-of-state applications are not being considered. The only exception to this policy is the non-resident applicant who is the son or daughter of an alumnus or alumna of the UT Center for the Health Sciences who has completed all of their undergraduate work in the College in the University of Tennessee system and is otherwise qualified competitively.

Admission to any program at the UT Center for the Health Sciences requires a completed the Medical Technology Program at the UT Memorial Research Center and Hospital is at the discretion of that program’s admissions committee. Admission to UTK and completion of a health professional program in the College of Liberal Arts does not assure admission to any professional training program.

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

Students in a pre-health professional program should consult with a health professional adviser in the Liberal Arts Advising Center (220 Ayres Hall) or the Coordinator of the Health Professions Office (218 Ayres Hall) for more information about the programs outlined below. Bulletins describing the various pre-health professional programs, including a detailed statement of requirements, may be obtained from the Health Professions Office, 218 Ayres Hall.

PRE-DENTAL PROGRAM

The College of Liberal Arts 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 of Liberal Arts, and

*Students wishing to prepare for professional training at other institutions other than The University of Tennessee Center for the Health Sciences may be directed to the catalogs of those institutions to determine the specific preparation required for admission.
the B.A. degree is granted upon satisfactory completion of the first year of study at the UT Center for the Health Sciences. In the four-year program the degree is granted upon completion of 180 or more credit hours while enrolled in the College, including a major of 36 or more hours in addition to the courses listed below. The requirement for a major is waived for those completing their fourth year at Memphis. 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 the UT Center for the Health Sciences.

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 Hours Credit
English 1510-20 8
Chemistry 1110-20 8
Mathematics (1540) 1550-60 or 1840 8
Triad I (Language, Literature & the Arts) 8
Triad II (History and Society) 8

Sophomore
Biology 1210-20-30 or Zoology 1118-28-38 12
Chemistry 3211-21-31 and 3219-29-39 12
Triad I 8
Triad II 8
Elective 4

Junior
Physics 2210-20-30 12
Speech 2311 4
Biology and/or zoology 12
Triad I 8
Triad II 8
Elective 4

Total (135)

Senior
Completion of major program and B.A. requirements 45
Completion of one year at the UT CHS
Total: 180 hours

PRE-DENTAL HYGIENE PROGRAM
A Bachelor of Science in Dental Hygiene is granted by the UT Center for the Health Sciences upon completion of a program which includes 96 hours of prescribed courses in the College of Liberal Arts and 6 quarters of study at Memphis. 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 of Liberal Arts offers both three-year and four-year programs leading to the degree of Bachelor of Arts for students preparing for the study of medicine. Both programs are based upon the program outlined below. In the three-year program the student must complete at least 135 credit hours while enrolled in the College of Liberal Arts, and the B.A. degree is granted upon satisfactory completion of the first year of study at the UT Center for the Health Sciences. In the four-year program the degree is granted upon completion of 180 or more credit hours while enrolled in the College, including a major of 36 or more hours in addition to the courses outlined below. The requirements for a major are waived for those taking their fourth year at Memphis. Students in either the three- or four-year program must complete the last 45 hours of credit in residence at UTCHS before entering the UT Center for the Health Sciences.

Although the B.A. degree is not required for admission to the College of Medicine, most students accepted into the study of medicine have the baccalaureate degree before admission. Therefore, pre-medical students are encouraged to plan to complete all requirements for the degree before enrolling in the College of Medicine.

Freshman Hours Credit
English 1510-20 8
Chemistry 1110-20 8
Mathematics 1840-50 8
Triad I (Language, Literature & the Arts) 8
Triad II (History and Society) 8
Electives 4

Total (135)

Sophomore
Biology 1210-20-30 or Zoology 1118-28-38 12
Chemistry 3211-21-31 & 3219-29-39 12
Triad I 8
Triad II 8
Elective 4

Total (48)

Junior
Physics 2210-20-30 12
Triad I 8
Triad II 8
Electives 15

Total (39)

Science-Medical Technology Curriculum
The Science-Medical Technology Curriculum is a three-year program consisting of a minimum of 135 credit hours in the College of Liberal Arts. Students who complete this curriculum satisfactorily may apply for admission to the course of study in medical technology at The University of Tennessee Memorial Research Center and Hospital in Knoxville. Successful completion of this course, which results in the granting of 50 credit hours, makes the student eligible for a Bachelor of Arts degree with a major in medical technology from UTCHS. In addition, a certificate of Laboratory Training will be awarded by the UT Memorial Research Center and Hospital. Students will then be eligible for examination by the Board of Registry of the American Society of Clinical Pathologists in order to be certified as registered medical technologists.

Senior
Completion of major program and B.A. requirements 45
Completion of one year at the UT Center for the Health Sciences
Bulletins describing the pre-medical program and requirements in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

*Or equivalent honors courses.
*The College of Dentistry requires 8 hours of English in addition to English 1510-20.
*Any student who has had two years of biology or one very good year in high school should take the proficiency tests for Biology 1210-20-30 to determine eligibility for going directly into Biology 3110 or 3120. Chemistry 1110-20-30 is a prerequisite to Biology 3110-20.
*Recommended electives include foreign language, literature, art, music, history, economics, psychology, philosophy, logic, Greek and Latin etymology, embryology, histology, microbiology, analytical chemistry, and biochemistry. (Courses printed in italic are strongly recommended.)
*Effective with the class entering the College of Dentistry July 1978.
*Recommended courses in biology and zoology are genetics, cell biology, and comparative vertebrate anatomy.
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 detail may be obtained from the Health Professions Office, 218 Ayres Hall.

Note: A degree program in nursing is also available at the University of Tennessee, Knoxville. Information may be obtained from the Dean of the College of Nursing.

PRE-PHARMACY PROGRAMS

The College of Liberal Arts offers three programs preparing students for the study of pharmacy at the UT Center for the Health Sciences in Memphis. The Bachelor of Science in Pharmacy degree is conferred by UTCHS upon completion of three years of professional study at Memphis following any of the three programs.

The two-year program prepares students to be admitted to the College of Pharmacy upon completion of 90 hours of prescribed coursework during their junior year. The student must complete at least 150 credit hours for the degree.

PRE-MEDICAL TECHNOLOGY PROGRAM

Students planning to seek admission to the medical technology course of study at the UT Center for the Health Sciences in Memphis must complete 135 credit hours of prescribed courses while enrolled in the College of Liberal Arts. The program at Memphis is 12 months in length and leads to the degree of Bachelor of Science in Medical Technology from UTCHS. Classes are offered in January and July and application must be made one year in advance.

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

PRE-NURSING PROGRAM

The minimum requirement for admission to the College of Nursing at the UT Center for the Health Sciences is 48 hours of prescribed courses in the College of Liberal Arts. The program at Memphis, which leads to the Bachelor of Science in Nursing from UTCHS, is three years in length.

Registered nurses who wish to work for a degree of Bachelor of Science in Nursing must complete 54 hours of prescribed courses to qualify for admission with advanced standing.

Junior

Accounting 2110……………………………..3
Physical 2210………………………………8
*Triad I 8
*Triad II………………………………..8
Electives………………………………..12

(Total 315)

Graduate

Completion of major program and B.A. requirements……………………………………45

Completion of one year at the UT Center for the Health Sciences.

Bulletin describing the pre-pharmacy programs in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

PRE-PHYSICAL THERAPY PROGRAM

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

Students interested in the pre-physical therapy 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. Bulletin describing the physical therapy program in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

OTHER HEALTH PROFESSIONS

Cytotechnology
Histotechnology
Optometry
Radiologic Technology
Veterinary Medicine

A library of materials about career opportunities in the health professions, including most allied health areas, has been developed and is located in the Health Professions Office, 218 Ayres Hall. Academic 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 180 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) communication design, (2) drawing, (3) life (human) form, (4) watercolor, (5) printmaking, and (7) sculpture. Transfer students are advised that a minimum of 28 credit hours in studio
courses and 8 upper-division credit hours in art history must be earned on the
Knoxville campus. The Bachelor of Fine Arts degree and its major will be recorded
as follows:
Bachelor of Fine Arts
Major: Studio Art
Core Curriculum: The core program is required of all B.F.A. candidates. It is designed to give a
broad art background, in both studio and art history, at the earliest possible time.
This background, during the freshman and sophomore year, provides 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 core program
is nonsequential, but should be completed by the end of the first two years. Core
courses are as follows:

Art History: Hours Credit
Art 1815. 4
Art 1905. 4
Art 2715. 4
A minimum of 8 hours in other art history courses. 8

Studio:
*Art 1115 Studio Fundamentals: Drawing and the Illusion of Space . 4
*Art 1125 Studio Fundamentals: Surface Composition and Color . 4
*Art 1135 Studio Fundamentals: Real Space and Volume . 4
Art 2105 Introduction to Drawing . 4
Art 2205 Introduction to Painting . 4
Art 2405 Introduction to Sculpture . 4
Art 2505 Introduction to Communication Design . 4
Art 2605 Introduction to Printmaking . 4

52 hours
*Prerequisite to 2000-level courses for B.F.A. program.

General Curriculum: In addition to the core program, B.F.A.
candidates must fulfill the following general requirements:
A. Trial Courses
  I. Language, Literature and the Arts
     A minimum of 8 hours English composition 8
     I. History and Society
     A minimum of 8 hours 8
     III. Science and Mathematics
     A minimum of 8 hours 8
     24 hours
B. Philosophy 3910 . 4
C. Non-Art electives
   A minimum of 20 hours. Students entering with a high school language
deficiency must take a minimum of 8 hours of foreign language . 20
  D. Art electives (within art department) A minimum of 40 hours 40
  E. Unspecified electives . 40
  180 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
establishing a unique education in studio art, which may include independent study, of
foreign study in addition to formal class work. Participation
and graduation in the College Artists Program will be noted on the student's transcript.

Students may apply for the program upon completion of 45 credit hours, but
will not normally be considered after the completion of 90 hours. Admittance 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
completed 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 courses 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 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 2008, seniors in 4008. Each course number may be repeated for a maximum of 24 hours credit.

Bachelor of Music
The Department of Music offers the degree of Bachelor of Music with concentrations in music theory,
composition, music history and literature, piano literature, and applied music (voice—piano—organ—strings—woodwind, brass and percussion instruments—
multiple woodwind instruments). The study is designed to prepare students for graduate study or for positions in music for which a professional degree is required.

Students who plan to work for this degree are assigned an 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 or better in all music courses taken. The minimum requirement for the degree is 180 credit hours, including the specified courses outlined below.

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

MUSIC THEORY
Freshman
English 1510-20 . 8
Music 1118-28-38 . 12
Music 1113-23-33 . 3
Music 1340 . 6
Applied music . 3
Ensemble . 3
Liberal arts electives . 6
Music 2000 . 0

Sophomore
Music 2118-28-38 . 12
Music 2113-23-33 . 3
Music 2310-20-30 . 9
Music 2599 . 6
Applied music . 3
Ensemble . 3
Liberal arts electives . 12
Music 2000 . 0

Junior
Applied music . 3
Music 3111-21-31 . 9
Music 3113-23-33 . 6
Music 4112 or 4115 . 3
Ensemble . 3
Liberal arts electives . 3
Music 3199 . 3
Electives . 12
Music 2000 . 0

Senior
Music 4100 . 3
Music 4111 . 3
Music 4112 or 4115 . 3
Music 4121 or 4141 . 3
Music 4131 . 3
Applied music . 3
Ensemble . 3
Liberal arts electives . 3
Electives . 12
Music 2000 . 0

COMPOSITION
Freshman
English 1510-20 . 8
Music 1118-28-38 . 12
Music 1113-23-33 . 3
Music 1340 . 3
Applied music . 3
Ensemble . 3
Liberal arts electives . 12
Music 2000 . 0

Sophomore
Music 2118-28-38 . 12
Music 2113-23-33 . 6
Music 2310-20-30 . 9
Music 2599 . 6
Applied music . 3
Ensemble . 3
Liberal arts electives . 12
Music 2000 . 0

Junior
Music 2340 . 3
Music 3111-21-31 . 9
Music 3113-23-33 . 6
Music 3133-23-33 . 6
Applied music . 3
Music 3599 . 3
Ensemble . 3
Electives . 3
Music 3199 . 3
Music 2000 . 0

Senior
Music 4111 . 3
Applied music . 3
Music 4141 . 3
Music 4599 . 3
Ensemble . 3
Liberal arts electives . 3
Electives . 12
Music history/literature (3000-level and above) . 6
Music 2000 . 0

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TOTAL: 180 hours

TOTAL: 180 hours
## Bachelor of Science in Chemistry

Students who desire to major in chemistry may select either the curriculum leading to the degree of Bachelor of Arts or that leading to the degree of Bachelor of Science in Chemistry. This latter program is approved by the American Chemical Society and is designed to train students to go directly into positions in the chemical industry, or to enter graduate study leading to positions in research and college teaching. A minimum average of C must be made on all chemistry courses applied toward the Bachelor of Science in Chemistry degree.

### COOPERATIVE PROGRAM IN CHEMISTRY

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

### CURRICULUM REQUIREMENTS

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**TOTAL: 180 hours**

### WOODWIND, BRASS, AND PERCUSSION INSTRUMENTS

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<td>English 1510-20</td>
<td>8</td>
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<tr>
<td>Music 1113-23-33</td>
<td>9</td>
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<tr>
<td>Music 1340</td>
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<tr>
<td>Principal applied study</td>
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<td>Ensemble</td>
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<tr>
<td>Electives</td>
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<tr>
<td>Music 2000</td>
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**TOTAL: 180 hours**

### MULTIPLE WOODWIND INSTRUMENTS

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>English 1510-20</td>
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<td></td>
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<tr>
<td>Music 1113-23-33</td>
<td>9</td>
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<td>Music 1340</td>
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<tr>
<td>Principal applied study</td>
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<tr>
<td>Ensemble</td>
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<tr>
<td>Liberal arts electives</td>
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<tr>
<td>Music 2000</td>
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### Language, Literature, Art Triad

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<th>Hours</th>
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<tr>
<td>Writing proficiency</td>
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<td>Language, Literature, Art Triad (literature, foreign language I)</td>
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<tr>
<td>History and Society Triad</td>
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### History

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<td>Chemistry 2140-49</td>
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<td>Chemistry 3410-20-30</td>
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<td>Chemistry 4210-20-29</td>
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<tr>
<td>Computer Science 3050</td>
<td>6</td>
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</tr>
<tr>
<td>History and Society Triad</td>
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</table>
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 50 or consult the Director of the Graduate School of Library and Information Science.

Planning

Students who wish to consider a career in city and regional planning or a related field will find a brief description of the program of the Graduate School of Planning on page 51. Students are accepted into planning from a broad variety of undergraduate backgrounds. Detailed information on the planning profession, admission requirements and the program of study may be obtained from the Graduate School of Planning.

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**
- Political Science 2510-20, 2530 (choose 8 hours) 8
- Economics 3110-20-30 9

**Sophomore**
- Political Science 3555-66 8
- Political Science 3545-46 or 3801-02-03-04 8
- Economics 3340 3
- Accounting 2110-20-30 9

**Junior**
- Political Science 4610-20 7
- Political Science 4410 4
- Economics 3410 3
- Accounting 3510 3
- Finance 4350-60 6

*Or equivalent honors courses.

May also be counted toward Triad requirements.

Social Work

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

Teaching

Students in the College of Liberal Arts who wish to be certified for secondary school teaching must satisfy state certification requirements as well as all degree requirements of the College of Liberal Arts, and must be recommended for certification by the College of Education. The College of Education is approved by the National Council for Accreditation of Teacher Education (NCATE); recommendation for certification by the College, therefore, in effect certifies the student in thirty 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 speech and hearing as determined by tests administered by the Speech and Hearing Center; (3) recommendation of the student’s advisor.

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 the student teaching will be undertaken. Those planning to student teach during the 1979-80 academic year must apply by January 1, 1979.

Curricula for students seeking teacher certification should include the following:

1) English 1510-20 or 1511-28
2) 16 hours, representing at least 3 fields, including:
   a) 4 hours of 2000-level English
   b) 12 hours of the student’s choice from anthropology, art, English literature, Library and Information Science 3510-20-30, foreign language (beyond the elementary level), history (upper division), music, philosophy, or religious studies
3) Language, Literature, and the Arts: 0-24 hours, the number of hours and choice of courses depending upon the options selected and the choices made in (2) above
4) History and Society: (a) One of the 8-hour historical sequences in category (a) of the Triad list
   (b) Psychology 2500 or 2518
   (c) 4 hours from anthropology, economics, geography, human services, political science or sociology courses on the Triad list
   (d) 0-8 additional hours of the student’s choice from courses on the Triad list, the number of hours depending upon choices made in (2) above
5) Science and Mathematics:
   (a) One of the 8-hour natural science sequences in categories 1 or 2 of the Triad list
   (b) 4 additional hours of natural science courses in categories 1 and 2
   (c) 4 hours of mathematics courses in category 4
   (d) 8 additional hours of the student’s choice from courses on the Triad list
6) Speech 2311
7) 9 hours in health and physical education, including at least 3 hours of school health, public health, or nutrition and 2 hours of physical education
8) Professional Education courses:
   (a) Education C&I 3010-20-30
   (b) Educational Psychology 3810
   (c) 6 hours of appropriate methods courses
   (d) Education C&I 3521-22-23
   *(e) Education C&I 4710-20 (student teaching)
9) 6 hours of electives from the College of Education
10) Additional courses necessary to complete liberal arts major(s)
11) Electives to reach total of 180 hours, including at least 60 upper-division hours, required for graduation.

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

*Admission to the Teacher Education Program is prerequisite for Education C&I 3010, 3030, and 4710-20.

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 16.

Course Load

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

The 17 credit limit was one of three means chosen to implement a 1972 decision by the college faculty to reduce the average number of courses carried by students. A second means has been to introduce four-credit courses into the curriculum on a broader scale than ever before. Using such courses the credits achieved by students each quarter would remain substantially the same as in quarters prior to this innovation but would
be generated with fewer courses. A final means has been to decrease the total number of hours required for the degree. The goal of the load reduction is to provide an opportunity for a deeper, more thorough learning experience in the courses which are taken.

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. 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 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 department. 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.

3. A student who desires to take a course S/NC should indicate that intention at the time of registration. A change from S/NC grading to regular grading or regular grading to S/NC will not be permitted beyond the add deadline in each quarter. (Exception: Students who register for a course S/NC in a restricted area will be required to change to regular grading when the error is discovered.)

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

5. A transfer student with S/NC or equivalent credit earned prior to admission to The University of Tennessee, Knoxville, in a course which satisfies a Triad requirement may count it for that purpose. In the case of a course which satisfies a major or minor requirement, statement (1) applies.

The option of taking courses on a S/NC basis is provided to encourage the able student to venture beyond the limits of those courses in which the student does well and, motivated by intellectual curiosity, to explore subject matter in which performance may be somewhat less outstanding than work in preferred subject fields.

Note: Students planning to seek admission to graduate or professional schools (medical, health sciences) should discuss with their advisers possible limitations on exercise of the S/NC option before registering for courses on this basis.

Off-Campus Study
Recognizing that learning is not restricted to formal classroom situations, the College provides for students to earn credit toward graduation for approved off-campus study. Such study may be undertaken only with prior approval of the faculty member and the department concerned. It may include certain kinds of work experiences, community involvement, working in political campaigns, 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 of Liberal Arts, although individual departments may limit the number of hours which may be applied toward a specific major.

Independent Study
Certain educational goals may best be met through independent study done by an individual under the direction of a faculty member. Students who wish to do such independent work should obtain the approval of the faculty members and the departments concerned prior to embarking upon their study. Credit per quarter will vary from 1-16 hours. Up to 24 hours of credit earned in this way may be applied toward a degree in the College of Liberal Arts, 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 of Liberal Arts. 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 programs conducted abroad by other academic institutions to which UTK students with approval may enroll for credit. Assistance in identification 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 which 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. Up to 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. Minimum credits may be counted 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 provided by 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. Each quarter the Student Academic Affairs Office issues the Liberal Arts Quarterly Bulletin in order to keep students informed about changes in the College curriculum as well as matters relating to registration, courses, and requirements.

Office of Black Studies
The Office of Black Studies, 812 Volunteer Blvd., cooperates with the various departments and colleges of the University with respect to the development of curricular changes and innovations which incorporate the Black experience into academic and extracurricular programs of the institution, supplies information on financial assistance for Black students, and acts as the focal point for the coordination and development of an improved and expanded Black Studies Program at the University.

Black Cultural Center
The Black Cultural Center represents one effort by the University to promote greater awareness of the nature of the Black experience and the contribution of Black America to the national past. The Center seeks to fulfill this role through a variety of programs and occasions. Typical of its cross-campus work is sponsorship of Black History Week, and the Black Arts Festival. Within the Center itself exhibits related to the Afro-American past, small group lectures, group study sessions, and a tutorial program aimed especially at minority students are a few of the ongoing activities.
The Center is located at 812 Volunteer Blvd. All members of the University community are invited to visit this location and utilize the opportunities provided by the Center to acknowledge the Black experience. For further information contact the director.

Bureau of Public Administration

The University has established in the College of Liberal Arts 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 prosenium 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. Hunter Hills Theatre, located in the foothills of the Great Smoky Mountains near Gatlinburg, is an outdoor theatre in which performances are offered during the summer months.

Instructional Facilities

The College of Liberal Arts 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), Resler (biological sciences), Physics (physics and astronomy), Geology-Geography (geology and geography), and Dabney and Buehrer (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 studies.

College Offices

The College Administrative Office is in 226 Ayres Hall and houses the office of the Dean/Associate Dean as well as the office of Curriculum and Special Programs. 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. Guthe, Ph.D. Michigan; P.W. Parmelee, Ph.D. Texas A&M.

Associate Professors:
I. Harrison, Ph.D. Syracuse; R.L. Jantz, Ph.D. Kansas.

Assistant Professors:

Research Assistant Professor:

UNDERGRADUATE

A major in anthropology shall consist of 39 hours, 12 of which are to be in the introductory 2000-level courses. Of the remaining 27 hours, 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, 3510, 3530, 3540, 3710, 3800, 4200, 4210, 4240, 4250, 4259, 4400, 4410, 4420, 4430, 4440, 4500, 4510, 4550, 4570, 4590, 4740.

(b) Physical: 3070, 3900, 3920, 3930, 4930, 4930, 4950, 4960, 4970.

(c) Archaeology: 3610, 3620, 3630, 3640, 3660, 4400, 4500, 4600, 4610, 4640, 4650.

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

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

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

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

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

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

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

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

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

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

3510 Peoples and Cultures of Mainland Asia (3) Ethnographic survey of indigenous cultures of mainland Asia. Cultural diversity and human ecology in a real perspective. 2530 recommended.

3530 Peoples and Cultures of Africa (3) Ethnographic survey of aboriginal cultures of sub-Saharan Africa. Cultural diversity and human ecology in a real perspective. 2530 recommended.

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

3555 Cherokee Ethno History (3) Survey of socio-political aspects of internal affairs and external relationships from first European contact to present. Emphasis on 18th and 19th centuries.

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

3580 Peoples and Cultures of Mesoamerica (3) Ethnographic survey of aboriginal peoples and post-conquest changes in Indian cultures. Emphasis upon analysis of small rural communities using modern village studies as source material. Recommended prerequisite: 2530.

3610 Archaeology of United States and Canada (3) Survey of prehistoric peoples north of Mexico from initial occupation to European contact. 2530 recommended.
4550 Indians of the Southeastern United States (3) Survey of Southeastern Indian cultures, emphasizing political organization on aboriginal adjustment to environment; lifeways of Southeastern Amerind groups prior to Euro-American contact. PreReq: 2530, 3340 or consent of instructor.

4560 Cherokee Ethnology (3) Intensive survey of ideology and material aspects of Cherokee culture as existing at time of European contact.

4570 Peoples of Southeast Asia (3) Survey of representative ethnic groups and indigenous cultures of mainland and island Southeast Asia. Problems of contemporary activities. PreReq: 2530, consent of instructor, or an East Asian course.

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 is on United States.

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.

4600 Method and Theory in American Archaeology (3) Historical development of New World archaeology with emphasis on excavation and field techniques. PreReq: 2520 or consent of instructor.

4610 African Prehistory (3) Survey of cultural history in Africa, south of the Sahara, from earliest evidence of human occupation to time of European contact. PreReq: 2520 or consent of instructor.

4640 Zooarchaeology (3) Basic osteological studies of vertebrate classes; emphasis on aboriginal man’s utilization of native animals in his subsistence and culture. Identification, analysis, and interpretation of archaeologically derived molluscan and vertebrate remains.

4650 Archaeology of Southeastern United States (3) Comprehensive survey of prehistoric American Indian. Special emphasis on Tennessee prehistory. PreReq: 3610 or consent of instructor.

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, belief, 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.

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

4930 Physical Growth and Constitution (3) Comparative growth patterns through 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.

4950 Primate Studies (3) Survey of field and laboratory investigations of comparative anatomy and nonhuman 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 taxa. PreReq: 2510. Recommended: Zoology 4380.

Arabic

See Romance Languages.

Art (140)

Professors:

Associate Professors:

Assistant Professors:
M.C. Clausen, M.F.A. Michigan; W.C. Jackson, M.F.A. Tennessee; T.J. Riesing, M.F.A. Nebraska; R.R. Steinmetz, M.Ph. Yale; L.D. Wiesener, M.F.A. Florida State.

Instructors:

Art has two aspects: history of art and practice of art. Knowledge of the practice of art is required of art history majors; knowledge of art history is required of studio majors.

The department reserves the right to acquisition of student studio work.

UNDERGRADUATE

B.A. Major: Art History—Consists of 36 hours in art history courses numbered 2000 and above. Courses numbered 2000 and above in the following areas may also be included in the 36 hours: Greek and Roman art and archaeology, aesthetics, history and theory of architecture (School of Architecture), and up to eight hours in studio courses in the Department of Art. Undergraduate work in art history is enhanced by a knowledge of at least one foreign language. Graduate work normally requires a reading knowledge of at least two foreign languages.

B.A. Major: Art (Concentration in Studio)—Art 1115-25-35 and Art 2715, and eight additional hours of art history are prerequisite to a major of 36 hours of courses numbered 2000 and above, including a minimum of 21 hours in upper-division courses.

Minor: none offered.

For information regarding the Bachelor of Fine Arts degree, see page 182.

1115-25-35 Studio Fundamentals (4, 4, 4) 1115—Drawing and the illusion of space; 1125—Surface composition and color; 1135—Real space and volume. For art, architecture, related arts and art education majors. Others with consent of instructor only.

1815-25 World Art (4, 4) A survey: 1815—prehistory to 1400; 1825—1400 to present.

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

2105 Introduction to Drawing (4) Prereq: 1115.

2115 Drawing II (4) Prereq: 2105. May be repeated for a maximum of 8 credit hrs.


2205 Introduction to Painting (4) Oil, acrylic and watercolor. Prereq: 1115-25-35 for art majors.

2215 Painting II (4) Oil and acrylic. Prereq: 2205. May be repeated for a maximum of 8 credit hrs.

2216 Watercolor II (4) Prereq: 2205. May be repeated for a maximum of 8 credit hrs.

2405 Introduction to Sculpture (4) Prereq: 1115-25-35 for art majors.

2415 Sculpture II (4) Prereq: 2405. May be repeated for a maximum of 8 credit hrs.


2516 Advertising Design (4) Fundamentals of lettering and layout 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. Prereq: 1115-25-35 for art majors.

2615 Intaglio II (4) May be repeated for a maximum of 8 credit hrs.

2616 Lithography II (4) May be repeated for a maximum of 8 credit hrs.

2617 Screen Printing II (4) May be repeated for a maximum of 8 credit hrs.

2715 Survey of Contemporary Art (4) 1945 to present.

2725 Black Art (4) Black artists in society. Emphasis on contemporary art forms.

2935 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.

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

3115 Drawing III (4) May be repeated for a maximum of 12 hrs. Prereq: 2115.

3215 Painting III (4) May be repeated for a maximum of 12 hrs. Prereq: Consent of instructor.

3315 Watercolor III (4) May be repeated for a maximum of 12 hrs credit. Prereq: Consent of instructor.

3415 Sculpture III (4) May be repeated for a maximum of 12 hrs.

3515 Visual Communications I (4) Graphic design: theory and techniques of problem solving for printed material. Prereq: 2525.

3516 Typography (4) Theories and techniques of typography and printing as a fine art medium. May be repeated for a maximum of 12 hrs.

3517 Airbrush (4) Techniques and creative applications. May be repeated once for credit. For art majors only.

3525 Visual Communications II (4) Advanced pictorial perception, concepts, methods, and techniques for designer. Prereq: 2525.


3615 Intaglio III (4) May be repeated for a maximum of 12 hrs.

3616 Lithography III (4) May be repeated for a maximum of 12 hrs.
3617 Advanced Screen Printing (4) May be repeated for a maximum of 12 hrs.
3705 Northern European Painting: 1350-1600 (4) Prints, landscape and genre painting of the Low countries. France, Germany, and England, includes international style manuscripts, Van Eyck, Bosch, Dürer, Holbein, and Bruegel.
3715 Early Italian Renaissance Art: 1300-1500 (4) Painting, sculpture, and architecture. Includes Giotto, Masaccio, Donatello, Brunelleschi, Alberti, Botticelli, and Leonardo.
3716 Art in Southern Europe and New World in Sixteenth Century (4) Italy, Spain and Latin America, 1475-1600. Emphasis on Leonardo, Michelangelo, Raphael, Pontormo, Bellini, Giorgione, Titian, Tintoretto, Veronese, and artistic relations between Italy and Latin America.
3726 Art of Northern Europe in Seventeenth and Eighteenth Centuries (4) Emphasis on Rembrandt, Vermeer, Hals, Rubens, Poussin, Callot, Georges de la Tour, Watteau, David, urban development of Paris and London, and pilgrimage churches of southern Germany.
3735 History of Nineteenth-Century Painting in Europe and America (4) Emphasis on France: Neo-classicism, Romanticism, Friedrich, Constable, Turner, Corot and Barbizon landscapists, Hudson River Group, Pre-Raphaelite Brotherhood, Manet, Courbet, Impressionism, Eakins, Homer, Seurat through Cézanne.
3736 History of Twentieth-Century Painting in Europe and America (4) Fauvism, Die Brücke, Cubism, Der Blaue Reiter, Futurism, Dada and Surrealism, geometric abstraction, social commentary painting. Abstract Expressionism in the U.S.A. and parallels in Europe; Pop, Op, Minimal, and Concept Art.
3746 History of Modern Sculpture in Europe and America (4) From 1900 to 1960. Neoclassicism to Rodin. From 1900 to present: emphasis on Cubism, Constructivism, Expressionism, Assemblage, Pop, Primary Forms, Environments, and Earthworks.
3755-56-57 Studies in Art History (4, 4, 4) Concentration in selected areas. Prereq: 12 hrs of art history or consent of instructor.
3765 History of North American Art (4) Survey of landmarks in painting, 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.
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.)
3835 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 hrs.
4008 Honors: Advanced Art (4) Intensified study for the exceptional student. May be repeated for a maximum of 24 credit hrs.
4015 Individual Problems (4) May be repeated for a maximum of 12 hrs credit. Prereq: Consent of instructor.
4101 Foreign Study (1-16) See page 187.
4102 Off-Campus Study (1-16) See page 187.
4103 Independent Study (1-16) See page 187.
4115 Drawing IV (4) May be repeated for a maximum of 12 hrs. Prereq: 12 hrs of 3115.
4215 Painting IV (4) May be repeated for a maximum of 12 hrs. Prereq: Consent of instructor.
4315 Watercolor IV (4) May be repeated for a maximum of 12 hrs. Prereq: Consent of instructor.
4415 Sculpture IV (4) May be repeated for a maximum of 12 hrs.
4545 Visual Communications Seminar (2) Political, social, economic, and moral problems of contemporary designer. Prereq: 4515.
4615 Intaglio IV (4) May be repeated for a maximum of 12 hrs.
4616 Lithography IV (4) May be repeated for a maximum of 12 hrs.
4617 Advanced Screen Printing (4) May be repeated for a maximum of 12 hrs.
4655-56-57 Reading and Research in Art History (2, 2, 2) Individual problems. Prereq: 16 hrs of art history, including an upper-division course in the area to be researched. Junior or senior standing and consent of instructor.
4875-77-77 Studies in Oriental Art History (4, 4, 4) Concentration in selected areas.

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)
5110-20-30-40-50-60 Drawing and Composition (3, 3, 3, 3, 3, 3)
5210-20-30-40-50-60 Oil Painting (3, 3, 3, 3, 3, 3)
5310-20-30 Watercolor Painting (3, 3, 3)
5340-50-60 Watercolor (3, 3, 3)
5410-20-30-40-50-60 Sculpture (3, 3, 3, 3, 3, 3)
5510-20-30-40-50-60 Communication Design (3, 3, 3, 3, 3, 3)
5610-20-30 Intaglio (3, 3, 3)
5611-21-31 Lithography (3, 3, 3)
5612-22-32 Screen Printing (3, 3, 3)
5770 Seminar in Art History (3)
5855-56-57 Reading and Research in Art History (2, 2, 2)
5900 Seminar in Art Criticism (3)

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; D. M. Lipscomb, Ph.D. Washburn.
H. A. Peterson, Ph.D. Illinois; B. Silverstein, Ph.D. Purdue.

Associate Professors
S. B. Burchfield, Ph.D. Michigan State; P. J. Carney, Ph.D. Iowa; C. G. Maisel, M.Ed. Texas; I. V. Nabeleh, Ph.D. Czech Technical (Prague).

Assistant Professor
T. O. Davidson, M.A. Tennessee.

Instructors

UNDERGRADUATE

General Information. One of mankind’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 or oral—aural communication with special attention to variations considered normal or different. Many of the courses offered in the department cover information that should be valuable to students planning to enter any social service discipline. Suggested electives for non-departmental majors include: 3010, 3040, 3050, 3070, 3710, 4720, and 4750.

Majors. The two majors (audiology and speech pathology) within the department are preprofessional; 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 audiometry or audiological 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 audiology consists of Audiology and Speech Pathology 3010, 3050, 3200, 3310, 3710, 4040, 4450, 4720, 4930 plus not less than 10 or more than 22 credit hours from the following: 3065, 4320, 4460, 4470 and 4500.

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

A major in speech pathology consists of Audiology and Speech Pathology 3010, 3050, 3065, 3200, 3310, 4040, 4320, 4330, 4450, 4720, plus not less than 9 nor more than 15 credit hours from the following: 3050, 4330, 4340, 4400, 4610, 4930, 4940.

Additional recommended courses for speech pathology majors are: Audiology and Speech Pathology 4520, 4450, 4460, 4470, 4470, Anthropology 2530 or 3410, Psychology 2500, 2520, 2530, 2540, 3150, Special Education 4030, 4341, 4342, 4110, 4120, 4130, 4610, and Child and Family Studies 4810.

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

3010 Basic Acoustics in Speech and Hearing (4) Fundamental aspects of acoustics in speech and hearing including physics of sound.

3040 Introduction to Speech Pathology and Audiology (3) Nature, etiology, and incidence of speech, hearing, and language disorders. Cannot be used to satisfy requirements of major in audiology or speech pathology.

3050 Speech Science I: Phonetics (4) Basic phonetics including recognition and production of spoken English sounds with analysis of their formant characteristics and characteristics of speech and speech perception. Prereq: 3010.

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 on diagnosis of speech and language development. Prereq: Psychology 3550 or Education 2430.

3310 Articulation Disorders (4) Evaluation, diagnosis, and treatment of articulatory defects. Prereq: 3050. (Same as Special Education 3310.)

3710 Audiology I (4) Fundamental aspects of normal hearing including anatomy and physiology of ear and basic audiometric principles. Prereq: 3010. (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 practice with diagnostic tests. Prereq: 3050. (Same as Special Education 4040.)

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

4101 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (1-16) See page 187.

4103 Independent Study (1-16) See page 187.

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 (3) (Same as Special Education 4210.)

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

4250 Introduction to the Education and Psychology of the Deaf (3) (Same as Special Education 4250.)

4310 Stuttering (4) Nature and treatment. Review and integration of various theories. (Same as Special Education 4310.)

*4320 Clinical Practice in Speech Pathology (1-6) Prereq: 3040, 3050, 3310, 4040, and consent of instructor. S/N.C. (Same as Special Education 4320.)

3320 Clinical Practice in Speech Pathology (1-6) Prereq: 3040, 3050, 3310, 4040, and consent of instructor. S/N.C. (Same as Special Education 3320.)

3340 Clinical Practice in Speech Pathology (1-6) Prereq: 3040, 3050, 3310, 4040, and consent of instructor. May be repeated for credit. S/N.C. (Same as Special Education 3340.)

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

*4450 Clinical Practice in Audiology (1-6) Prereq: 4720, 4930, or 4940. S/N.C. (Same as Special Education 4450.)

4460 Clinical Practice in Audiology (1-6) Prereq: 4720, 4930, or 4940. S/N.C. (Same as Special Education 4460.)

4470 Clinical Practice in Audiology (1-6) Prereq: 4720, 4930, or 4940. May be repeated for credit. S/N.C. (Same as Special Education 4470.)

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

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

4560 Problems in Audiology (1-6) May be repeated to a maximum of 6 hours credit. Prereq: Consent of instructor.


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

4700 Audiology for Educators of the Deaf (4) Fundamental aspects of hearing, including physiology of sound, anatomy and physiology of the ear, etiology and rehabilitation of hearing loss and basic audiometric techniques. May be used to satisfy requirements of major in audiology and speech pathology. (Same as Special Education 4700.)

4719 Audiology Laboratory (1) Prereq: Consent of instructor. Undergraduate credit only. (Same as Special Education 4719.)

4720 Audiology II (4) Etiology and rehabilitation of hearing loss including pediatric and geriatric aspects, medical treatment and diagnostic audiology. Prereq: 3710. (Same as Special Education 4720.)

4750 Noise in the Environment (3) Discussion of extent to which noise problem exists, introduction to methods of noise measurement, basic techniques in sound and vibration abatement, acoustical factors, and physiological concomitants in noise stimulation. Knowledge of acoustics is advisable.


4920 Aural Rehabilitation: Speechreading and Auditory Training (4) Speechreading as a receptive language process and development of maximum use of residual hearing in acoustically handicapped. (Same as Special Education 4930.)

4939 Laboratory in Aural Rehabilitation (1) (Same as Special Education 4939.)

4940 Advanced Aural Rehabilitation (4) Prereq: 4930 or consent of instructor. (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 Aural 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 (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 (2)

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

5200 Seminar on Stuttering (3)

5201 Aphasia (3)

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

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

5380 Cerebral Palsy (3)

5390 Cleft Palate (3)

5440 Hearing Aid Evaluation (3)
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 4119. Additional credits from Biochemistry 4210-20-30 and/or 4500 and/or 5010 are desirable.

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

4119 Cellular and Comparative Biochemistry Laboratory (2) Basic biochemical procedures of general application in biochemistry and molecular biology. Prereq: Prereq: 1st quarter of analytical chemistry. Prereq or coreq: 4110.

4210-20 Introduction to Physical Biochemistry (3, 3) 4210—Introduction to thermodynamics; phase stability and solubility; chemical potential; osmotic pressure; activity and the Debye-Hückel 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 bio-polymer considerations. Prereq: Mathematics 1640-50-60, 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 hydrodynamics, electrophoretic behavior, 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
The Master's Program
Master's degree requirements are found in the Graduate Catalog. Candidates usually should offer an undergraduate major in either biology or chemistry.

The Doctoral Program
Requirements for the Doctor's degree are found in the Graduate Catalog. An incoming student must present an undergraduate major in either chemistry or biology.

5000 Thesis
5010 Biochemical Techniques (2)
5110 The Metabolism of Nitrogen Containing Compounds (3)
5120 Membranes, Compartments, and the Regulation of Energy Metabolism (3)
5130 Protein Structure and Enzyme Function (3)
5220 Structures and Functions of the Nucleic Acids (3)
5230 Protein Synthesis and Its Role in Metabolic Regulation (3)
5300 Graduate Research Participation (3-6)

5310-20-30 Experimental Techniques (2, 2, 3)
5450 Special Topics (1-3)
5510 Properties of Biomolecules Related to Function (3)
5520 Molecular and Cellular Basis of Metabolic Regulation (3)
5530 Biosynthesis and Regulatory Functions of Informational Molecules (3)
6000 Doctoral Research and Dissertation
6010 Advanced Biochemistry Seminar (1)
6410-20-30 Current Topics in Biochemistry (2, 2, 2)

Biology (190)
Coordinator: K.J. Monty
A major in biology may be met by completing one of the two following concentrations:
A. Concentration in Cell Biology: Consists of Biology 3110-20-30, Chemistry 3211-21-31, 3219-29-39, Biochemistry 4110-20, and 12 hours from approved upper-division courses in biochemistry, botany, microbiology, and zoology. Prerequisites to this concentration are Biology 1210-20-30 or Botany 1110-20 or 1118-28 or Zoology 1118-28; Chemistry 1110-20-30. Corequisites are Math 1841-51; a year sequence in physics (except 1410-20-30); and Chemistry 2140-49.
B. Concentration in Organismal and Systems Biology. Consists of Biology 3110, 3120, 3130, Chemistry 3211-21-31, 3219-29-39, and 18 hours from approved upper-division courses in biochemistry, botany, microbiology, and zoology. Prerequisites to this emphasis are Biology 1210-20-30 or Botany 1110-20 or 1118-28 or Zoology 1118-28; Chemistry 1110-20-30. Corequisites are Math 1841-51 or 1550-60 (Math 1841-51 is recommended choice); a year sequence in physics (except 1410-20-30) or Geology 1510-20.

Bacteriology

Biochemistry (188)

Professors: J.E. Churchich, Ph.D. Sheffield (England); K.J. Monty (Acting Head), Ph.D. Rochester; T.P. Salo, Ph.D. Michigan.

Associate Professors: S.W. Hawkins, Ph.D. Chicago; J.G. Joshi, Ph.D. Poona (India).

Assistant Professors: L. Brattsten, Ph.D. Illinois; R.E. Bryant, Ph.D. Illinois; R.H. Feinberg, Ph.D. California (Berkeley); L. Huang, Ph.D. Michigan State.

5310-20-30 Experimental Techniques (2, 2, 3)
5450 Special Topics (1-3)
5510 Properties of Biomolecules Related to Function (3)
5520 Molecular and Cellular Basis of Metabolic Regulation (3)
5530 Biosynthesis and Regulatory Functions of Informational Molecules (3)
6000 Doctoral Research and Dissertation
6010 Advanced Biochemistry Seminar (1)
6410-20-30 Current Topics in Biochemistry (2, 2, 2)

Biology (190)

Coordinator: K.J. Monty

A major in biology may be met by completing one of the two following concentrations:

A. Concentration in Cell Biology: Consists of Biology 3110-20-30, Chemistry 3211-21-31, 3219-29-39, Biochemistry 4110-20, and 12 hours from approved upper-division courses in biochemistry, botany, microbiology, and zoology. Prerequisites to this concentration are Biology 1210-20-30 or Botany 1110-20 or 1118-28 or Zoology 1118-28; Chemistry 1110-20-30. Corequisites are Math 1841-51; a year sequence in physics (except 1410-20-30); and Chemistry 2140-49.

B. Concentration in Organismal and Systems Biology. Consists of Biology 3110, 3120, 3130, Chemistry 3211-21-31, 3219-29-39, and 18 hours from approved upper-division courses in biochemistry, botany, microbiology, and zoology. Prerequisites to this emphasis are Biology 1210-20-30 or Botany 1110-20 or 1118-28 or Zoology 1118-28; Chemistry 1110-20-30. Corequisites are Math 1841-51 or 1550-60 (Math 1841-51 is recommended choice); a year sequence in physics (except 1410-20-30) or Geology 1510-20.

Bacteriology

Biochemistry (188)

See Microbiology.

Biochemistry (188)

Professors: J.E. Churchich, Ph.D. Sheffield (England); K.J. Monty (Acting Head), Ph.D. Rochester; T.P. Salo, Ph.D. Michigan.

Associate Professors: S.W. Hawkins, Ph.D. Chicago; J.G. Joshi, Ph.D. Poona (India).

Assistant Professors: L. Brattsten, Ph.D. Illinois; R.E. Bryant, Ph.D. Illinois; R.H. Feinberg, Ph.D. California (Berkeley); L. Huang, Ph.D. Michigan State.
Botany (198)

Professors: R.W. Holton (Head), Ph.D. Michigan; E.E.C. Clebsch, Ph.D. Duke; H.R. DeSeij, Ph.D. Ohio State; W.R. Herron (Vice Chancellor for Academic Affairs), Ph.D. Vanderbilt; L.R. Hesler (Emeritus), Ph.D. Cornell; L.W. Jones, Ph.D. Texas; J.F. McCormick (Director of Biology Program), Ph.D. Emory; P.H. Norris, Ph.D. Ohio State; J.S. Olson, Ph.D. Chicago; R.H. Petersons, Ph.D. Columbia; A.J. Sharp (Emeritus), Ph.D. Ohio State; P.L. Walne, Ph.D. Texas.

Associate Professors: C.C. Amundsen, Ph.D. Colorado; S.L. Bell, Ph.D. Chicago; M.W. Bjorner, Ph.D. Texas; J.D. Caponetti, Ph.D. Harvard; A.M. Evans, Ph.D. Michigan; A.S. Heilman, Ph.D. Ohio State; H.H. Shugart, Ph.D. Georgia.


Instructor: B.D. Durland, M.S. Georgia College.

UNDERGRADUATE

Major: Consists of Biology 3110-20; 23 upper-division hours of botany, including 3210 and at least 2 hours from 4710-20, plus 4 hours of upper-division courses from a related biological science (zoology, microbiology, biochemistry, agricultural biology, forestry, ornamental horticulture and landscape design, plant and soil science). Not more than 3 hours from 3050, 3070, 3090 allowed for major credit. Prerequisites to this major are Botany 1110-20 or 1110 or 1116-20 or 1110 or 1118-20. Corequisites are Math 1840-50 or Math 1550-60, Physics 1210-20 or Physics 2210-20 or Chemistry 2311-21-31, 3129-29 or Geology 1510-20 plus 4 additional hours in biology.

Minor: Consists of Biology 3110-20 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 1118-20 or Biology 1210-20. Corequisites are 15 upper-division hours of upper-division courses in a related biological science (zoology, microbiology, biochemistry, agricultural biology, 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. Two 1-hr discussions and approximately 3 hrs audio-tutorial laboratory per week. Students may not receive credit for both Biology 1110-20 and Biology 1210-20.

1118-20 Honors: Fundamentals of Botany (6, 6) Honors course designed for superior students in beginning botany. Open to freshmen with a score of 570 or better on the Scholastic section of the American College Testing Program, and sophomores who have a cumulative grade point average of 3.25 (or 3.5 in the sciences) or who are approved through an interview with a member of botany faculty. Students receiving C or D in 1118 must transfer to 1120. Three 2-hr lecture-tutorial periods. Honors are awarded upon completion of the course.

Black Studies
See Cultural Studies.
Chemistry (235)

Professors: D.A. Shirley (Head), Ph.D. Iowa State; N.S. Bowman, Ph.D. Princeton; C.A. Buehler (Emeritus), Ph.D. Ohio State; W.E. Bull, Ph.D. Illinois; C.J. Collins, Ph.D. Northwestern; J.A. Dean, Ph.D. Michigan; J.F. Eastham, Ph.D. California (Berkeley); W.H. Fletcher, Ph.D. Minnesota; C.W. Kleinman, Ph.D. Texas; D.C. Kleinfelter, Ph.D. Princeton; M.H. Lietzke, Ph.D. Wisconsin; G. Mamantov, Ph.D. Louisiana State; A.D. March, Ph.D. (Emeritus), Ph.D. Penn State; G.D. O'Kelley, Ph.D. California (Berkeley); G.K. Schweitzer*, Ph.D. Illinois; G.P. Smith, Ph.D. Virginia; H.A. Smith (Emeritus), Ph.D. Harvard; W.T. Smith (Emeritus), Ph.D. Ohio State; W.A. Van Horn, Ph.D. Johns Hopkins; E.L. Wehr, Ph.D. Purdue; T.F. Williams1, Ph.D. London (England); J.H. Wood (Emeritus), Ph.D. North Carolina.

Associate Professors: J.E. Bloor, Ph.D. Manchester (England); J.Q. Chambers, Ph.D. Kansas; G.W. Kabalka, Ph.D. Purdue; C.A. Lane, Ph.D. California (Berkeley); J.W. Larsen, Ph.D. Purdue; R.M. Magid, Ph.D. Yale; R.M. Pagni, Ph.D. Wisconsin; J.R. Peterson, Ph.D. California (Berkeley).

Assistant Professors: J.L. Adcock, Ph.D. Texas; F.A. Grimm, Ph.D. Cornell; J.F. Kinaite, Ph.D. Akron; J.D. Kovac, Ph.D. Yale; J.M. Modular, Ph.D. Tennessee; F.M. Schell, Ph.D. Indiana; C. Woods, Ph.D. North Carolina State.

*Alumni Distinguished Service Professor.

UNDERGRADUATE

For information regarding the Bachelor of Science in Chemistry degree and the cooperative program in chemistry, see page 185.

There are two alternative routes for the student to take in designing a program for a B.A. degree with a major in chemistry.

Concentration A is designed to prepare the student for a career as a professional chemist or for entrance into graduate school in such fields as chemistry, biochemistry, geochemistry, etc. This program has similarities to that leading to the degree of Bachelor of Science in Chemistry, (page 185), 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 using Concentration A is approved by the Committee on Training of the American Chemical Society.

The prerequisites consist of Chemistry 1110-20-30, Mathematics 1840-50-60 or 1840-60-60, and Physics 2510, 2310-20. The concentration consists of Chemistry 2140, 2149, 3211-21-31 or 3511-21-31 (latter recommended), 3219-29-39 or 3219, 3529-39 (latter recommended), 3410-20-30, 3429 plus at least 10 hours of additional upper-division work in chemistry. (Up to six hours of biochemistry 4000 level and above or Geology 4610 may be applied to the ten hour requirement.)

Concentration B is 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 economics. This concentration, supplemented by appropriate courses from other areas, is suitable for students planning careers in these areas. Concentration B is specifically designed to provide more elective hours which may be employed in fields which are related to chemistry. Concentration B is not appropriate for students intending to become professional chemists.

The prerequisites consist of Chemistry 1110-20-30, Mathematics 1840-50-60 or 1840-60-60, and Physics 2510, 2310-20; Geology 1510-20; Biology 1210-20-30; Biology 3110-20 and Microbiology 3000, 3008; Botany 1110-20. The concentration consists of Chemistry 2140, 2149, 3211-21-31 or 3511-21-31 (latter recommended), 3219-29-39 or 3219, 3529-39 (latter recommended), 4910-20-30, 4929 plus at least 10 hours of additional upper-division work in chemistry. (Up to six hours of biochemistry 4000 level and above or Geology 4610 may be applied to the ten hour requirement.)

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 3211-21-31, 3219-29 (or 3529); 3329 (or 3539) (12 hours) or Chemistry 3410-20-30 (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 3610. 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 move from one sequence to another as long as 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 the 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 courses designed for the student who has already made considerable progress in science. Class size may be limited to promote faculty-student interaction. Selection is based on ACT scores, high school chemistry grade, and if necessary, performance on a placement examination to be given during the first class meeting. A student receiving a passing grade below B in 1118 will complete the year's work by
taking 1120-30. A student receiving a grade of C or D in 1138 will not be eligible for 1138 and must take 1130 to get the full 12 hours credit. Beginning students who have had high school chemistry and who have had additional extramural, summer institute study, special research projects, home laboratory) are invited to apply during the summer to the head of the department for permission to take proficiency examination in one or more quarters of freshman chemistry. If a satisfactory grade is made on the examination, credit will be allowed for the quarter (or course) for which the exam was taken.

1110-20-30 General Chemistry (4, 4, 4) General courses of theoretical and descriptive chemistry, 1110—Modern atomic theory, chemical bonding, stoichiometry and quantitative treatment of gas laws. 1120—Quantitative aspects of solution chemistry, kinetics, chemical equilibria, and thermochemistry. 1130—Descriptive chemistry of nonmetals, halides, and nitrogenous compounds. 1140—Electrochemistry and introduction to organic and biochemistry. Must be taken in sequence. 3 hrs and 1 lab.

1118-28-38 Honors: General Chemistry (4, 4, 4) (See explanation above.) 3 hrs and 1 lab.

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

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

1510-20-30 General Chemistry (4, 4, 4) Introductory course with emphasis on topics relating to living systems: 1510—Thermodynamics and molecular structure, gas laws, liquid and solid state, solutions, colloids. 1520—Acids and bases, oxidation and reduction, kinetics and equilibria, introduction to organic chemistry, alkanes, unsaturated and aromatic hydrocarbons. 1530—Structure and reactions of various organic functional groups. Introductory biochemistry—amino acids and proteins, carbohydrates, lipids, nucleic acids. Must be taken in sequence. 3 hrs and 1 lab.

1610-20 Chemistry and Society (4, 4) Chemistry for non-science majors emphasizing role of chemistry in dealing with current social concerns. 1610—Basic principles including particle nature of substances and their chemical changes. 1620—Impact and utilization of chemical principles in modern society with special attention to areas of energy, environment, medicine and consumer products. Must be taken in sequence. 3 hrs and 1 lab.

2140 Analytical Chemistry (3) Principles and practices of quantitative measurement with emphasis on chemical systems. Acid-base equilibria, oxidation-reduction systems, complexometric titrimetry, elementary spectrophotometry, potentiometric methods, application of titrimetric analysis. Prereq: 1110-20-30; coreq: 2149.

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

2230 Elements of Organic Chemistry (4) Brief introduction of the organic chemistry with emphasis on compounds of biological interest. Prereq: One year of general chemistry. Not open to chemistry majors, and no credit will be received for both courses 2230 and 2211, toward graduation or otherwise.

3000 Searching the Chemical Literature (2) Use of abstracts and chemical, reference, compendia, books, chemical journals and other sources of chemical information. 2 hrs. Open only to upper-division chemistry majors.

2211-21-31 Organic Chemistry (3, 3, 3) Compounds of carbon and their reactions, reaction mechanisms, spectroscopic and other physical properties. 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.


3429-39 Physical Chemistry Laboratory (1, 1) Gases, liquids, chemical equilibria, solutions, phase equilibria, reaction kinetics and electrochemistry. The corresponding courses (3420 and 3430) are coreq: 1 lab.

3511-21-31 Principles of Organic Chemistry (3, 3, 3) Structure and reactivity of aliphatic and aromatic compounds; fundamental concepts of synthetic utility. Use of spectroscopic and physical techniques to elucidate reaction mechanisms. Recommended for students planning careers in physical or biological sciences. Must be taken in sequence. Prereq: 1110-20-30. Corresponding lecture (3511-21-31) or 3219, 3529-39 is a coreq; latter is recommended.

3529-39 Organic Chemistry Laboratory (1, 1) Experiments on topics discussed in 3521-31. Similar to 3219-39 except designed for students who have not had previous knowledge of various spectroscopic and chromatographic techniques. Corresponding lecture (3521-31 or 3521-32) is coreq for students not having credit for the lecture.

3810 Radioactivity and Its Applications (3) Radioactive materials in tracer and therapeutic applications. Radioactive decay, detection apparatus and techniques, tracer procedures and safety precautions in agriculture, biology, medicine, nutrition, etc. Not for credit by physics or chemistry majors or minors. Prereq: Math 1550 or equivalent, 1 yr of general chemistry.

4110 Physical Chemistry (3) Theoretical aspects of chemical kinetics. Quantum mechanics of atomic and molecular systems. Molecular symmetry, crystal structure and solid state, statistical thermodynamics. Prereq: 3430; coreq: 4119.

4119 Physical Chemistry Laboratory (1) Solutions, phase equilibria, reaction kinetics and spectroscopy. Theoretical aspects of thermodynamics, phase equilibria and solutions, and chemical equilibria. 4170—Gases and kinetic theory, chemical kinetics, 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.

4219 Advanced Analytical Chemistry Laboratory (1) Experiments on topics discussed in 4210. Coreq: 4220.

4220 Advanced Analytical Chemistry (3) Electroanalytical methods of analysis (including polarography, coulometry, potentiometry, and voltammetry); magnetic resonance methods; mass spectrometry; x-ray absorption and fluorescence techniques. Prereq: 2140-49, 3240 or 4220 recommended.

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

4420 Physical Inorganic Chemistry (3) Theoretical concepts leading to an understanding of inorganic chemistry; quantum theory of the atom, principles of molecular structure, and elementary nuclear chemistry. Prereq: 3450-39.

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 organic compounds and mixtures. Prereq: 3211-21-31, 3219-29-39 or 3219, 3529-39. 3 labs. (Not open to students who have completed 4610.)


4810-20 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: 3231-39 or 3231-3539, 3430-39, 4220. Students who receive credit for 4810 may not also receive credit for 4510.

4640 Electronics for Chemists (4) Electronics in design and construction of chemical instrumentation. 2 hrs and 2 labs. Prereq: Physics 2310.

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

4910-20 Biophysical Chemistry (3, 3, 3) Physicochemical principles with applications to biological systems. Must be taken in sequence. Not open to students having 3410-20-30-39; first, second and third laws of thermodynamics; 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 1540-50 or equivalent.

4929-39 Biophysical Chemistry Laboratory (1, 1) Experiments on topics discussed in 4910-20-30. Must be taken in sequence. Not open to students taking 3410-20-30-39 sequence. 4929 is coreq or prereq for 4929. 4930 is coreq or prereq for 4939. 1 lab.

GRADUATE

Students majoring in chemistry for the M.S. or Ph.D. degree are required to present a prerequisite one year each of general, analytical, organic, and physical chemistry with a satisfactory record. Students 3219-20 must have completed a 4420. Students must be admitted with appropriate deficiencies which must be removed without graduate credit.

For students minoring in chemistry, the prerequisite is one course of chemistry including quantitative analysis.

The Master's Program
Master's degree requirements are found in the Graduate Catalog.

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

5000 Thesis
5110-20-30-35 Advanced Organic Chemistry (3, 3, 3)
5129 Advanced Organic Chemistry Laboratory (3)
5140 Introductory Polymer Chemistry (3)
5150 Kinetics of Polymerization (3)
Classics (257)

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

Associate Professors:
M.L. Herbst, M.A. Arkansas; J.E. Shelton, Ph.D. Vanderbilt.

Assistant Professors:
G.C. Gesell, Ph.D. North Carolina (Chapel Hill); B.J. Levy, Ph.D. Texas; P.J. Nassen, Ph.D. Ohio State.

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, 4010, 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.
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)

GRADUATE

Graduate courses in classics include wider reading of Greek or Latin authors in a selected field, more detailed study of one of the great areas of classical literature, and development of background for appreciation of Greek or Roman life and literature.

5000 Thesis
5110-20-30 Greek Epic, Homer (3, 3, 3)
5210-20-30 Greek Drama (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 transfer to The University of Tennessee 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.

1110-20-30 Beginning Latin (3, 3, 3) Must be taken in sequence.
2511-21 Intermediate Latin (4, 4) 2511—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 Elegaic Poets (3)
4120 Horace, Satires and Epistles (3)
4140 Cicero and Techniques of Latin Prose Composition (4) Recommended for Latin majors and minors, especially those intending to teach or pursue 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
5000 Thesis
5310 Seminar in Caesar (3)
5410-20-30 The Latin Epic. Lucretius, Virgil, Lucan (3, 3, 3)
5510-20-30 Roman Comedy. Plautus, Terence (3, 3, 3)

GENERAL COURSES
2710 Greek Etymology (3) Origin and derivation of words. Greek stems most commonly found in English language with special attention to words in scientific and technical vocabularies.
4510 Selected Readings in Latin Literature in Translation (3) Content varies; may be repeated for credit with consent of department.

GRADUATE

5620 Problems in Old World Archaeology (3) Comparative Literature. See Cultural Studies.

Computer Science (266)

Professors: R.T. Gregory (Head), Ph.D. Illinois; F. Donaldson 1, Ph.D. Texas; R.J. Pimmmons, Ph.D. Auburn; G.R. Sherman, Ph.D. Purdue.

Associate Professors: R.M. Alken, Ph.D. Northwestern; C.E. Hughes, Ph.D. Pennsylvania State; S.M. Selkow, Ph.D. Columbia.

Assistant Professors: T. Feagin 1, Ph.D. Texas; W.S. Havens, M.S. VPI; C.P. Huang, Ph.D. SUNY (Buffalo); S.R. Jordan, Ph.D. Wisconsin; M. Meshel, Ph.D. Ohio State; C.P. Pfleeger, Ph.D. Pennsylvania State; D.W. Straight, Ph.D. Texas; M.G. Thompson, Ph.D. Duke.

*Space Institute

UNDERGRADUATE

Computer science offers an undergraduate major and minor 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 Liberal Arts Advising Center, 220 Ayres Hall.

Major: Computer Science 1510 is a prerequisite to a major in computer science which consists of 2510, 3155, 3510, 3520, 4510, 4550, and an additional fifteen hours selected from computer science intermediate and advanced courses as listed below. Also required are Math 2840-50-60 (or the honors sequence 2848-58-68) and Statistics 3450.

Minor: A minor in computer science consists of 2510, 3510, 4510, 4550, and an additional 12 hours of computer science upper-division courses.

Introductory and Service Courses

1410 Introduction to Business Oriented Programming (3) Current and potential uses of computers as tools in the business environment with emphasis on learning FORTRAN programming. Not for computer science majors: students may not receive credit for both 1410 and 1510. Intended primarily for students in College of Business Administration. Prereq: Math 1560 or Math 1840.

1510 Introduction to Computer Science (4) Computer as a tool of varied uses in modern world; emphasis on FORTRAN programming. Problem-solving process; organization and characteristics of digital computers. Survey of applications of computers in various disciplines. Not for credit if 2410 previously taken. Students may not receive credit for both 1410 and 1510. Prereq: Mathematics 1560 or Mathematics 1840.


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

3150 Introduction to Numerical Algorithms and Programming (3) Solution of linear equations, least-squares data fitting, numerical integration, numerical methods for ordinary differential equations. Introduction to programming in FORTRAN. 3150 and 3155 may not both be taken for credit; students with a knowledge of FORTRAN should take 3155. Prereq or coreq: Math 2860. (Same as Math 3150.)

3155 Introduction to Numerical Algorithms (3) Roots of equations, systems of linear equations, least-squares data fitting, numerical integration, numerical methods for ordinary differential equations. 3150 and 3155 may not both be taken for credit. Students with no knowledge of FORTRAN should take 3150. Prereq: 1510 or consent of instructor. Prereq or coreq: Math 2860. (Same as Math 3155.)

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

3910 Commercial Computer Concepts and Control (3) Elements, operation, and control of computer in a business environment; computer input, storage, data manipulation, output, flowcharting, and error control. Prereq: 3410 and Accounting 2120.

4310 Computation in Statistical Analysis (3) Use of digital computer in standard statistical analyses, such as frequency tabulations, percentiles, and characteristic trend and regression, analyses of variance. Not for credit for computer science majors. Prereq: Statistics 2100 or equivalent. An elementary knowledge of a procedure-oriented language such as FORTRAN is also assumed.

4430 Independent Study in Computer Science (1-2) Special project in area of student's primary interest. To be directed by computer science faculty, perhaps jointly with student's faculty adviser. Permission of instructor. May be repeated. Maximum 9 credit hrs.

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: 1510, 2510, or 3150 or consent of instructor.


3570 Programming Languages (4) Comparison and analysis of programming languages and their features. Languages to be discussed include SNOBOL, LISP, APL, and PASCAL. Prereq: 2510.

3715 Discrete Structures (3) Introduction to discrete and combinatorial mathematics. Sets, logic, relations, functions, proof techniques, graph theory, lattices, Boolean algebras. Prereq: 1510 and Math 2660 or equivalents. (Same as Math 3715.)

4035-45 Introduction to Numerical Linear Algebra (3, 3) Floating-point numbers and arithmetic on modern digital computer; numerical algorithms for solving systems of linear equations; linear least-squares methods and eigenvalue computations. Prereq: 3150 or 3155. (Same as Math 4035-45.)

4225-35 Introduction to Numerical Analysis (3, 3) (Same as Math 4225-35).

4510 Data Structures and Non-numerical Programming (3) Data structures and algorithms for their manipulation. Arrays and orthogonal lists; stacks, queues, rings, doubly-linked lists, trees, dynamic storage allocation; organization of files, programming languages and machine architecture. Prereq: 3520. Prereq or coreq: Knowledge of SNOBOL equivalent to that gained in 3570.
4550 Computer Organization and Programming III
(3) Computer organization and advanced programming. Machine language and design of computers, organization of information, microprogramming, software systems, input/output systems, interpreters, macro assemblers. Prereq: 3520 or equivalent.


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.

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


4730 Analysis of Non-numeric Algorithms (3) Study of efficient algorithms for searching (e.g., binary search, tree searches, hash coding) and sorting (e.g., heap sort, shell's sort, quicksort). Algorithms for other non-numeric applications, such as pattern matching, graph path detection, set operations. Precise notions of time and space complexity. Polynomial complete problems. Prereq: 4510.

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

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

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

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

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

4980-90 Special Topics in Computer Science (1-4, 1-4) Credit determined at time of registration. May be repeated. Maximum of 9 hrs credit 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)
5210 Artificial Intelligence (3)
5250 Medical Computing (3)
5430 Theory of Compilers (3)

5455 Finite Difference Methods for Partial Differential Equations (3)
5465 Mathematical Aspects of the Finite Element Method (3)
5655-65-75 Numerical Mathematics (3, 3, 3)
5670-80 Advanced Operating Systems (3, 3)
5710 Finite Automata Theory (3)
5730 Computability and Computational Complexity (3)
5750 Theory of Formal Languages (3)
5810 Information Organization and Retrieval (3)
5840-50 Pattern Recognition (3)
5910-20-30 Special Topics in Computer Science (1-3, 1-3, 1-3)
5940-50 Advanced Small Computer Systems (3, 3)
5970 Independent Study in Computer Science (1-3)

Cultural Studies
Director: Dr. Charles O. Jackson
Basic Staff:
S.R. Blanshei, Ph.D. History; J.S. Elliott, Ph.D. Russian; D.M. Fieno, Ph.D. Russian; C.O. Jackson, Ph.D. History; S.B. Kurth, Ph.D. Sociology; H.E. Lewald, Ph.D. Spanish; D.H. Littlejohn, B.A. Special Programs; C.J. Mellor, Ph.D. German; M.E. Peele, M.A. History; M.P. Rice, Ph.D. Russian; H.C. Rutledge, Ph.D. Classics; P.B. Scott, Ph.D. Home Economics; Z. Shirakawa, M.A. Special Programs; S.E. Young, Ph.D. Music.

The ideal curriculum encourages not only proficiency in a given field of knowledge but also the comprehension of similarity and complementarity between areas of intellectual endeavor. One answer to the need for fusion and integration of knowledge is the interdisciplinary program. The College has joined the resources of several departments to offer a cultural studies major with concentrations in American studies, ancient Mediterranean, Asian studies, Black studies, comparative literature, Latin American studies, linguistics, Medieval studies, and Eastern European studies. Minors are provided in Asian studies, Black studies, comparative literature, Latin American studies, linguistics, Medieval 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 electives dealing with the American experience. Nine hours of the elective group must be from one of the following disciplines: anthropology, economics, political science, or sociology. A list of acceptable elective courses is published annually by the American Studies Committee.

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

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

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 21 additional credits from Asian studies or approved departmental courses. The latter should constitute a coherent program, including a minimum of one course (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 eight 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 eight 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. Phoebe Marr.

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.

3510-20 Rise of Classical Civilizations (2, 2) Introduction to the classical world, including the development of civilization in the Mediterranean.

3310 Indian Culture (4)
3320 Chinese Culture (4)
3330 Japanese Culture (4)
3340 Islamic Culture (4)

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

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

Asian Language and Literature
ARABC (127)
(See Romance Languages)
1510-20 Spoken Arabic (4, 4)
2110-20-30 Elementary Modern Standard (3, 3, 3)
3510-20 Intermediate Modern Standard (4, 4)
3610 Islamic Literature in English Translation (4)
4101 Foreign Study (1-16)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)

CHINESE
Asian Studies 2531-32 Elementary Chinese (4, 4)
Taped language program. Must be taken in sequence.
Asian Studies 3531-32 Intermediate Chinese (4, 4)
Taped language program. Prereq: 2531-32 or equivalent or consent of instructor. Must be taken in sequence.
Asian Studies 4531-32-33-34 Advanced Chinese (4, 4, 4, 4)
Taped language program. Prereq: 3531-32 or equivalent or consent of instructor. Must be taken in sequence.

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

JAPANESE
Asian Studies 2631-32 Elementary Japanese (4, 4)
Must be taken in sequence.
Asian Studies 3631-32 Intermediate Japanese (4, 4)
Prereq: 2631-32 or equivalent or consent of instructor. Must be taken in sequence.
Asian Studies 3650-60 Japanese Literature in English Translation (4, 4)

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

Approved Area Courses
(a) Art, Asian Culture, Literature, and Music
Art 3775 Art of Indian Asia (4)
Art 3776 Chinese Art (4)
Art 3777 Japanese Art (4)
Art 4875-76-77 Studies in Oriental Art History (4, 4, 4)
Asian Studies 3310 Indian Culture (4)
Asian Studies 3320 Chinese Culture (4)
Asian Studies 3330 Japanese Culture (4)
Asian Studies 3340 Islamic Culture (4)
Arabic 3610 Islamic Literature in English Translation (4)
Asian Studies 3650-60 Japanese Literature in English Translation (4, 4)
Asian Studies 3660 Modern Japanese Literature in English Translation (4)
Asian Studies 4010-20-30 Readings in Asian Literature (4, 4, 4)
Spanish 4050-60-70 Hispano-Arabic Literature and Culture (3, 3, 3)
Music 4260 Introduction to Ethnomusicology (3)
(b) Economics, Geography, History, and Political Science
Economics 4232 The Political Economy of Asian Development (3)

Geography 3870 Geography of Asia (4)
History 3780-90 History of the Middle East (3, 3)
History 3795 Contemporary Middle East (4)
History 3800 North Africa since 1830 (3)
History 3810-20-30 History of East Asia (3, 3, 3)
History 4791 Modernization of the Middle East (3)
History 4792 Historical Writers in Islamic History (3)
History 4811-21 History of Japan (4, 4)
History 4870 Cultural History of China (3)
History 4880 History of Modern China (3)
History 4890 History of Contemporary China (3)
Political Science 3621-22 Politics of Asian States (4, 4)
Political Science 3641 Government and Politics of Middle East and North Africa (4)
Political Science 3795 Contemporary Middle East (4)
(c) Anthropology, Philosophy, Religious Studies, and Sociology
Anthropology 3510 Peoples and Cultures of Mainland Asia (3)
Anthropology 4500 Peoples of China I: Chinese Society before 1839 (3)
Anthropology 4510 Peoples of China II: Chinese Society after 1839 (3)
Anthropology 4570 Peoples of Southeast Asia (3)
Anthropology 4590 Peoples of Japan (3)
Philosophy 3650 Philosophy and Religion in India (4)
Philosophy 3660 Buddhist Philosophy and Religion (4)
Philosophy 3671 Religion and Philosophy in China (4)
Religious Studies 3650 Philosophy and Religion in India (4)
Religious Studies 3660 Buddhist Philosophy and Religion (4)
Religious Studies 3671 Religion and Philosophy in China (4)
Religious Studies 3672 Religion and Society in Japan (4)
Religious Studies 3680 Islam (4)
Religious Studies 3760 Eastern Religions and Western Thought (3)
Religious Studies 3770 Zen Buddhism (3)
Religious Studies 4670 Topics in Eastern Religions (4)
Religious Studies 4960 Tradition, Change, and Modernity in Asia (4)
Sociology 3672 Religion and Society in Japan (4)
Sociology 4960 Tradition, Change, and Modernity in Asia (4)

Black Studies (195)
The concentration in Black studies and the minor in Black studies offer in-class, 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 in 4102 and 4103 combined can be applied to a major and a maximum of 4 hours in 4102 and 4103 combined can be applied to a minor. In addition, courses from at least two other departments must be selected.

For further information consult the coordinator of the Black Studies Committee, Mr. Marvin Peek.

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 collaborative reading in some area of Black studies which is defined 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)
Course will trace, analyze and interpret educational systems established for and by Blacks. Special emphasis will be given to colonial experience and the Washington-DuBois controversy in 3630; 3640 will deal with present urban educational problems of Blacks. Recent proposed remedies and solutions as integration, compensatory programs, decentralization, voucher systems; Black Studies and Freedom Schools will be discussed. Sociology 2010-20, History 1590-60 recommended. Prereq: Consent of instructor.

4101 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (4-8) See page 187.

4103 Independent Study (1-6) See page 187.

4200 Senior Seminar on Pan-Africanism (4)
Explores concepts and philosophers of Pan-Africanism and implications of this 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 African American history, African history, and children's literature. Prereq: 2010 or 2020 or consent of instructor.

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

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

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

4830 Black Women in American Society (4) Historical and contemporary socio-economic-political factors in American society as they relate to the Black woman. History 1590-60 recommended. Prereq: Consent of instructor.

4880 Afro-American Psychology (3)
(Same as Psychology 4880.)
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 Comparative Literature Program). Minors in comparative literature are strongly encouraged to continue their study of a foreign language beyond the minimum requirements.

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

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

4010 Methodology of Comparative Literature (3)
Research and writing of comparative literary studies. Major project will be preparation of seminar paper in comparative literature. Prereq: 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)

Classics 3210-20-30 Greek and Roman Mythology (3, 3, 3)

Classics 4010 Greek Drama in English Translation (3)

Classics 4510 Selected Reading in Latin Literature in Translation (3)

English 3411-12-20-30 Modern Drama (3, 3, 3, 3)

English 3710 Literature of the English Bible (3)

English 3910-20-30-40 Comparative Literature (3, 3, 3, 3)

English 4720 Folktale (3)

English 4730 Popular Ballad (3)

English 4950 Approaches to Literature (3)

English 5860 Introduction to Literary Research (3)

German 3210-20-30 Masterpieces of German Literature in English Translation (3, 3, 3)

German 4030 German Drama in English Translation (3)

German 4040 The Modern German Novel in English Translation (3)

German 4050 The Faust Legend (3)
Linguistics (623)

This concentration offers a broad exposure to the various fields of linguistics (including historical, descriptive and theoretical linguistics) along with an opportunity to study areas where linguistics overlaps with other disciplines such as psycholinguistics, sociolinguistics, speech pathology and the like. It is designed to prepare a student for graduate work in linguistics or related areas, or to serve as a general survey of language and linguistics. It provides the additional possibility of 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 a foreign language. (This can be accomplished by electing Option I of the Language, Literature and Arts section of the Triad requirements. The following languages offer sequences which fulfill Option I: French, German, Greek, Italian, Latin, Russian, Portuguese, Spanish.) By special permission of the Linguistics Committee, certain language-related courses may be substituted for a 3000-level sequence of the foreign language.
(b) Two quarters of a non-Indo-European language to be selected from the following: Religious Studies 3141-51 (Hebrew); Arabic 2510-20; Asian Studies 2531-32 (Chinese); Asian Studies 2631-32 (Japanese).

Concentration
The concentration shall consist of 38 hours distributed as follows:
(a) 32 hours composed of: Audiology and Speech Pathology 3050; French, German, Russian, or Spanish 4250-60-70; English 2330, 4430, 4440; Speech 4811; Linguistics 4020-30.
(b) 6 hours of the following, selected in consultation with the Linguistics Committee: Anthropology 3800; Audiology and Speech Pathology 3900, 4650, 5651, 5790; Educational Curriculum and Instruction 3562-63; Special Education and Rehabilitation 5220, 5310-20-30; English 3340, 4450, 4460, 4471, 4481, 5150, 5170-80; German 4310-20, 4810-20-30, 5710-20-30; Linguistics 4000; Russian 4310-20-30; Philosophy 4630; Psychology 4650, 4660, 5360-70; French 4210-20-30, 5110-20-30; Spanish 4210-20-30, 5110-20-30.

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

Minor
A minor in linguistics shall consist of 27 credit hours composed of 9 from section (b) of the major selected in consultation with the Linguistics Committee, and 18 hours as follows: Audiology and Speech Pathology 3050; Linguistics 4020-30; English 4430; French, German, Russian, or Spanish 4250-60.

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

For further information consult the chairperson of the program, Dr. James Elliott.

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

4020-30 Historical Linguistics, Neo-Grammarians School, and Growth of Structuralism (3, 3) 4020—Traces development of scientific approach to linguistics from Jacob Grimm and Franz Bopp through 19th century. 4030—Trace change in linguistic interest brought about by Saussure's Course and growing impact of anthropology and behaviorism on linguistic studies.

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

Medieval Studies (674)

A concentration in Medieval studies focuses upon culture and society from the collapse of the Roman Empire to the sixteenth century. Such a concentration offers the opportunity to deepen one's self-awareness and broaden one's view of the range of human possibilities by studying a very different and remote culture—its conditions of life, social and political institutions, values and ideals, and modes of perception and expression. A concentration in Medieval studies consists of Medieval Studies 2010 and 4010 and 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 Sarah Blanshi, 1113 McClung Tower.

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 3061 History of Western Religious Thought and Institutions (4)

History 3411 Renaissance (3)

History 3710 History of Germany (3)

History 3780 History of Middle East (3)

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

History 4500 History of Medieval England (3)

History 4710-20-30 Medieval History (3, 3, 3)

Philosophy 4430 Medieval Philosophy (4)

Political Science 3802 Studies in Political Thought (4)

Religious Studies 3061 History of Western Religious Thought and Institutions (4)

Religious Studies 3411 Renaissance and Reformation (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 4810-20 Chaucer (3, 3) (readings in Middle English)

French 4350-60-70 Medieval French Literature (3, 5, 3) (readings in French)

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

French 3210 French Literature in English Translation (3)
German 4310 History of German Language (3) (readings in German)
German 3210 German Literature in English Translation (3-4)
German 3240 Old Norse Literature in English Translation (3)
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)
Italian 4010 Italian Drama in English Translation (3) (or in Italian)
Spanish 4050-60-70 Hispanic-Arabic Literature and Culture (3, 3, 3) (in English translation)

Category #3 The Arts

Architecture 4010 Special Problems in Architecture (1-8) (when subject is part of medieval culture and society, e.g. Gothic and Scholasticism)
Architecture 4130 Seminar in Medieval Architecture (4)
Art 3704 History of Medieval Art (4)
Art 3705 Northern European Painting, 1350-1600 (4)
Art 3715 Early Italian Renaissance Art, 1300-1500 (4)
Music 4200 Independent Study in Music History and Literature (1-3) (when subject is part of medieval culture and society)
Music 4280 The Mass to 1600 (3)
Music 4290 Gregorian Chant (3)
Theatre 3252 History of the Theatre (4)

Russian and East European Studies (887)

There are two approaches for the student to take in designing a program with a concentration in Russian and East European studies:

Track I is designed for students whose interest is in a career in the academic world or in some branch of government service. Prerequisites to this track are Russian 2510-20 and 2640-50. The track consists of Economics 4000; Geography 3880; six hours from History 3470-80, 4470, 4480, and 4490; Political Science 4815 and four hours from Political Science 3631-32, 3715; Russian 3510-20 and 3 hours from 3610-20; and six hours from Russian 3210-21-30, 3240, 3250, 3260.

Track II is designed for students whose interest is in a career in the world of international business and/or finance specifically oriented toward trade with the Soviet Union and Eastern Europe. Prerequisites to this track are Russian 2510-20 and 2640-50. The track consists of Economics 3210, 4000, and 4230; three hours from History 3470-80 and nine hours from History 4480, 4490, or Geography 3880; Political Science 4815 and four hours from 3631-32, 3715; Russian 3510-20 and 3 hours from 3610-20-30; Marketing 4230; and Finance 4420.

For further information, consult the chairman of the Russian and East European Studies Committee, Dr. Martin Rice.

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

Urban Studies (985)

A concentration in urban studies consists of 40 quarter hours, including Urban Studies 2500 and 3000, at least 4 hours of Urban Studies 4000, and 28 hours from the urban studies curriculum provided below. The urban studies minor consists of 24 quarter hours, including Urban Studies 2500 and 3000 plus 16 hours from the urban studies curriculum provided below. For further information consult the chairperson of the Urban Studies Committee.

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 12 hours credit.

4000 Directed Field Work (1-18) Participant observation and other directed field research in selected sites and organizations. May be done in a concentration major 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 16 hours credit.

Urban Studies Curriculum:

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

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

Architecture:
2000 Man-Environment Systems I (4)
3930 Behavioral Approaches to Environmental Design (6)
4900 Aspects of Urban Environment (4)

Geography:
2000 Man, Location, and Behavior (4)
3430 Urban Geography (4)

History:
4670 Cities and Urbanization in American History (3)
4740 The City in Europe (3)

Planning:
4100 Introduction to Planning (3)

Political Science:
3750 The Urban Polity (4)
3780 Urban Policy Process (4)

Real Estate and Urban Development:
3810 Principles of Real Estate and Urban Development (3)
4120 Urban Growth and Land Use (3)
4130 Problems of Urban Development (3)

Sociology:
3410 Urban Environment (4)
3420 Urban Problems (4)
4330 Urban Ecology (4)
4530 Community Organization (4)

Women's Studies (944)

Minor: Consists of Women's Studies 2010-20 and 16 hours of appropriate courses numbered 3000 or above. Supporting courses are drawn from several departments and colleges on the UTK campus. A list of available courses will be published annually by the Women's Studies Committee. For further information consult the chairperson of Women's Studies, Dr. Suzanne Kurth.

2010-20 Women's Studies (4, 4) Explores basic knowledge and sources necessary to understand current and past societal experiences of women. 2010 utilizes perspective of humanities; 2020 emphasizes that of social sciences.

4000 Topics in Women's Studies (4)

Cultural Studies (270)

4000 Selected Interdisciplinary Cultural Topics (1-12) Acceptable for credit in any cultural studies concentration or minor with the consent of the director of cultural studies and the respective chairperson. May be repeated for credit up to maximum of 12 hours.

4101 Foreign Study (1-16) Acceptable for credit in any cultural studies concentration or minor except Black studies. Registration by consent of director of cultural studies and the respective chairperson. See page 187.

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 page 187.

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 page 187.

GRADUATE

5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent 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 interdisciplinary department provides advanced courses in contemporary ecology for students from undergraduate programs in basic and applied biology, 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 and the...
Tennessee Valley Authority 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.

ADMISSION

Requirements for admission to this program are: (1) admission to the Graduate School of The University of Tennessee; (2) at least 12 quarter hours of college chemistry, 9 quarter hours of college mathematics, and 4 quarter hours of biology 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, 408 10th Street, University of Tennessee, Knoxville, Tennessee 37916.

COURSES ACCEPTABLE IN PROGRAM

Agricultural Biology
4010 Biology of Soil Microorganisms (4)
4510 Freshwater Fishery Biology (4)
4520 Management of Lakes and Ponds (4)

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)

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)
5330 Marine Ecology (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)

Economics
4260 Economics of Resources (3)

Environmental Engineering
4700 Air Pollution-Air Resources Management (3)

Forestry
4005 Forest Ecosystems (3)
4450 Game Mammals (4)

Game Birds (4)

Geography
5610 Selected Topics in Climatology (4)

Geology
5210 Seminar in Wildlife Conservation (3)
5220 Seminar in Forest Tree Biology (3)
5240 Seminar in Forest Genetics (3)

Geography
5610 Selected Topics in Climatology (4)

Geology
5290 Quarternary Problems (4)
5829 Experimental Microbial Ecology (3)

Plant and Soil Science
4320 Soil Formation, Morphology, and Classification (4)
5240 Soil Productivity and Management (3)
5250 Pedology (4)

5810 Crop Climatology (4)

5820 Advanced Crop Physiology and Ecology (4)
5750 Ethological Psychology (3)

Zoology
4240 Animal Ecology (4)
4660-70 Limnology (4, 4)
5570 Animal Populations (3)
5850 Insect Auteology (4)
5860 Geographic Distribution of Animals (4)
5870 Insect Synecology (4)

Economics (283)

See faculty list, page 90.

Economics courses offered in the Department of Economics of the College of Business Administration provide opportunity for a major or minor in 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 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 a part of the upper-division work and should be taken as early as 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.

English (339)

Professors:
J. H. Fisher (Head), Ph.D. Pennsylvania; P.G. Adams, Ph.D. Texas; E.W. Bratton, Ph.D. Illinois; K. Curry, Ph.D. Yale; R.B. Davis (Emeritus), Ph.D. Virginia; R.Y. Drake, Jr., Ph.D. Yale; J.A. Hansen, Ph.D. Yale; R.W. Kelly, Ph.D. Yale; R. Knickerbocker (Emeritus), Ph.D. Yale; B.J. Leggett, Ph.D. Florida; F.D. Miller, Ph.D. Virginia; R.E. Parker (Emeritus), Ph.D. California (Berkeley); J.E. Reese (Chancellor), Ph.D. Kentucky; N.J. Sanders, Ph.D. Shakespeare Institute, Stratford-on-Avon; P.L. Soper (Emeritus), Ph.D. Cornell; H.E. Spivey (Emeritus), Ph.D. North Carolina; B.T. Stewart, Ph.D. Northwestern; E.W. Stockton (Emeritus), Ph.D. Harvard; A. Thaler (Emeritus), Ph.D. Harvard; R.H. Walker, M.A. Texas; T.V. Wheeler, Ph.D. North Carolina; J.M. White, M.A.

Cambridge, N. Wright, Ph.D. Yale.

Associate Professors:

Assistant Professors:
J.M. Armstead, Ph.D. Duke; D.R. Cox, Ph.D. Missouri; R.T. Goode, Ph.D. Texas; D.F. Goslee, Ph.D. Yale; N.M. Goslee, Ph.D. Yale; T.J.A. Heffernan, Ph.D. Cambridge; M.A. Lofaro, Ph.D. Maryland; M.P. Richards, Ph.D. Wisconsin.

Alumni Distinguished Service Professor.
John C. Hodges Professor.
UNDERGRADUATE
Major: (36-39 hours) Two courses in English at the 2000 level are prerequisite to a major, which consists of the following requirements:
(1) English 2150, which should be taken as soon as possible after the student has elected English as a major.
(2) Upper-division courses in English (26-27 hours)
Nine English courses at the 3000 and 4000 level should be distributed over a broad spectrum of British and American literature, either
(a) by taking 14 hours in the British and American literature surveys (8 hours in English 4991-92 and 6 hours from English 3010-20-30) and the remaining 12-13 hours in individual author and genre courses at the 3000 and 4000 level in English linguistics; or
(b) by taking 6 hours each from the courses listed below under categories A, B, and C, with the remaining 9 hours arranged to form a coherent program.

Three hours of advanced writing (Category D below) may fulfill a part of either (a) or (b) above.
(3) Additional courses in literature or language (6-8 hours), either
(a) 6-8 hours of 3000-level literature in a foreign language; or
(b) 8-9 hours of comparative literature or foreign literature in translation, at least half of which must be in the upper-division level.
(4) Corequisites—English majors must complete the equivalent of the second (2000-level) year of a foreign language.

Special Programs for the Major—The Director of Undergraduate Studies is empowered to approve the individualized programs developed by students in consultation with their advisors. These programs need not necessarily fulfill all of the requirements listed above.
Honors Program—For students who qualify for this concentration, the English department offers a program of individualized study in the fourth year, culminating in a senior thesis and comprehensive examination. If these two are passed with grades of B or better the student will be graduated with honors in English.

Classification of Upper-Division English Courses for the Major:
C. Nineteenth and Twentieth Century: 3030, 3070, 3080, 3140, 3150, 3210-20, 3411-12-20-30, 3930, 3940, 4060, 4210-20-30, 4230-40-30, 4620, 4652, 4660, 4890.
D. Advanced Writing: 3450, 3460, 3470, 3830, 4960.
Minor: 24 hours, including at least 18 at the upper-division level.
Certification for Teaching English and Speech in Tennessee
Consult Certification Clerk, Room 212, Claxton Education Building.

General Prerequisites English 1010-20-30 or equivalent are prerequisite to all English courses numbered above 2000.

1010 English Composition (3) Expository writing with emphasis on invention, organization, style, and revision; intensive study of essays for meaning and ways of expressing meaning; conferences on individual writing problems. Coreq: English 1019 for designated students. A, B, C, I, NC, W grading.

1019 Writing Workshop (1) Required concurrently with 1010 of students selected on the basis of either their placement scores and high school record or their performance in English 1010. Specific criteria of selection for 1019 will be published by the English Department to quarter each year. Individual and group instruction in grammar, mechanics, sentence patterns, reading comprehension, précis writing, and paragraph development. Grade S/NC; a student taking 1019 concurrently with 1010 must pass 1010 to receive credit for 1019.

1020 English Composition (3) Analytical writing based on study of great themes in literature; practice in documentation; individual conferences. Prereq: 1010. Students receiving an A in 1020 may elect to complete a year's work in English composition with any 2000- or 3000-level writing course. A, B, C, I, NC, W grading.

1031-33 English Composition (3, 3, 3) Applicati

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1221 Written and Oral English for Foreign Students (6) Emphasis on the more advanced structures of English grammar and on paragraph writing. Required during the first quarter of residence of foreign students. Coreq on the English Proficiency Examination demonstrate need for work in English structure, but not at the intensive level of English 1011. Required also of foreign students who complete 1211. A, B, C, I, NC, W grading.

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

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

1441 English Composition for Foreign Students (3) For students whose native language is not English, writing based on reading and discussion with attention to use of library and to basic skills of documentation. Prereq: 1221. Writing assignments encountered by college students. English 1441 replaces English 1020 for undergraduate foreign students. Prereq: 1431. A, B, C, I, NC, W grading.


2150 Colloquium for English Majors (3) Introduction to methods and objectives of literary study; conferences to plan student's program in major.

2510-20 English Masterpieces (4, 4) 2510—To the mid-eighteenth century. 2520—Since the mid-eighteenth century.

2530 American Masterpieces (4)

2540 The Literature of Black America (4) Poetry, fiction, drama. Emphasis on twentieth century.

2560-70-80 Literature of the Western World (4, 4, 4) 2560—Ancient and Medieval. 2570—Renaissance through the eighteenth century. 2580—Nineteenth and twentieth centuries.

2640-50 English Culture (4, 4) Began in the late eighteenth century. 2650 in the late eighteenth century to the present.

2660 Introduction to Drama (4) Study of selected plays to provide critical techniques necessary for understanding of drama.

2670 Introduction to Poetry (4) Study of selected poems to provide critical techniques necessary for reading of different types of poetry.

2680 Introduction to the Novel (4) Study of selected novels to provide critical tools necessary for judging longer works of fiction.

2710 Introduction to Writing Fiction (3) Fundamental course for those entering creative writing program. Instruction in and application of basic skills of finding the subject, selecting setting and point of view, shaping plot, developing characters.

2720 Introduction to Writing Poetry (3) Further basic course for those entering creative writing program. Study of fundamental elements of poetry: composition and discussion of poems by students.
to professional employment or graduate study in geography, 4210 and/or a senior project under 4103 are/is 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. Thoroughly goods availability 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. Need not be taken in sequence. Not open to students who have taken 1110 and 1120, respectively.

1810-20 Geography of the Natural Environment (4, 4) Characteristics and processes of earth's surface and lower atmosphere; their interaction to produce wave patterns of distinctive environments significant to man. Must be taken in sequence. 1810 not open to students who have taken 1710.

2110-20-30 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 commercial activities; as they relate to distance, natural environment, and culture. Order and regularity in pattern of human use of earth's surface.


3430 Urban Geography (4) Concepts and theories concerning development and significance of systems of cities and internal morphology of cities. Not open to students who have taken 4660.

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

3490 Geography of Resources (4) Study of factors related to variation in resource availability from time to time and from place to place, with particular emphasis upon energy and mineral 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 The Atmospheric System and Man (4) Overview of general circulation system leading to world pattern of climates. Role of climate in agriculture, architecture, human comfort, and economic activity.

3530 The Land-Surface System and Man (4) Nature and regional variations in relationships among surface form, water, vegetation, and surface materials. Man as evaluator and agent of change.

3600 Geography of Population (4) World population pattern; regional socio-economic characteristics and demographic trends; relationship to resource base.

3610 Political Geography (4) Importance of geographic factors for understanding political relations within and between nations; spatial implications of political decision-making process; geography of administrative units.

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

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

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

3810 Geography of Europe (4)

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 the Southwest 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 3260, 3890 or 3900.

3880 Geography of the Soviet Union (4)

3910 Regional Geography of United States and Canada (4) Major physical, economic, and social distributions as they interrelate to give distinctive character to regions of the United States and Canada. Not open to students who have taken 3710 or 3790.

3920 Geography of the American South (4) Geographical appraisal of southeastern United States, including physical environment 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) Interal relations of physical, economic, and social patterns to give distinctive character to the region and its parts, especially southern Appalachia. Appalachia in perspective in the current American scene.

4075 Geography of Transportation (4) Geographic examination of transportation systems, emphasizing transport of people at highways and by public facilities. Relationship of these systems to changing geography of cities and urban hinterlands.

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

4101 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (1-16) See page 187.

4103 Independent Study (1-16) See page 187.

4210 Problems in Geographic Method (4) Examples of problems and approach in geographic analysis and synthesis. Emphasis on characteristic of geographic data, area sampling, generalization, classification, regionalization, and questions of scale.

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 regions, and patterns of urban development. Not open to students who have taken 4250-60.
4640 Geology of Agriculture (4)
4700 Cartography (4) Map construction, map production, and practice in map drawing.
4720 Data Mapping (4) Methods of representing spatial distributions by maps and graphs. Map- pable data may include phenomena as diverse as birth rates, voting patterns, and air pollution levels. Prereq: Junior standing 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.
4750 Interactive Computer Graphics (3) Same as Computer Science 4750 and Electrical Engineering 4750.
4900 Pros seminar in Geography (4) Overview of major themes in geography, especially trends over past 20 years. Designed for undergraduate majors and minors; not open to graduate students. Prereq: Completion of at least 12 hrs of major or minor requirements for geography.

**Graduate Program**

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

**Doctoral Program**

General requirements for Doctor's degree 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
5410 Advanced Topics in Economic Geography (3)
5520 Advanced Urban Geography (3, 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)
5915 Regional Geomorphology (4)
6000 Doctoral Research and Dissertation
6110 Seminar in Economic Geography (3, 3)
6220-30 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)
6710-20 Seminar in Physical Geography (3, 3)

**Geological Sciences**

**Geology (424)**

1000 Frontiers in Earth and Planetary Sciences (4) Recent developments in earth science of interest to the public. Designed for non-majors; treats popular topics such as discovery of oil by Apollo missions, earthquake prediction, and drifting of continents.

1410-20 General Geology I, II (4, 4) 1410—Introduction to study of earth, its composition, structure, and processes that change it. 1420—Emphasizes development of life and physical events through Mesozoic Era. Must be taken in sequence. 3 hrs and one 2-hr lab or field period.

1430 General Geology III (4) Continuation of 1410-20 sequence emphasizing the advent of human life and its interactions with geological processes and events. Prereq: 1420. 3 hrs and one 2-hr lab or field period.

2130 Geological History of the Earth (4) Origin and evolution of continents, atmosphere, oceans and earth's inhabitants with emphasis on physical history of North America. Prereq: 1420. 3 hrs and 1 lab or 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 hrs and 1 lab or field period.


2610 Introductory Geology for Engineers (3) Materials and structure of the earth. For College of Engineering students only. 2 lectures and 1 lab or field period.

2710 Introductory Oceanography (4) Introduction to study of oceans including origin and development of ocean basins and physical and biological processes within ocean basins and their contained water and sediment masses. 1410 recommended.

3160 Introduction to Earth Materials (4) Study of minerals and rocks. Laboratory includes both hand specimen and analytical methods of identification. Not available for credit to majors. Prereq: 1410. 2 lectures and 2 labs.

3180 Mineralogy (4) Introduction to crystallography and study of minerals. Laboratory includes hand specimen, chemical and X-ray methods of identification. Prereq: 1410. Chemistry 1110-20 or equivalent. 3 lectures and 1 lab.

3210-20 Invertebrate Paleontology (4, 4) Systematic review of important invertebrate fossil groups. 3210—Prostata to Brachiopoda, including sponges, coelenterates and bryozoa. 3220—Phoronida to Hemichordata, including annelids, molluscs, arthropods and echinoderms. May be taken separately or in any order. Prereq: 3260; Biology 1210-20 or consent of instructor. 3 hrs and 1 lab or field period.

3250 Micropaleontology (4) Microscopic remains of animals and plants with special emphasis on stratigraphically important groups. Prereq: 3210 or consent of instructor. 3 hrs and 1 lab.

3280 Paleobiology (4) Introduction to principles and materials of paleontology as applied to interpretation of earth history. Prereq: 1420. 3 lectures and 1 lab or field period.

*Mathematics 1840-50 has prerequisites of 2 years high school algebra and one year of trigonometry equivalent. Students who are deficient in these subjects may need to take Mathematics 0150 and/or 1500 prior to enrolling in Mathematics 1840-50. Consult mathematics section of this catalog or the Department of Mathematics for details.*
3270 Geological History of Land Organisms (4) Geologic history and development of terrestrial biota and ecosystem with special emphasis on fossil record of land plants and vertebrates. Prereq: Biology 1210-20 or consent of instructor. 3 lectures and 1 lab or field period.

3310 Lithology (4) Study of igneous and metamorphic processes and rocks. Laboratory includes hand specimen and microscopic study of important rock types. Prereq: 3180. 2 lectures and 2 labs.

3330 Geology of East Tennessee (4) Lectures and field excursions. Prereq: 12 quarter hrs of geology and consent of instructor.

3360 Stratigraphy-Sedimentation (4) Introductory study of sedimentary principles and practices and of sedimentary processes and interpretation of depositional environments. Prereq: 1420 and 3180. 3 hrs and 1 lab or field period.

3370 Structural Geology (4) Introductory discussion of structures such as folds, faults, joints, cleavage, and primary structures. Laboratory work includes depth and thickness problems. Structure sections, structure contour maps, etc. Prereq: 1420, Mathematics 1840-50 or equivalent. 3 hrs and 1 lab.

3410 Principles of Ground Water Geology (3) Geologic principles and methods affecting the occurrence and behavior of water. Not open to geology majors. 2 lectures and 1 lab. (Same as Water Resources Development 3410.)

3510 Introductory Environmental Geology (4) Geologic problems involving earth environments and resources, and geologic parameters associated with their control and misuse. Prereq: 1420 or consent of instructor. 2 lectures and 2 lab or field periods.

3610 Quaternary Geology for Engineers (3) Erosional and depositional processes, landforms, groundwater. 2 lectures and 1 lab or field period. Prereq: 2610 or equivalent.

3710 Origin and Evolution of the Continents and Ocean Basins (4) Introductory study of origins and characteristics of continents and ocean basins with emphasis on modern concepts of continental drift and plate tectonics. Prereq: 1420.

4110 Principles of Economic Geology (4) Formation of mineral deposits. Prereq: 3180, 3370 or equivalent.

4115 Elementary Applied Geophysics (4) Basic principles of electrical, seismic, gravity and magnetic surveying. Recommended: 1420, Physics 2220 or 2230. 3 lectures and 1 lab.

4130 Sedimentology (4) Introduction to physical processes of sedimentation: transport of sediments and formation of sedimentary structures, river flow, waves, tides, and ocean circulation. Prereq: 3180. 3 lectures and 1 lab.

4230 Paleoecology (4) Principles of environmental analysis as applied to fossil assemblages and associated lithologies. Prereq: 3260 or consent of instructor. 3 hrs and 1 lab.

4240 Paleobotany (4) Survey of fossil record of plants with particular emphasis on (1) comparative morphology and evolutionary trends in major plant groups and (2) chronological succession and geographic distribution of past floras on earth. Prereq: 1420 or 2210; Botany 3010-20 or consent of instructor. 3 hrs and 1 lab or field period. (Same as Botany 4240.)

4310 Geologic Mapping (4) Interpretation of maps and methods of geologic mapping. 3 lectures and 1 lab or field period. Prereq: 12 quarter hrs of geol.

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

4440 Field Geology (8) Five weeks' field course, first term summer quarter. Advanced undergradu-
recognized foreign study programs can readily be transferred to UTK. For qualified students, the department offers German 4101 Foreign Study and Russian 4101 Foreign Study. See page 187. 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 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 3010-20-30 and courses in English translation.

It is recommended that German majors also take History 1510-20 or 3710-20-30 and 8 hours of sophomore English. Majors are also strongly urged to consider a minor in some other area of the humanities.

German 2110-20-30 or its equivalent is a prerequisite to the minor. The minor shall consist of at least 24 hours of German courses numbered above 3000, which will normally include German 3110-20-30 or 3410-20-30, and 15 additional hours of courses numbered above 3000, excluding 3010-20-30 and courses in English translation.

Russian
Major: Russian majors should carefully prepare their programs in consultation with the departmental faculty adviser. Russian 2510-20 or its equivalent is a prerequisite to the major. Russian 2640-50 is a corequisite to the major. The major itself consists of 36 hours of Russian courses, including Russian 3510-20, 3610-20-30, 9 hours from Russian 3210-20-21-30-40-50-60, and 9 hours of courses numbered above 4000. It is recommended that majors take History 3470-80-90 and 9 hours of sophomore English majors are urged to consider a minor in some other area of the humanities.

Minor: Russian 2510-20 or its equivalent is a 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 3510-20, 3610-20-30 and courses numbered above 4000.

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 Elementary German (4, 4) Must be taken in sequence.

1518-2518-28 Honors: Elementary and Intermediate German (5, 5, 5) Honors course for students of superior ability. Freshmen are admitted on the basis of high school average and performance on the American College Testing Program. Upperclassmen must have a B average. A grade of C or above must be achieved in any class to continue to 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 (1-4) Same material as in German 1510-20, but student achieves individualized instruction at own pace, with a minimum of one credit hr per quarter. With completion of four hrs student has option of transferring to 1520. May be repeated. Maximum credit 8 hrs.

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

3010-20-30 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 upper-division 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) Prereq: 2130 or equivalent.

3410-20 Readings in Modern and Contemporary German Literature (3, 3) Prereq: 2130 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 187.

4102 Off-Campus Study (1-13) See page 187.

4103 Independent Study (1-16) See page 187.

4110-20-30 Studies in Classical and Modern Writers (3, 3, 3) Content varies. May be repeated for credit with consent of department. Prereq: 9 hrs 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) Prereq: 9 hrs 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. Content varies. May be repeated for credit. Prereq: 9 hrs of 3000 courses (exclusive of 3010-20-30, or courses in English translation).

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) 2410—Lyrical poetry. 4220—Drama. 4225—Narrative prose. Prereq: 9 hrs of 3000 courses (exclusive of 3010-20-30, 3210-20-30, 3310) or equivalent.

4250 Introduction to Descriptive Linguistics (3) (Same as Russian, French and Spanish 4250. 4260 Introduction to Historical and Comparative Linguistics (3) Linguistic change, proto-languages. Phonological and morphological change. Cultural influence on historical and sociological influences upon the development of language. Semantic change. Lexicography. All these topics copiously illustrated by selected examples from Indo-European languages. Prereq: 9 hrs of upper-division English, or 9 hrs of upper-division courses in a modern or ancient language (exclusive of German and French 3010-20-30, courses in literature in translation, and general courses in Latin and Greek requiring no knowledge of written or oral Indo-European). Consent of department. (Same as Russian, French and Spanish 4260.)

4270 Introduction to Germanic Linguistics (3) Phonetics and phonemics of German, German grammar and German vocabulary from a descriptive point of view. Dialects of German. Introduction to study of other Germanic languages.

3120-10 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 graduate study that will qualify for Ph.D. or M.A. Students taking 3 courses may receive graduate credit. Prereq: Senior standing, with a record of A in half of German courses taken as prerequisite to the major. 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.

GENERAL COURSES

3110-20-30 Culture of German-Speaking Peoples (3, 3, 3-4) Prereq: 3810-20-30 or equivalent. Students opting for 4 credit hrs will be expected to present an appropriate amount of extra work above that required for 3 hrs.

3200 Old Norse Language in English Translation (3) Prereq: 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.

3250 Modern Scandinavian Literature in English Translation (3) Introduction to modern literature of Sweden, Norway, Denmark, and Iceland. Representative readings by such writers as Ibsen, Strindberg, Lagerlöf, Hamsun, Vesaas, Lagerkvist, Bang, Nexé, Laxness.

3260 German Drama in English Translation (3)

3270 Modern German Novel in English Translation (3) From 1900 to present. Remarque, Hesse, Mann, Kafka, Frisch, Böll, Grass. No foreign language credit.

3280 Goethe's Faust in English Translation (3) In- tensive study of Faust I and II and survey of criticism and interpretations of the work. No foreign language credit.

3310 Dramas of Bertolt Brecht (3-4) Chronological survey of Brecht's dramatic works and theoretical writings in English translation. No foreign language credit.

3320 Novels of Hermann Hesse (3-4) Study and analysis of Hesse's major novels in English trans- lation. No foreign language credit.

3330 Dramas of Ibsen and Strindberg (3-4) Study of two principal forerunners of twentieth-century drama. Works are read in English translation. No foreign language credit.

3340 Special Topics in German Literature in English Translation (1-4) Topics and credit hours vary and are announced in advance. Student suggestions for topics are welcome. No foreign language credit. May be repeated for credit.

4050 The Faust Legend (3) Survey of development of legend from Faust chabook to present, excluding Goethe's Faust. No foreign language credit.

GRADUATE

The Department of Germanic and Slavic Languages offers three advanced degrees. They are Master of Arts (M.A.) in German, Master of Arts in College Teaching
4850 History of the Caribbean (3) Caribbean region from discovery and colonization to contemporary times.
4870-80-90 China (3, 3, 3) 4870—Cultural History of China. 4890—History of Modern China. 4890—History of Contemporary China.

GRADUATE
A student who enrolls in the Graduate School with intention of obtaining an advanced degree in history shall have completed an undergraduate major in history or its equivalent.

The Master’s Program
General requirements for the Master of Arts and Master of Arts in College Teaching degrees are found in the Graduate Catalog.

The Doctoral Program
General requirements for the Doctor's degree are found in the Graduate Catalog.

5000 Thesis
5002 Non-Thesis Graduation Completion (3-15)
5015 Periods in European History (3)
5016 Periods in American History (3)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)
5211-12-13-14-15-16-17-18-19 M.A. Reading Courses (3, 3, 3, 3, 3, 3, 3, 3, 3)
5221-22-23-24-25 M.A. Reading Courses (3, 3, 3, 3, 3)
5240 Introduction to Historical Research (3)
5250 European Historiography (3)
5260 American Historiography (3)
5271-72-73 Teaching of College History (0, 0, 3)
5280 Philosophy and Methodology (3)
5290 Quantitative Analysis of Historical Data (3)
5300 Topics in History (3)
5310 Topics in Women’s History (3)
5320 Topics in Historical Editing (3)
5360 Topics in American Foreign Relations (3)
5410 Topics in Early Modern European History (3)
5440 Revolution and Restoration in Central Europe, 1786-1850 (3)
5444 Topics in French History (3)
5445 Topics in Nineteenth-Century European History (3)
5450 Topics in Twentieth-Century European History (3)
5480 Topics in Russian History (3)
5510 Topics in Tudor-Stuart England (3)
5520 Topics in Modern English History (3)
5550 Reaction and Reform in England, 1789-1848 (3)
5560 Anglo-Irish Relations (3)
5640 Topics in American Social and Cultural History (3)
5645 Topics in American Urban History (3)
5650 Topics in American Westward Movement (3)
5660 Topics in Negro History (3)
5670 Topics in American Colonial History (3)
5675 Topics in the Early National Period of American History (3)
5680 Topics in Nineteenth-Century American History (3)
5690 Topics in Twentieth-Century American History (3)
5710 History of the Crusades (3)
5720 Topics in Medieval History (3)
5740 Topics in European Urban History (4)
5750 Topics in Ancient History (3)
5780 Topics in German National Socialism (3)
5790 Topics in Middle Eastern History (3)
5810 Topics in Andean History (3)
5820 Topics in Mexican History (3)
5850 Topics in Chinese History (3)
5860 Topics in Japanese History (3)
5910-20 Topics in Southern History (3)
6000 Doctoral Research and Dissertation
6210-20-30-40 Directed Readings (3, 3, 3, 3)
6300 Seminar in Special Studies (3)
6310 Seminar in Tennessee History (3)
6350 Seminar in American Diplomatic History (3)
6410-20 Seminar in Western Europe (3, 3)
6444 Seminar in French History (3)
6480 Seminar in Russian History (3)
6510 Seminar in English History (3)
6610 Seminar in American Colonial History (3)
6620 Seminar in Era of American Revolution (3)
6630 Seminar in Early National Period of American History (3)
6635 Seminar in Jacksonian Period (3)
6640 Seminar in Social and Cultural History of the United States (3)
6650 Seminar in American Westward Movement (3)
6710 Seminar in Medieval Institutions (3)
6740 Seminar in the Crusades (3)
6770 Seminar in Central European History (3)
6810 Seminar in Latin American History (3)
6910 Seminar in the Civil War Era (3)
6930 Seminar in Twentieth-Century America (3)
6940 Seminar in History of the South (3)
6960 Seminar in Negro History (3)

Honors Program
Director: Dr. Harry Jacobson

Non-Departmental
The following courses are restricted to students who have been selected to participate. 1118-28-38 are for first-year students invited on the basis of test scores, high school averages, and where appropriate, on University performance. Participation in the 2000-, 3000-, and 4000-

level courses is based on cumulative averages. At present students with an average of 3.25 or greater are eligible.

Honors (509)
1118-28-38 Honors: First-Year—Inquiry and Modes of Thought 2-4, 2-4, 2-4 1118—The Humanities; 1128—The Natural Sciences; 1138—The Social Sciences. May be repeated.
2118-28-38 Honors: Sophomore—Special Problems Seminar 2-4, 2-4, 2-4 2118—The Humanities; 2128—The Natural Sciences; 2138—The Social Sciences. These seminars focus on selected problems in the respective disciplines. The specific topics will 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 187 and Director of Special Programs. Primarily for College Scholar Students.
4102 Honors: Off-Campus Study (1-16) See page 187 and Director of Special Programs. Primarily for College Scholar Students.
4103 Honors: Independent Study (1-16) See page 187 and Director of Special Programs. Primarily for College Scholar Students.
4118-28-38 Honors: Senior—Colloquium 2-4, 2-4, 2-4 Small group studies of selected topics. May be repeated.
4988 Honors: College Scholars Studies (2-16) Designed for College Scholars working on their senior thesis, project, or performance. May be repeated for a total of 16 credit hrs.

Human Services (532)
Associate Professor: R.F. Kronick (Director), Ph.D. Tennessee.
Assistant Professors: J.D. McLean, Ph.D. Chicago; F.J. Spicuzza, M.S.W. Tennessee.
Instructors: J.E. Everett, M.S.W. Michigan; N. Wright, M.S.W. Pittsburgh.
develop specific helping skills and to become exposed and involved in the roles and functions of social services; to provide some direct services in a supervised learning situation. For majors only. May be repeated 1 hr. required. S/NC. Prereq: Consent of instructor.

4900 Aspects of Urban Environment (4) (Same as Architecture 4900, Real Estate 4900, Psychology 4900.)

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:
L.K. Barrett (Head), Ph.D. Pennsylvania; G.E. Albert (Emeritus), Ph.D. Wisconsin; S. Bradsby, Ph.D. Iowa; J.H. Garruth, Ph.D. Louisiana State; R.E. Cline, Ph.D. Purdue; R.J. Gaverman, Ph.D. Wisconsin; D.J. Desart, Ph.D. Maryland; E.D. Eaves (Emeritus), Ph.D. Texas; H. Frandsen, Ph.D. Illinois; D.A. Gardiner, Ph.D. North Carolina State; R.T. Gregory, Ph.D. Illinois; T.J. Hallam, Ph.D. Missouri; D.B. Hinton, Ph.D. Tennessee; A.S. Householder (Emeritus), Ph.D. Chicago; L.S. Husch, Ph.D. Florida State; H.T. Mathews, Ph.D. Tulane; R.M. McConnel, Ph.D. Duke; D.D. Miller, Ph.D. Michigan; R.J. Plemmons, Ph.D. Auburn; K.C. Reddy, Ph.D. Indian Institute of Technology; P.W. Schaefer, Ph.D. Maryland; F.W. Stallman, Ph.D. Giessen (Germany); B.D. Steeman D.Sc. Dundee (Scotland).

Associate Professors:
J.D. Chandler, Jr., Ph.D. Virginia; C.E. Clark, Ph.D. Louisiana State; D.E. Dobbs, Ph.D. Cornell; M.D. Gumburz, Ph.D. New York; W.E. Haver, Ph.D. SUNY (Binghamton); G.S. Jordan, Ph.D. Wisconsin; K.R. Kimble, Ph.D. Ohio State; G.A. Klassen, Ph.D. Nebraska; Y. Kuo, Ph.D. Cincinnati; B.S. Rajput, Ph.D. Illinois; W.H. Row, Jr., Ph.D. Wisconsin; S.M. Serbin, Ph.D. Cornell; J. Smith, Ph.D. California (Berkeley); K. Soni, Ph.D. Oregon State; R.P. Soni, Ph.D. Oregon State; W.R. Wade, Ph.D. California (Riverside); C.G. Wagner, Ph.D. Duke.

Assistant Professors:
D.F. Anderson, Ph.D. Chicago; W. Brandall, Ph.D. Northwestern; V.A. Douglas, Ph.D. Harvard; L.E. Evans, Ph.D. Houston; R.H. Hanks, Ph.D. Minnesota; W.F. Keigrer, Ph.D. Illinois; R.J. Rollotile, Ph.D. Virginia; R.D. Shelton, Ph.D. Rice; K.R. Stephenson, Ph.D. Wisconsin; C.C. Travers, Ph.D. Massachusetts; J.J. Walsh, Ph.D. SUNY (Binghamton); A.T.M. Wang, Ph.D. Minnesota.

Instructors:
E.S. Carleen, M.A. Alabama; C.G. Doss, M.A. Tennessee; M.S. McLean, M.S. Purdue; D.P. Nash, M.A. Colorado; A.M. Steele, M.Ed. Pittsburgh.

On leave.

Space Institute-Tullahoma.

Visiting.

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 one semester of trigonometry or equivalent. Students who present an ACT score below 25 in mathematics are urged to complete 1700 with a grade of C or better before taking 1840 (or 1842). Students who have not had high school trigonometry should take 0150 before (or concurrently with) 1840 (or 1842). Students who present an ACT score of at least 25 in high school algebra and who have a high school average of at least 3.00 are eligible for the honors course 1848. Prospective mathematics majors who meet these requirements are particularly encouraged to enroll in 1848. Exceptions to the eligibility criteria for 1848 are possible. Interested students should see the department head in Ayres Hall, Room 124.1

The prerequisites for 1540 are two years of high school algebra or one year of algebra and one year of geometry. Students who present an ACT score below 18 in mathematics may be advised to take Algebra Refresher, Part I, in the Workshops and Non-Credit Programs (or equivalent elsewhere), and make at least B, or to make a passing grade in Algebra Refresher, Part I and II, in the Workshops and Non-Credit Programs (or equivalent elsewhere). Students who have taken 2 years of high school algebra and 1 year of high school geometry and who present an ACT score 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 an appropriate course(s) in the Workshops and Non-Credit Programs (or equivalent elsewhere).

A student may receive credit for only one of the following courses: 1500, 1540, 1700. The last one of these courses taken is the one which will count for credit.

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 who has present 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." For the final Timetable and on the student's transcript. These honors courses may be offered upon the initiative of interested faculty, students, or the department head (in all cases subject to the approval of the department head).

Proficiency Examinations: Students who have taken calculus in high school are encouraged to inquire at 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).

Major: To major in mathematics, a student must complete the Basic Requirements and Advanced Requirements listed below:

1. Basic Requirements:
   a. 2840-50-60; or 2848-58-68; or 2540-50-60 and 2580-60.
   b. 3810, preferably taken during the sophomore year. Students who take 2848-58-68 may substitute any 3 or 4 hour mathematics course numbered 3050 or above for 3810.

2. Advanced Requirements:
   a. 21 additional hours in mathematics courses numbered 3050 or above, including a senior seminar (4910 or 4920) and at least two of the following sequences:
   b. 9 additional hours in courses from the following list: mathematics courses numbered 3050 or above; Computer Science 4010, 4020, 4410, 4420, 4430, 4510; Curriculum and Instruction 3751, 3752, 3521, 3522; Physics 3210, 3220, 3250, 4410, 4420, 4430, 4210, 4220, 4250; Statistics 3450.

Honors Program:
An Honors Program in mathematics will consist of at least 27 hours of mathematics courses numbered 4000 or above, including at least 6 hours of honors courses (those whose number ends in 8). Students who satisfy the major requirements (categories 1 and 2 above) and complete the Honors Program with a grade point average of at least 3.4, 3.6, or 3.8 will be graduated with Honors, High Honors, or Highest Honors in mathematics respectively.

In exceptional cases, other courses of similar level may be accepted in place of the six hours of honors courses.

A student who wishes to be considered under the Honors Program will apply the quarter before he or she expects to graduate (but in the spring, if graduation is to be in December). The application will list the 27 hours to be offered, including the honors courses or their proposed substitutes. Students taking more than 27 hours of qualifying courses may select those to be listed. A note of successful completion will be added to the student's transcript.

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

Minor: 20-50, 2848-58-68; or 2540-50-60, 2610 and 2860) and at least 12 hours in courses numbered 3050 or above.

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

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

Program 1. This program is designed for students who have a general interest in mathematics and do not plan to become professional mathematicians. Supplemented by appropriate non-mathematical electives, such a program might be followed, for example, by pre-medical or pre-law students, by students planning to teach secondary school mathematics, or by those who plan to enter business or industry.
Suggested courses: Mathematics 3150, 3050-60, 3790-90, 3330, 4150-20, 4120, senior seminar, 6 hours of math electives.

Program 2. This program emphasizes pure mathematics and is designed to prepare students for graduate work in any of the mathematical sciences. Suggested courses: Mathematics 3150, 3050-60, 4150-20, 4510-30, 4120, 4610-50, 4250, 4550-250, senior seminar, 3 hours of math electives. The honors courses 4518-28-38 and 4518-68 are especially recommended. Since 4518-68 begins only in the fall quarter, students who wish to enroll in this sequence should take 4120 during their sophomore or junior years.

Program 3-A. This program emphasizes numerical mathematics, and is designed to prepare the student for employment in industry. Suggested courses: Mathematics 3150, 4220-30, 4610, 4060-70, 4250, Computer Science 4410, Mathematics 4990 or Computer Science 4330, senior seminar, 6 hours of math electives selected from 4540, 4550, 4620, 4640, 4710.

Program 3-B. This program emphasizes numerical mathematics and is designed to prepare the student for graduate work in numerical mathematics or computer science. Suggested courses: Mathematics 3150, 4225-35, 4610, 4060-70, 4510-20-30, 4250, Computer Science 4410, Mathematics 4990 or Computer Science 4330, senior seminar.

Program 4-A. This program emphasizes operations research, probability, and mathematical statistics, but is designed to prepare the student for employment in business or industry. Suggested courses: Mathematics 3150, 4540, 4060-70, 4650-60-70, 4750-60-70, Statistics 3450, Industrial Engineering 3510-20-30, senior seminar, 3 hours of math electives.

Program 4-B. This program emphasizes operations research, probability, and mathematical statistics, and is designed to prepare the student for graduate work in one or more of these areas. Suggested courses: Mathematics 3150, 4060-70, 4650-60-70, 4510-20-30, 4750-60-70, Industrial Engineering 3510-20-30, senior seminar.

Program 5. This program emphasizes actuarial science and is designed to prepare students for graduate work in actuarial science. Suggested courses: Math 3155, 4225-35, 4120, 3780-90, 4650-60-70, senior seminar and two courses from 4750-60-70, 4060-70, Computer Science 3510, 3520, 4550.

Students following this program should supplement their mathematical training by selecting electives such as Economics 2110-20-30 or 2118-28-38, Business 2110-30; Insurance 3220, 4710-20; Marketing 3110; Statistics 3450; Industrial Engineering 3510-20-30; Computer Science 3510, 3520, 4550. Students in this program should also plan to take Actuarial Examination I and II.

1050 Trigonometry (6) Plane trigonometry with emphasis on identities and other analytic aspects used in calculus. For students who enter with deficiencies in high school trigonometry. 3 hrs per week. No college credit.

1210 Mathematics: A Philosophical Approach (4) Mathematics as a science, art and "language game"; nature of mathematical truth; strengths and limitations of the axiomatic method; the infinite and the infinitesimal; mathematical creativity; ethical problems facing the mathematician-scientist.

1540 College Algebra (4) Sets, real and complex number systems, exponents and radicals, fundamental algebraic operations, theory of equations, polynomial inequalities, relations, functions, graphs. NOTE: students may not receive credit for both 1540 and 1700. If both are taken, the last one taken counts.
Prereq: Two years of high school algebra or one year algebra and one year geometry.

1550-60 Introductory Calculus—General Mathematics (4, 4) 1550—Equations of straight lines, conics, derivatives of algebraic functions, applications of derivatives, antiderivatives, integration of algebraic functions, applications of integration. Prereq: 1540 or equivalent. 1550—Determinants, matrices, systems of linear equations and inequalities, Cramer's Rule, linear programming, trigonometric functions, applications, arithmetic and geometric series, simple and compound interest, annuities, exponential and logarithmic functions, law of growth, applications. Prereq: 1550 or equivalent.

Note: Students with an adequate high school background in algebra are advised to begin the 1540-50-60 sequence with 1550.

1630 Analytic Geometry (5) Straight line; plane curves; polar coordinates; parametric equations; line and plane in three dimensions; review of trigonometry. This course will prepare students for 2710-20-30 and cannot be taken for credit in addition to 1810-20. Prereq: Two years high school algebra and one semester of trigonometry or equivalent.

1700 Precalculus Mathematics (4) Function concept and use of functional notation. Properties of functions and their graphs. Polynomial, exponential, logarithmic, hyperbolic, circular, inverse functions. NOTE: students may not receive credit for both 1540 and 1700. If both are taken, the last one taken counts.
Prereq: Two years high school algebra and the equivalent of one-half year of trigonometry or taking Mathematics 0150 concurrently.
trics, elementary optimization and game theory, applications of linear differential equations, elementary number theory, and introductory probability and statistics. Prerequisites: Two years of high school algebra or one year of algebra and one year of geometry.

2612 Calculus Refresher (4) Functions, graphs, limits, derivatives, mean value theorem, integrals and properties of the integral. For students who have had calculus in high school. Must be taken in sequence. Prerequisite: Two years of high school algebra, one year geometry, and one semester of trigonometry or equivalent.

1840-50-60 Single Variable Calculus (4, 4, 4) Functions, graphs, slope of a curve, definition of derivative, limits, derivatives of algebraic functions, implicit differentiation, chain rule, differentials, continuity, applications of differential calculus, transcendental functions and their derivatives. Techniques of integration, plane analytic geometry, polar coordinates. Must be taken in sequence. Prerequisite: Two years of high school algebra, one year geometry, and one semester of trigonometry or equivalent.

1841-51 Calculus for Biological Sciences (4, 4, 4) Course designed for majors in an area of the life sciences. Differentiation and integration of logarithmic, exponential, trigonometric, and algebraic functions; partial differentiation, elementary differential equations, infinite series, probability. Emphasis upon applications of calculus problems in the life sciences. Must be taken in sequence. Prerequisite: Two years of high school algebra, one year geometry, and one semester of trigonometry or equivalent.

1842-52-62 Single Variable Calculus with Computer Support (3, 5, 5) Same coverage of calculus as 1840-55-60 supplemented with computer. Elements, limits, derivatives, and integrals of algebraic functions; partial differentiation, exponential and algebraic functions, partial differentiation, elementary differential equations, infinite series, probability. Emphasis upon applications of calculus problems in the life sciences. Must be taken in sequence. Prerequisite: Two years of high school algebra, one year geometry, and one semester of trigonometry or equivalent.

1848-58-68 Honors: Single Variable Calculus (4, 4, 4) Honors course for students who have had trigonometry, algebra II, and have achieved good grade in placement tests, high school record. Students receiving a grade below B in 1848 will complete the year's work at the honors level. Students receiving a grade below A in 1858 will be made available for students who perform well in 1840. Must be taken in sequence.

1900 Selected Topics (4) Applications of definite integration; approximate integration; simultaneous linear equations; matrix inversion; elementary linear programming; infinite series; descriptive statistics and finite probability. This course is especially recommended for architecture majors. Prerequisite: 1810-20. A student wishing to continue with this course after completing 1900 should consult the mathematics department.

120 Basic Concepts of Elementary Mathematics (4) Sets, theory of arithmetic operations, elementary algebra, elementary geometry. Applications. May not be taken for credit after completion of 2240. 1810, 1815, 1810, 1840, 1848, 2110, 2410, 2412, 2540, 2710. Primarily for secondary education students.

2020 Great Ideas in Mathematics (4) Course for non-science majors designed to expose the student to ideas which have had a significant impact on direction of mathematical thought in particular and on civilization in general. Selected topics may include: the Greeks and mathematics as logical reasoning; irrational numbers; Descartes and coordinate geometry; number systems; logic and Leibniz and the mathematics of motion; non-Euclidean geometry; the infinite. Prerequisite: High school algebra and geometry and an interest in the history of mathematics and mathematics, nor is it available for credit to students in College of Business Administration.

3040 The Ideas of Calculus (4) Study of basic ideas and theory behind differential and integral calculus designed for students whose course of studies does not involve the use of calculus. Emphasis on the historical framework in which calculus was discovered and its influence on subsequent branches of mathematics. Prerequisite: One year of high school algebra. May not be taken for credit by any student who has previously received credit for any college level calculus course.

3050 Elementary Probability and Statistical Analysis (3) Combinatorial problems; sample spaces, sets, and events; statistical independence; axioms of probability; random variables and their distributions; simple random processes. Prerequisite: 1550 or equivalent.

3060 Elementary Statistical Analysis (3) Elementary probability distributions; sampling techniques; confidence intervals and statistical tests of hypotheses; least squares and linear regression. Prerequisite: 350 or consent of instructor.

3070 Polynomials and Rings (3) Elementary introduction to rings and fields; polynomial rings; quotient rings; symmetric functions; their coefficients from various fields. Prerequisite: 2860 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. Prerequisite: 1550 or equivalent.

3110 Real Number System (3) Laws of arithmetic; rational and irrational numbers; fields. Primarily for students in the College of Education. Prerequisite: 1550 or equivalent.

3150 Introduction to Numerical Algorithms and Programming (3) (Same as Computer Science 3150.)

3155 Introduction to Numerical Algorithms (3) (Same as Computer Science 3155.)

3210 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. Prerequisite: Math 1860 or 2550 or equivalent.

3310 Advanced Euclidean Geometry (3) Triangles and circles; constructions; axiomatic concepts. Prerequisite: 1 year of college mathematics.

3320 Non-Euclidean Geometry (3) Foundations of geometry; elliptic and hyperbolic plane geometry. Prerequisite: 1 year of college mathematics.

3330 Transformational Geometry (3) Fundamental transformations in Euclidean geometry. Classification of isometries and similarities; symmetries of a polygon; inversions. Prerequisite: 1 year of college mathematics.

3510 Intermediate Analysis (3) Primarily for students in secondary mathematics education. Course covers elementary calculus from advanced viewpoint with emphasis on proofs of basic theorems. Topics covered include limits of sequences and functions, continuous functions, derivatives, definite integral, and fundamental theorem of integral calculus. Prerequisite: 1550-60 or 1960.

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

3730 Theory of Equations (3) Techniques for finding roots of polynomial equations. Topics covered include complex, integral, and rational roots, multiple roots, separation of roots, Sturm's Theorem, Horner's method of approximating roots, and formulas for quadratic, cubic, and biquadratic equations. Prerequisite: 1 year of college mathematics.

3780-90 Introduction to Combinatorial Theory (3, 3) Introduction to problems of arrangement and selection within discrete systems. Enumeration by recurrence relations and generating functions,
graph theory, finite geometries and finite fields, partitions, block designs. Prereq: Math 2860 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 problem solving and discussion. May include standard topics such as elementary set theory, relations and functions, and mathematical induction. Coreqs: 2850 or 2560.

3920-30 Topology of Euclidean Spaces (4, 4) Topics will include topology of line and plane, separation properties, compactness, connectedness, completeness, continuous functions, homeomorphisms, convergence, and topological invariants. Must be taken in sequence. Prereq: 2860 and 3810, or 2860 and 2850.

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

4035-45 Introduction to Numerical Linear Algebra (3, 3) (Same as Computer Science 4035-45.)

4050 Matrix Algebra and Applications (3) Matrices, elementary operations, systems of linear equations, vector spaces, determinants, eigenvalues and eigenvectors. A student cannot receive credit for both 2860 and 4050. Prereq: 2850 or 2550 or consent of instructor.

4060-70 Matrix Algebra and Applications (3, 3) Eigenvalues and eigenvectors, singular values and singular vectors, vector and matrix norms, Jordan canonical form, and related topics. Prereq: 2860 or 4050.

4101 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (1-16) See page 187.

4120 Linear Algebra (3) Abstract vector spaces, linear transformations, and their matrices, systems of linear equations and determinants, inner products, and diagonalization of symmetric matrices. Prereq: 2860 or 4050.

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, (3) Boolean fields. Must be taken in sequence. Prereq: 2860 or 4050.

4225-35 Introduction to Numerical Analysis (3, 3) Interpolation and approximation, numerical differentiation and integration, roots of equations, systems of linear equations. Prereq: 3150 or 3155. (Same as Computer Science 4225-35.)

4250 Elementary Complex Variables (3) Complex numbers, Cauchy’s integral theorem, Cauchy’s integral equations, elementary functions, Cauchy’s theorem and formula, Taylor and Laurent series, residues and their applications. Prereq: 2860; one 4000-level mathematics course recommended.

4510-20-30 Introduction to Analysis (3, 3, 3) Real number system, functions, sequences, limits, continuity, uniform continuity, differentiation, integration; Functions of several variables, implicit function theorem. Multiple integrals, infinite series, sequences and series of functions, uniform convergence, Taylor series. Should be taken in sequence. Prereq: 2860.

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: 2860.

4550 Partial Differential Equations (3) Fourier series; Fourier integral; orthogonal functions; the vibrating string; solution by series; heat flow, Bessel functions. Prereq: 2860; 4610 or 4710 recommended.

4610-20-30 Ordinary Differential Equations (3, 3, 3) 4610—Linear first and second order equations. Power series solutions and Legendre polynomials. Regular singular points, Frobenius method, and Bessel equations. Systems of linear differential equations and the matrix exponential. 4620—Numerical methods for ordinary differential equations, Runge-Kutta methods, stability, and two point boundary value problems. 4630—Special topics which may include existence and uniqueness, oscillation theory, Liapunov stability, singular perturbations, and asymptotic solutions. Prereq: 4610, 2860 or 4050, 4620; 4050 or 2860; and 3150 or 3155; 4630: 4610 or consent of instructor.

4640 Calculus of Finite Differences (3) Real difference equations and their applications 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: 2860.

4710 Vector Analysis (3) Fundamental operations, vector products and dot and cross products, directional derivatives, divergence and curl of vector fields, line and surface integrals, divergence theorem of Gauss, and Stokes' theorem. Prereq: 2860.


4810 Elementary Number Theory (3) Divisibility, congruences, theorems of Fermat and Wilson, primitive roots, indices, quadratic reciprocity. Prereq: 2860 or consent of instructor.

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

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

4990 Studies in Mathematics (1-4) Credit determined at registration. May be repeated for credit with consent of department; maximum 9 hrs credit. Prereq: Recommendation of member of mathematics professional 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 Master of Arts and Master of Science degree programs presuppose a bachelor’s degree with a major 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)

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

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

5210-20-30 Theory of Functions of a Real Variable (3, 3, 3)

5240-50-60 Linear Analysis (3, 3, 3)

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

5310-20-30 Introduction to Higher Geometry (3, 3)

5340-50-60 Numerical Treatment of Algebraic and Transcendental Equations (3, 3, 3)

5430 Integral Equations (3)

5440 Calculus of Variations (3)

5450-60-70 Introduction to Partial Differential Equations (3, 3, 3)

5455 Finite Difference Methods for Partial Differential Equations (3, 3)

5456 Mathematical Aspects of the Finite Element Method (3)

5480-90 Mathematical Programming (3, 3)

5510-20-30 Introduction to Higher Algebra (3, 3, 3)

5640 Galois Theory (3)

5650-70-80 Theory of Matrices in Numerical Analysis (3, 3, 3)

5590 Theory of Rings (3)

5610-20-30 Mathematical Methods in Physics (3, 3, 3)

5640 Numerical Methods in Physics (3)

5655-65-75 Numerical Mathematics (3, 3, 3)

5710-20-30 Tensor Analysis (3, 3, 3)

5750-60-70 Advanced Mathematical Statistics (3, 3, 3)

5810-20-30 Number Theory (3, 3, 3)

5910-20-30 Elementary Topology (3, 3, 3)

5990 Graduate Reading in Mathematics (1-3)

5991 Seminar Analysis (1-3)

5992 Seminar Topology (1-3)

5993 Seminar Algebra (1-3)

5994 Seminar Foundations (1-3)

5995 Seminar Applied Mathematics (1-3)
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 182, and who have been approved by the Pre-Medical Advisory Committee.

4011-12 Microbiology, 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, Clinical aspects of biochemistry, including overview of principles and instrumentation with emphasis on practical laboratory applications of analytical procedures, specimen collection and handling, significance of results, and quality assurance. Includes blood gas analysis, including radioimmunoassay, 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, Principles, theories, techniques, and instrumentation related to the qualitative and quantitative evaluation of cellular elements of blood and other body fluids; factors of hemostasis, quantitative chemical analysis of urine and renal function studies. Emphasis is placed on microscopic identification of cells and the significance and correlation of laboratory data.

4041-42 Immunohematology, Theory and practice in blood bank operation. Erythrocyte antigens and their normal and abnormal immunology. Serological tests used in cross-matching, blood grouping and typing, and antibody detection, and preparation of blood components for transfusion. Safety control methods and standards for an efficient blood bank are important part of course material.

4043 Clinical Serology and Immunology, Performance and interpretation of a broad range of clinical serological and immunological procedures with emphasis on principles and clinical correlation. Formal lecture series included.

4050 Nuclear Medicine, Physical characteristics, detection and use of short half-life radioactive materials. Emphasis placed on in vivo diagnostic medical uses and radiation safety.

4060 Histology, Overview of techniques of preparation and interpretation of microscopic evaluation and role of histopathology in clinical diagnosis.

4071 Orientation and Basic Techniques, Designed to facilitate transfer of students from campus to hospital community and clinical laboratory. Introduction to medical terminology, ethics, and health team concept. Orientation to basic techniques of methods of study include procedures for collection and handling of specimens, principles of operation of major laboratory instruments, review of laboratory mathematics and introduction of quality control procedures. Portions of course extend over entire clinical year.

4072 Principles of Supervision and Education in Medical Technology, Consists of seminars in basic principles of management, supervision, and education, theories and methods. There will be comprehensive examination covering the entire course.

Music (698)


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 183. The requirements for a major and minor are as follows:

Major:
(a) Concentration in Applied Music—consists of Music 2000, 2111-21-31, 2310-20-30-40, 27 hours in applied music at the 2000-3000-4000 levels (9 hours each), and junior and senior recitals. Prerequisites are Music 1111-21-31, 1113-23-33, and 3 quarters of study in applied music at the 1000 level.
(b) Concentration in Music History and Literature—consists of Music 2111-21, 2313-23-33, 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 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, 3130-20-30-40 and 18 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 108 for requirements.

General

1000 Fundamentals of Music Theory (3) Theory and practice of basic elements of music. 3 hrs.
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 Exam. Approved courses must be substituted with an equivalent number of quarters of study in Music 1580 or above.
1015 Class Voice (1) For music and music education majors only. May be repeated for credit.
2000 Solo Class (0)
2010 Introduction to Musical Theatre Technology (3) Stage technology unique to lyric stage.
2055-65-75 Diction for Singers (2, 2, 2) Sounds by phonetic symbols. Opera and art songs used for examples. Performance practice.
2071-81-91 Church Service Playing I (1, 1, 1) Practical skills applicable to the use of the organ in church services, including keyboard harmony, improvisation, hymn playing, and accompanying on the organ. Prereq: 1131 and 6 hrs in organ.
3000 Junior Recital (0)
3012-22-32 Song Literature (2, 2, 2) Study of literature from 1750 to present with emphasis on performance practices. 3012—Classical and Romantic German art songs; 3022—French and Russian songs; 3032—Late German and contemporary songs. Prereq: 2075 and consent of instructor.
3014-24 Woodwind Literature (2, 2) Prereq: Consent of instructor.
3015 Percussion Literature (1) Prereq: Consent of instructor.
3016 String Literature (2) May be repeated. Maximum 6 hrs credit. Prereq: Consent of instructor.
3025-26-27 Elementary and Intermediate Piano Pedagogy (2, 2, 2) Piano methods and materials for pre-college level student. Collaborative laboratory experiences. Prereq: Consent of instructor.
3040-50-60 Advanced Piano Literature (2, 2, 2) Piano music from preclassical period to present. Prereq: Consent of instructor.
3041 Keyboard Harmony (2) Melody harmonization, figured bass realization, and improvisation. Prereq: 1131-33, and keyboard proficiency at the 2000 level.
3052-53 Jazz Improvisation (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 hrs and 1 lab.
3044-54 Brass Literature (2, 2) Prereq: Consent of instructor.
3070 Opera Production (1-3) Supervised work on opera productions. May be repeated for credit. Prereq: Consent of instructor.
3071-81-91 Church Service Playing II (1, 1, 1) Continuation of Music 2071-81-91, which is prerequisite.
3112 Instrumentation (3) Basic techniques in scoring for voices; brass, woodwind, and string choir; and percussion. Prereq: 2131 or 2138.

3113 Analysis I (3) Study and practice in analysis of structures of music from smallest structural units to large compound forms. Emphasis on macro-analytic techniques. Prereq: 2131 or 2138 or equivalent.

3114-24 Choral Arranging (3, 3, 3) Analysis of scores and writing of arrangements for choruses. 3114—male and female chorus. 3124—mixed chorus. Prereq: 3112 or consent of instructor.

3122 Orchestration (3) Advanced techniques in instrumental writing with emphasis on scoring for the concert orchestra. Prereq: 3112 or consent of instructor.

3123 Analysis II (3) Continuation of Analysis I with emphasis on micro and linear analytic techniques. Prereq: 3113.

400 Independent Study in Music Theory (1-3) May be repeated for credit. Prereq: Consent of instructor.

4101 Foreign Study (1-16) See page 187.


4112 Twentieth-Century Compositional Techniques (3) Analytical and compositional devices from Debussy to the present. Emphasis on scores, idiomatic writing. Prereq: 2131 or equivalent.

4113 Pedagogy of Music Theory (3) Techniques, methods and materials involved in college-level theory programs. Prereq: Consent of instructor.

4114 Stage Band Arranging (3) Analysis of scores and scoring for the stage band. Prereq: 3112 and consent of instructor.

4115 Variation (3) Study and application of variation procedures. Prereq: 3123 or equivalent.

4116 Set Structure in Muscal Composition (3) Theory of sets and its application to analysis of music. Prereq: Consent of instructor.

4124 Band Arranging (3) Study and application of techniques involved in scoring for the marching and concert bands. Prereq: 3112 or equivalent.

4134 Band Transcription (3) Technique and application of transcribing keyboard and orchestra music for band instrumentation. Emphasis on editing and resettling. Prereq: 3112 or equivalent.

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.

MUSIC HISTORY AND LITERATURE

1210-20 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 fourth through the twentieth centuries. 1220—Introduction to masterworks of music from 1600 to present. For non-music majors. Prereq: 1210 for 1220 or consent of instructor.

1340 Introduction to Music Literature (3) Acquaintance with basic terms of music and accepted analytical techniques through chronological approach. For music majors and minors only.


3210 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.

3211 Orientation in Music: The Twentieth Century (3) Examination and study of serious, popular, folk, and ethnic music of the twentieth century. Prereq: 1210 or consent of instructor.

3212 Orientation in Music: Music for the Theatre (3) Survey of selected representative composing techniques for Broadway stage, films, operaetta, and opera. Prereq: 1210 or consent of instructor.

3230 The Concerto (3) Survey of literature from seventeenth 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 (3, 3) Dramatic, vocal and orchestral elements in opera of 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 contribution.

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 and stylistic methods; organ design. Prereq or coreq: 2310-20-30-40 and consent of instructor.

4200 Independent Study in Music History and Literature (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 400-1900. 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 in 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. Includes both folk and cultivated traditions. Prereq: 1210-20 or equivalent.

4260 Introduction to Ethnomusicology (3) Basic attitudes and techniques of ethnomusicology. Survey of music cultures of the Pacific, Near East, Asia and Africa.

4270 Evolution of Jazz (3) Study of origin, development and styles of jazz music and its exponents.


4290 Gregorian Chant (3) Chants of Latin rite. Masses and Offertories examined as functional music as well as by type.

4310 History of Art Song (3) Survey of art song from fifteenth century to 1930.

4315 Wind Chamber Music (3) Study of wind chamber music from 18th through 20th century. Emphasis placed on stylistic evolution, rehearsal techniques,programming and musical significance, both historical and theoretical.
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 credit. Study at the principal level receives one hour of 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.

Undergraduate students 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. Exceptions to these requirements may be 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 200 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.
1510-2510 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.
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.
2599-3599 4599-5599 Composition (1-3, 1-3, 1-3) May be repeated for credit. Prereq: Consent of instructor.
3597-4597-5597 Composition with Electronic Media (1-3, 1-3, 1-3) May be repeated for credit. Prereq: 3199 and consent of instructor.

ENSEMBLES

All students studying applied music are required to perform in a major musical organization each quarter. String, woodwind, brass, and percussion students must be enrolled in an instrumental organization; voice students in a choral organization, opera workshop or opera theatre.

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.
3607-5607 Tuba Ensemble (1, 1) May be repeated for credit.
3610-5610 Percussion Ensemble (1, 1) May be repeated for credit.
3612-5612 Baroque Ensemble (1, 1) May be repeated for credit.

3620-5620 UT Singers (1, 1) May be repeated for credit.
3630-5630 Chamber Singers (1, 1) May be repeated for credit.
3632-5632 Collegium (1, 1) May be repeated for credit.
3634-5634 Saxophone Choir (1, 1) May be repeated for credit.
3640-5640 Opera Theatre (1, 1) May be repeated for credit.
3642-5642 Opera Workshop (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.
3684-5684 Campus 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.

GRADUATE

The Department of Music offers the Master of Music degree in performance, composition, music theory, choral conducting, and Suzuki string 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)
5060 Seminar in Choral Performance (3)
5070 Opera Production (1-3)
5090 Special Topics in Performance (1-3)
5100 Independent Study in Music Theory (1-3)
5111 Advanced Harmony (3)
Organizational Psychology Program
See Graduate School.

Philosophy (745)

Professors:
J.W. Davis (Head); Ph.D. Emory; R.B. Edwards, Ph.D. Emory; R.D. Herrmann, Ph.D. Mainz (Germany); M.H. Moore (Emeritus), Ph.D. Chicago; D. Van de Vate, Ph.D. Yale.

Associate Professors:

Assistant Professors:
J.D. Bennett, Ph.D. Tulane; G.G. Brenkert, Ph.D. Michigan; S.M. Cohen, Ph.D. Northwestern; K.A. Emmett, Ph.D. Ohio State; H.P. Hamlin, Ph.D. Georgia; E.R. Jones III, Ph.D. Chicago; B.C. Latta, Ph.D. Yale; S.J. Reaven, Ph.D. California (Berkeley).

Instructor:
M.L. Osborne, M.A. Bryn Mawr.

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 who desire to use logic to understand ourselves and other people and to understand human actions and their results. Philosophy helps one to understand and to develop skills in logical and critical thinking, and to understand why people do things.

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 programs 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 Experience (4) Introduction to various understandings of art.

2510-20 Elementary Logic (4, 4) 2510—Traditional or modern deductive logic, informal fallacies, uses of language. (3810 is recommended as an introductory course 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- and Early Twentieth-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 nineteenth century; 3312—Late nineteenth century to present.

3315 American Ideals (4) Ideological variants in American society.


3330 Philosophy of History (4) Speculative and critical aspects of philosophy of history.

3410 Philosophical Ideas in Literature (4) Philosophical assumptions and implications in major literary works.

3420 Philosophy of Literature (4) Study of the nature, functions, value and epistemic principles of literary arts.

3430 Concepts of Woman (4) Examination of some of the theoretical foundations of feminism and anti-feminism.

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)

3611 Religious and Philosophical Issues in Medical Ethics (4) (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: Eight hrs. of physical science or consent of instructor.

3770 Introduction to Philosophy of Science (4) Standard topics in philosophy of science: scientific method, nature of laws and theories, problem of induction, explanation, measurement. No background in logic is presupposed.

3810 Introductory Symbolic Logic (4) Techniques for formal analysis of deductive reasoning (propositional logic and quantification theory).

3910 Contemporary Aesthetics (4) Philosophical discussion of contemporary art.

4000 Special Topics (4) A student- or instructor-initiated course to be offered at the 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 187.

4102 Off-Campus Study (4-12) See page 187.

4103 Independent Study (4-12) See page 187.

4111-21 Modern Religious Philosophies (4, 4) (Same as Religious Studies 4111-21.)

4310 Intermediate Ethics (4) Topics in meta-ethics or ethics.

4370-71 Theoretical Issues in Medical Ethics (4, 4) 4370—Prereq: 3130 or 3611 or consent of instructor. 4371—Prereq: 4370 or consent of instructor. (Same as Religious Studies 4370-71.)

4410 Plato (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4420 Aristotle (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4440 Continental Rationalism (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4460 British Empiricism (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4470 Kant (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4480 Advanced Topics in Existentialism and Phenomenology (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4490 Process Philosophy (4) Prereq: Eight hrs. 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: Eight hrs. 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 hrs of philosophy or consent of instructor.

4630 Philosophy of Language (4) Prereq: Eight hrs of philosophy or consent of instructor.
Physics and Astronomy

Professors:
W. M. Bugg (Head), Ph.D. Tennessee; C.R. Bingham, Ph.D. Tennessee; R.D. Birkhoff, Ph.D. Northwestern; M.A. Breazeale, Ph.D. Michigan State; L.G. Christopoulos, Ph.D. Manchester (England); G.T. Condo, Ph.D. Illinois; C.J. Cowlick-French (Director of Environmental Center), Ph.D. Duke; E.G. Harris, Ph.D. Tennessee; D.T. King, Ph.D. Bristol (England); R.J. Lovel, Ph.D. Vanderbuilt; A.A. Mason, Ph.D. Tennessee; A.H. Nielsen (Emeritus), Ph.D. Michigan; F.E. Obsenshain, Jr., Ph.D. Pittsburgh; M.W. Peters (Emeritus), M.A. Tennessee; R.D. Present, Ph.D. Harvard; R.H. Ritchie, Ph.D. Tennessee; W.R. Ruok (Emeritus), M.S. Tennessee; H.C. Schweinzer, Ph.D. Massachusetts Institute of Technology; I.A. Sellin, Ph.D. Chicago; P.H. Steilson, Ph.D. Massachusetts Institute of Technology; J.O. Thompson, Ph.D. Illinois; I.H. Tipton (Emeritus), Ph.D. Duke; T.A. Welton, Ph.D. Illinois; J.W. White, Ph.D. North Carolina.

Associate Professors:

Assistant Professors:
H.W. Crater, Ph.D. Yale; M.F. Fair, M.S. Michigan; M.W. Gudry, Ph.D. Tennessee; R.H. Kohl, Ph.D. Ohio State; R.S. Thoe, Ph.D. Connecticut.

Research Associate Professor:
L. Adler, Ph.D. Tennessee.

Research Assistant Professor:
D.L. McCorkle, Ph.D. Tennessee.

Lecturers:
R.L. Becker, Ph.D. Yale; M.H. Garrabrant.

*Alumni Distinguished Service Professor.
*Space Institute, Tullahoma.
*Visiting.
*Distinguished Professor.

Astronomy (150)

2110-20-30 Introductory Astronomy (4, 4, 4) Surveys astronomical data and theories. 2110-20 concentrate on the solar system. 2130 introduces stellar astronomy including binary and variable stars clusters and nebulae. It is recommended that courses be taken in sequence. 4 hrs 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 hrs lecture discussion; 2 hrs lab per week. Coreq: Math 1810-20-30 or equivalent.

4110-20-30 Astrophysics (3, 3, 3) Physics of stars and interstellar matter, planets and planetary matter; atmospheres, interiors, and evolution; nebulae, quasars, etc. Observational data and their determination. Current developments. Approach will be interdisciplinary. Acceptable for major credit. Prereq: Physics 2330 and consent of instructor.

Physics (773) UNDERGRADUATE

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

Major: Physics 3138-28-38 and Mathematics 1840-50-60 are prerequisites to a major in physics which includes the following 3000 courses: Physics 2318-28-38, Mathematics 2840-50-60; Physics 3210-20; either Physics 3710-20-30 or 4110-20-30; 4210-20; and at least six hours from 3510-20-30, 3610-20, 4230-40, 4510-20-30, 4540-50. Physics 1310-20-30 or Basic Engineering 1310-20-30 may be substituted for Physics 3138-28-38 and Physics 2310-20-30 may be substituted for Physics 2318-28-38 as a graduation requirement.

Transfer students from other schools or departments may substitute 2510 and 1300 for 1310-20-30 or 1318-28-38. A major in physics with a concentration in health physics includes Physics 2310-20 or 2318-28, 3210-20, 4210-20, 4710-20-30, and Mathematics 2840-50-60. It is suggested that students also take Chemistry 1110-20-30, 3211-21-31, 3219-29-39, and 12 hours of an approved biological science.

Minor: A minor in physics consists of 24 hours of courses including 2318-28-38 and the remaining from physics courses numbered 3000 or above. Provisions in the major statement also apply to the minor.

An Engineering Physics Curriculum is also offered. The program is described on page 152 and listed in tabular form on page 131.

1210-20-30 Introductory Physics (4, 4, 4) General course for students whose major falls outside the physical sciences. Concepts of physics developed by observation of phenomena and logic rather than mathematics analysis. Specific areas covered in the first quarter are mechanics, heat and energy. In the second quarter wave motion, sound, electricity and magnetism, and light are discussed. In the third quarter the main emphasis is on modern physics. It is recommended that courses be taken in sequence. 1210-20 represent a survey of classical physics and are recommended as an introduction to the discipline for liberal arts non-science majors.

1310-20-30 Fundamentals of Physics: Mechanics and Heat (4, 4, 4) First course in physics for engineers and liberal arts majors in mathematics and the physical sciences. Basic Engineering 1310-20-30 is equivalent for graduation purposes. Must be taken in sequence. Coreq: Mathematics 1840-50-60. 3hrs lecture, 2hrs lab.

1318-28-38 Honors: Fundamentals of Physics: Mechanics and Heat (4, 4, 4) Honors course designed for physics and engineering physics majors and for qualified students from other disciplines. Must be taken in sequence. Coreq: Mathematics 1840-50-60. 3 hrs lecture, 2 hrs lab.

1410-20-30 Nature of the Physical World (4, 4, 4) Introductory course covering concepts and principles of physical sciences which enables a student to establish a unified picture of the physical universe. In the first two terms the principles of mechanics, mathematics, and basic physics are studied.
electricity, and wave motion are developed and applied to such varied fields as solar systems, atomic and nuclear theory, light, radiation, dynamical changes in the atmosphere and in the earth’s crust and to stellar and galactic phenomena. In the third term only the principles are applied in more detail to such topics as nuclear energy, cosmology, atmospheric and oceanic phenomena, drifting continents and science society. May be out of sequence only with consent of instructor. 4 hrs including demonstration lab.

1450 Physics of Athletic Activity (4) Principles of physics, particularly mechanics and heat, are introduced. Discussion of these ideas will emphasize their role in physical activities, particularly sports-related. Course topics include statics, equilibrium, linear and angular motion, momentum, force work, and energy. 4 hrs lecture-demonstration.

1810 Physics of Music (4) Production, transmission, and reception of sound waves. Frequency, intensity, timbre. Basic acoustics of instruments and voice. 4 hrs lecture and demonstration.

2210-20-30 Elements of Physics (4, 4, 4) 2210—Mechanics, properties of fluids, heat. 2220—Electricity and magnetism, sound waves. 2230—Optics, atomic and nuclear physics, radiation protection. Basic physical principles are applied to selected biomedical, pre-clinical, pre-pripharmacy, and pre-veterinary programs. Must be taken in sequence. Prereq: Math 1550-80 (or Math 1580-85, with a grade of C or better). 3 hrs lecture and 3 hrs lab.

2240-50-60 Elements of Physics for Architects (4, 4, 4) 2240—Statics, dynamics, properties of fluids; coreq: Math 1550 or 1580. 2250—Heat and thermodynamics, sound and wave motion, optics. 2260—Electricity and magnetism, statics. 2270—Atomic and nuclear physics. Basic physical principles with applications particularly as applied in architecture. Limited to students in School of Architecture, and should be taken in sequence. 3 hrs lecture. 3 hrs lab.

2310-20-30 Fundamentals of Physics: Electricity, Waves and Optics, Modern Physics (3, 3, 3) Required for all engineering students. 2310—Electricity. 2320—Waves and Optics. 2330—Modern Physics. Must be taken in sequence. Prereq: 2310-20-30 or Basic Engineering 1310-20-30, or Physics 2510; coreq: Math 2610, 2810-20. 3 hrs lecture, 2 hrs laboratory-recitation per week.


2510 Mechanics (5) Statics, kinematics, Newton’s laws, moment, energy, motion, rotation. Must be taken in sequence. 5 hrs laboratory-problem sessions. Prereq: Mathematics 1460-50-60 or equivalent. 2510 satisfies prerequisites for Physics majors. Physics majors should also take Physics 1330 as a prerequisite to the major.

2320-50-60 Mechanics (3, 3, 3) 3220—Statics, kinematics, and dynamics of a particle; 3230—Statics, kinematics, and dynamics of systems of particles and rigid bodies; 3250—Lagrangian and Hamiltonian equations of motion of particles. Must be taken in sequence. Prereq: 2320 and Math 2880.

2320 Heat and Thermodynamics (3) Concepts of temperature and heat; laws of thermodynamics; applications of laws to simple physical and chemical problems. Prereq: 2320 or Math 1530 and calculus; 2320-20 or instructor’s consent.


3510-20-30 Physical Measurements (3, 3, 3) Laboratory measurement of some physical quantities. Theory supplied where necessary. Prereq: 2310-20-30 or 2210-20-30, and calculus; 3510 for 3520 and 3530. 3 hrs lab.

3610-20 Electronics (3, 3) Electronic components and circuit theory, introduction to circuits. Prereq: 2310-20-30 or 2210-20-30 and calculus. 3 hrs lab.

3630 Nuclear Electronics Laboratory (3) Elementary circuits of interest in nuclear instrumentation are designed and built, and their characteristics are determined from a function of various parameters. Prereq: 3610-20.

3640-50-60 Health Physics Practicum (3, 3, 3) Instrumentation; legal aspects and practice of applied physics—nuclear medicine, record keeping and report writing. For students in health physics cooperative program.

3710-20-30 Introduction to Atomic and Nuclear Physics (3, 3, 3) 3710—Atomic and nuclear physics. Prereq: Math 2680 and Physics 2320 for 3710; 2330 or 3710 for 3720-30.

3990 Junior Seminar (1-3) Topic of current interest. May be repeated for credit with consent of department.

4040 Foundation of Physics (3) Development of concepts and principles of classical and modern physics; their use in constructing working view of physics. Measurement, hypothesis, experimentation, discoveries, and applications. One year of general physics and consent of instructor. Required of M.A.C.T. candidates.


4140 Elementary Nuclear Physics (3) General theory of nuclear structure, nuclear forces, nuclear models, nuclear reactions, nuclear disintegrations and beta-decay, nuclear spin and magnetism. Prereq: 3730 or 4120.

4160 Physical Acoustics (4) Considerations fundamental to detailed investigation of any branch of acoustics; propagation of acoustic waves in the infrasonic, the audible, the ultrasonic, and the hyper-audible ranges of frequencies. 3 hrs and 1 lab. Prereq: 3210-20-30.

4210-20-50 Electricity and Magnetism (3, 3, 3) Intermediate level electrostatics; steady and alternating currents; wave mechanics; Maxwell's equations; radiation of electromagnetic waves; reflection and refraction; electromagnetic fields of moving charges. Must be taken in sequence. Prereq: 2320 or 2220 and Math 2830.

4220-40 Modern Optics (4, 4) 4230—Geometrical Optics: Reflection and transmission of light at a dielectric interface; paraxial theory of interfaces, lenses, and mirrors; thick lenses, less systems, ray tracing; polarization; imagery; laser light. Prereq: 4240—Physical Optics: Mathematics of wave motion, superposition of waves; interference; Fraunhofer and Fresnel diffraction; Fourier optics; holography. Prereq: 4210 or consent of instructor. 3 hrs lecture and 3 hrs lab.


4540-50 Experimental Nuclear and Radiation Physics (4, 4) Interaction of charged particles and electromagnetic radiation with matter; theory and characteristics of various methods of counting, nuclear properties. Experiments illustrate recent techniques for investigating the nucleus and nuclear radiation. 1 hr lecture, 6 hrs lab. Prereq: 2330.

4580 Principles of Non-Destructive Testing (3) Detection and characterization of discontinuities in materials by non-destructive physical (measurments. Ultrasonic, electromagnetic, holographic, and penetrating radiation techniques are discussed. Reading: See Course Syllabus. 3 hrs lecture and 3 hrs laboratory.


4710-20-30 Introduction to Health Physics (3, 3, 3) Radioactivity, interaction of electromagnetic radiation with matter, radiation quantities and units, point kernel and extended sources, X-rays and gamma rays, neutron activation, interaction of charged particles with matter, stopping power, range-energy relations, counting statistics, shielding, dosimetry, waste disposal, criticality, prevention, radiation biology and ecology. Prereq: 3730.

4918-28-38-48-58-68-78-88-98 Honors: Research and Independent Study (1 hr each) Designed for well-qualified undergraduates. Provides opportunity for research and independent study with faculty guidance. Special consent of department is required. Maximum of 16 credits.

4990 Senior Seminar (1-3) Topic of current interest. May be repeated for credit with consent of department.

GRADUATE

The Master's Program

General requirements for the Master’s Degree are found in the Graduate Catalog. The Doctoral Program

General requirements for the Doctor’s degree are found in the Graduate Catalog.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5080 Graduate Research Participation (3)

5110-20-30 Introduction to Theoretical Physics (3, 3, 3)

5210-20-30 Advanced Modern Physics (3, 3, 3)

5240 Electronic Properties of Solids (3)

5250 Electromagnetic Properties of Solids (3)

5310-20-30 Advanced Dynamics (3, 3, 3)

5410-20-30 Electromagnetic Theory (3, 3, 3)

5440 Experimental Methods of Infrared and Raman Spectroscopy (3)

5450 Radiation Chemistry (3)

5510-20-30 Advanced Thermodynamics and Statistical Mechanics (3, 3, 3)

5510-20-30 Mathematical Methods in Physics (3, 3, 3)

5540 Numerical Methods in Physics (3)

5720 Physics of Polyatomic Molecules (3)
and Politics; International Relations; and Political Theory and Methodology. A minor consists of twenty-four hours that must be distributed as follows:
(1) Eight hours at the 2000 level in political science or in political science courses not used for Triad credit but included on the History and Society list.
(2) Sixteen hours in political science courses numbered at 3000 and above. Upper-division courses on the Triad list may be included. These thirty-two hours must include at least one course in each of four areas of the discipline: United States Government and Politics/Public Administration; Comparative Government and state administrators. Attention will be paid to state government’s role in formulating, enacting, and implementing state policy.
3750 The Urban Polity (4) Analysis of political institutions and processes in metropolitan areas.
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 relationship 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.
4540-50 Presidency, Congress and Public Policy (4, 4) The Presidency and Congress within framework of policy-making process.
4545-46 The Judicial Process (4, 4) The study of courts as components of political systems, and public policy formation and judicial opinion making. 2510-20 desirable as preceding courses.
4575 Special Topics in United States Government and Politics (4) May be repeated up to a maximum of 8 hrs credit 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.
4630 Problems in Public Management (3) Selected problems. Emphasis on internal and external communication and information systems in government and public access to information.
4740-50-60 Politics and Elections (3, 3, 3) 4740- 50—Structure and function of party system; nominations and campaigns. 4760—Voting behavior of the electorate.
4840 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) Characteristics and problems of political changes with primary focus on developing areas.
3615-16 Dynamics of Black African Politics (4, 4)
3621-22 Politics of Asian States (4, 4)
3625-26 Latin American Government and Politics (4, 4)
3631-32 Government and Politics of the Soviet Union (4, 4)
3635-36 Politics in Western Democracies (4, 4) Political culture, political patterns and institutions of Western democratic systems.
3641 Government and Politics of Middle East and North Africa (4)
3795 Contemporary Middle East (4) (Same as History 3795)
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 up to a maximum of 8 hrs credit with consent of department.
International Relations
3701-02 Introduction to International Relations (4, 4) 3701—Methodology and background. 3702—International structures and institutions including war, diplomacy, law and organization.
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
3801 Studies in Ancient Political Thought (4) Classical Greek and Roman political thought.
3802 Studies in Medieval Political Thought (4) From Augustine to Luther: Emphasis on problems and theories of religion and politics.
3803 Studies in Early Modern Political Thought (4) Machiavelli through the Enlightenment.
3804 Studies in 19th- and 20th-Century Political Thought (4) Political theories of industrial and technological societies, 19th and 20th century.
4815 Contemporary Soviet Marxism-Leninism (4) Soviet applications of Marxist-Leninist theory.
4821-32-33 The Systematic Study of Politics (4, 4, 4) Scope, methods and procedures of analysis in political science; intended primarily for seniors intending to pursue graduate work and entering graduate students who have not had such a course.
4875 Special Topics in Political Thought (4) May be repeated up to a maximum of 8 hrs credit with consent of department.

Other
4101 Foreign Study (1-16) See page 187.
4102 Off-Campus Study (1-16) See page 187.
4103 Independent Study (1-16) See page 187.
4975 Proseminar in Political Science (4) Selected research for seniors; primarily for majors. May be repeated up to a maximum of 8 hrs with consent of department.

GRADUATE
The Master's Program
See requirements in the Graduate Catalog.
The Doctoral Program
General requirements for the degree of Doctor of Philosophy are described in the Graduate Catalog.
5000 Thesis
5002 Non-Thesis Graduation Completion (3-15)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)
5110-20 Seminar in World Political Theory (3, 3)
5140 Politics, Administration and Community in Non-metropolitan Areas (3)
5150 Internship in Political Science (3-9)
5210-20 Seminar in World Politics (3, 3, 3)
5211 Directed Readings in Political Science (3)
5250 Seminar in African Politics (3)
5270-50 Seminar in Politics of Development (3, 3)
5310-20 Seminar in Comparative Government (3, 3, 3)
5340-60-60 Seminar in Latin American Government (3, 3, 3)
5370-80 Seminar in Soviet Politics and Government (3, 3)
5410-20 Seminar in Public Law (3, 3, 3)
5440-50 Theory and Analysis of U.S Foreign Policy Processes (4, 4)
5510-20 Seminar in International Organization (3, 3)
5540 Seminar in Comparative Public Administration (3)
5550 Seminar in Administration in Developing Countries (3)
5600 Public Administration (3)
5605 Research and Methodology in Public Administration (3)
5610-20 Seminar in Organization Theory (3, 3)
5611-21 Seminar in State-Local Administration (3, 3, 3)
5630 Seminar in Technology and Public Policy (3)
5635-45 Operations Research for Public Administrators (3, 3)
5640-50-60 Seminar in Metropolitan Areas (3, 3, 3)
5641 Seminar in Contemporary Public Policies (3)
5670-80 Seminar in Policy Analysis (3, 3)
5710 Seminar in Politics of Administration (3)
5740 Seminar in Organizational Analysis (3)
5750 Seminar in Public Management (3)
5755 Seminar in Public Management (3)
5760 Seminar in TVA Public Personnel Management Practices (3)
5785-75 Law and the Administrative Process (3, 3)
5770 Practicum in Public Administration (3)
5780 Seminar in Fiscal Management (3)
5785-95 Seminar in Staff Functions (3, 3)
5810 The American Political Process (4)
5820 The American Political Process (4)
5850 Seminar in Comparative State Politics (3)
5910-20-30 Methodology and Bibliography (3, 3, 3)
6000 Doctoral Research and Dissertation
6210 Advanced Studies in International Politics (3)
6310 Advanced Studies in Political Theory (4)
6410 Advanced Studies in International Organization (3)
6430 Advanced Studies in Jurisprudence (3)
6440 Advanced Studies in Comparative Politics (3)
6510-20-30 Advanced Studies in American Constitutional Law (3, 3, 3)
6610-20 Advanced Studies in Public Administration (3, 3, 3)
6710 Directed Research in Political Science (3)

Psychology (830)

Psychology (830)

Professors:
W.H. Calhoun (Head), Ph.D. California (Berkeley); G.M. Burghardt, Ph.D. Chicago; J.F. Byrne, Ph.D. Tennessee, E.E. Cureton (Emeritus), Ph.D. Columbia; H.J. Fine, Ph.D. Syracuse; L. Handler, Ph.D. Michigan State; J.F. Lubar, Ph.D. Chicago; E.O. Milton (Director, Learning Research Center), Ph.D. Michigan; K.R. Newton, Ph.D. Tennessee; H.R. Ph.D. Pollio, Ph.D. Michigan; N.L. Rasch, Ph.D. Pennsylvania; F. Samejima, Ph.D. Keio (Japan); R.R. Shadish, Ph.D. Tennessee; W.S. Verplanck, Ph.D. Brown; R.G. Wahler, Ph.D. Washington; J.A. Wiberley, Ph.D. Syracuse.

Associate Professors:
H.S. Bacon, Ph.D. Tennessee; C.P. Cohen, Ph.D. Kansas; L.F. Droppelman, Ph.D. Catholic; H.R. Friedman, Ph.D. Tennessee; S.J. Handel, Ph.D. Johns Hopkins; M.G. Johnson, Ph.D. Johns Hopkins; J. Kandilakis, Ph.D. Tennessee; A. Kastor, Ph.D. Yale; J.C. Maloney, Ph.D. Duke; W.G. Morgan, Jr., Ph.D. Tennessee; W.M. Simmons, M.S.S.W. Tennessee, E.D. Sundstrom, Ph.D. Utah; C.L. Travis, Ph.D. California (Davis).

Assistant Professors:

UNDERGRADUATE
Major: (Concentration in General Psychology) Designed to give students a broad and current background in the science and application of psychological methods and principles. It is particularly suited for students who plan careers in areas such as business, law, and journalism, or who for other reasons desire a liberal education concentrating on psychology. Psychology 2500 and two courses from 2520-30-40 and 2518-29 are prerequisite to a major consisting of Psychology 3150 or 4150, at least 4 hours of laboratory, field or practicum courses, and 32 or more hours of upper-division psychology courses.

(Concentration in Academic Psychology) Designed to prepare students for advanced work in the scientific, professional, and college level teaching areas of psychology. Prerequisites to the major include Psychology 2500, two courses from 2520-30-40 or 2518-28, Mathematics 1540-50-60 or 1840-50-60, and Biology 1210-20-30. The major consists of Psychology 3150 or 4150, 8 hours of laboratory, field, or practicum courses, and 28 or more hours of upper-division courses, of which 12 hours must be in courses at the 4000 level.

Minor: A minor in psychology shall consist of Psychology 2500 and 20 additional hours from 3000- and 4000-level courses.

Honors Program in Psychology. A two-year (Junior-Senior) program leading to the B.A. degree. Objective of the Honors Program is to enable superior students to accelerate development of grasp of science of psychology. Program encourages independent study.

Eligibility: Selection of participants is determined by departmental
3650 Abnormal Psychology (4) Constitutional and environmental factors in abnormal behavior; neu- rotic and psychotic reactions; non-technical dis- cussion of diagnostic and therapeutic methods. 2540 recommended.

4101 Foreign Study (1-18) See page 187.

4102 Off-Campus Study (1-16) See page 187.

Psychology 4103, 4107, and 4109 are courses of Independent study and research taken by consent of instructor only. Course requirements, meeting times, and grading procedures are established by agreement between the student and a member of the psychology faculty. For each credit hour, a student may expect to spend from two to three hours per week for the quarter. No more than 24 credit hours may be earned in courses 4103-4107-4109 combined.

4103 Independent Study (1-16) May be repeated. Maximum credit 16 hrs. 4107 Experience in Individualized Instruction (1-6) May be repeated. Maximum credit 12 hrs. Graded by letter grade only. Prereq: Consent of instructor.

4109 Undergraduate Research (1-18) May be re- peated for credit to maximum of 16 hrs. Prereq: Consent of instructor.

4120 Topics in Social Psychology (4) Intensive analysis of selected research topics. Prereq: 3120 or Sociology 3130. (Same as Sociology 4120.)

4150 Probability Models in Psychology (4) Introduction to use of probability models in theory of binary test items, differential psychology, compar- ison of different populations in specific psych- ological parameters, individual choice be- havior, and testing of psychological hypotheses in human and animal behavior; reliability theory and regression theory. Prereq: Math 1560 or 1860 or consent of instructor.

4230 Sensory Processes and Perception (4) Survey of sensory 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) (Same as Industrial Management 4460.)

4510 Personality Theories (4) Prereq: 3650 or 3690.

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

4610 Group Processes (3) Study and experience of theory and techniques of group processing and facilitation. Those participating in 4610 are expected to continue into 4620 and 4630. Pre- req: 3616-26 and consent of instructor.

4620-30 Seminar in Group Processes (3, 3) Di- dactic and laboratory experience for those quali- fied for further training as group facilitators. Pre- req: 4610 and consent of instructor.

4640 Psychological Tests and Measures (4) Theo- rgy and construction of individual and group measures; survey of various methods of assess- ment of intelligence, personality, special abili- ties, and educational achievement. Prereq: 3150.

4650 Symbolic Processes (4) Logic of signs and symbols; directed and associative thinking; memory, problem solving, and concept forma- tion; nature, use, and development of language. Prereq: 3210 or consent of instructor.

4660 The Psychology of Language (4) Theories and descriptions of phonology, syntax, and semantic- al study of the psychology of linguistic back- ground rec- ommended.

4710 Physiological Psychology (4) Nervous sys- tem and physiological correlates of behavior. Prereq: One year of biology or zoology and Psychol- ogy 1200.

4719 Physiological Psychology Laboratory (4) Laboratory studies of nervous system and physi- ological correlates of behavior. Coreq: 4710.

4720 Comparative Animal Behavior (4) Methods and principles. (Same as Zoology 4720.)

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

4750 Evolution and Ontogeny of Social Behavior (4) Genetic, evolutionary, ecological, and develop- mental processes as they apply to social or- ganizations and formation of species and vertebrates. Prereq: Consent of instructor.

4780 Psychology and Current Issues (4) Re- search and theory relevant to selected contem- porary issues. 4 class hrs per week. Prereq: Consent of instructor.

4830 History and Systems of Psychology (4) Pre- req: 9 hrs of upper-division psychology.


4860 Programmed Learning (3) (Same as Educa- tion C.1.4690.)

4870 Contemporary Research in Behavior of Women (4) Study of interaction of cultural and biologi- cal factors in determining the behavior of women, with emphasis on physiological mechan- isms involved.

4880 Afro-American Psychology (4) Review and analysis of psychological literature on Afro- Americans. Prereq: Consent of instructor. (Same as Black Studies 4480.)

4900 Aspects of Urban Environment (4) (Same as Architecture 4500, Human Services 4900, and Real Estate 4900.)

4910 Senior Seminar in General Psychology (4) Integrative review of major problems in psychol- ogy. Intensive examination of selected topics. Prereq: Consent of instructor.

4948-58-58 Honors: Reading and Research (4, 4, 4) Honors candidates only.

4978-88-88 Honors: Senior Reading and Re- search (4, 4, 4) Honors candidates only.

GRADUATE
The Master's Program
See requirements in the Graduate Catalog.

The Doctoral Program
General requirements for the degree of Doctor of Philosophy are described in the Graduate Catalog.

5000 Thesis
5002 Non-Thesis Graduation Completion (3-15)

5017 Colloquium in Experimental Psychology (1)

5019-29-39 Laboratory Techniques in Experimen- tal Psychology (3, 3, 3)

5070 Seminar in College Teaching (2)

5079 Practicum in College Teaching (2)

5080 Current Topics in Applied Psychology (3)

5100 Developmental Psychology (3)

5105 Developmental Assessment (3)

5110 Clinical Aspects of Human Sexuality (3)

5111-12-13 Seminar in Current Issues in School Psychology (1, 1, 1)
Religious Studies (863)

Professors: R. S. Lusby (Head), B. D. Colgate (Rochester); D. L. Dungan, Th. D. Harvad; R. V. Norman, Jr. (Associate Vice Chancellor for Academic Affairs), Ph. D. Yale.

Associate Professors: B. L. Daniels (Assistant Dean of the College of Liberal Arts), Ph. D. Duke; W. L. Humphreys, Th. D. Union; D. P. Linge, Ph. D. Vanderbilt; C. Reynolds, Ph. D. Harvard.

Assistant Professors: J. Kim, Ph. D. Chicago; R. Lee, Ph. D. Harvard.


UNDERGRADUATE

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

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 Religion: 3011, 3021, 3061-71, 3110, 3120, 3210-20, 3270, 3311-12, 3330, 3340, 3411-12, 3440, 3490, 3510-20, 3550, 3560, 3560, 3690, 3671, 3672, 3680, 3710, 3711, 3713, 3770, 4210, 4310, 4450, 4640, 4670, 4810-20-30.

Problematic of Religion: 3600-10, 3611, 3620, 3690, 3715, 3720, 3740, 3750, 3760, 3780, 4101, 4102, 4103, 4111-21, 4270-71, 4410, 4540, 4610, 4810-20-30, 4850, 4940, 4950, 4960.

Minor: Twenty-four hours of courses at the 3000 level and above. It is suggested that students minor in religious studies discuss their programs with a member of the department faculty.
2610 Introduction to Religions of the World (4) Introduction to the study of religion through selected historical traditions, East and West.

2611 Introduction to Ancient Near Eastern Reli- gions (4) Introduction to study of religion through selected ancient Near Eastern and Medieval traditions.

2612 Issues in Religious Studies (4) Introduction to study of religion through selected religious problems and alternatives.

HISTORY AND LITERATURE OF RELIGION (HRS)

2601-71 History of Western Religious Thought and Institutions (4, 4) 2601—First Century to the Thirteenth Century. 2607—Thirteenth Century to 1900. (Same as History 2601-71.)

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 the Jewish people from the Babylonian captivity to the Bar Kochba revolt.

3210 Early Greek Mythology (3) (Same as Classics 3110.)

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 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.

3411-12-13 Renaissance and Reformation (3, 3, 3) (Same as History 3411-12-13.)

3440 Religion of Primitive Peoples (3) (Same as Anthropology 3440.)

3490 African Religions (4) Examination of religious beliefs and practices of African peoples, including a study of functions of myths, 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 race relations in America, focusing on the role of religion in shaping American racial attitudes and policies.

3560 Black Religion in America (4) Historical and critical examination of the role of religion in the development of black religious thought and institutions in America. (Same as Black Studies 3560.)

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 of the faith, development of Muslim theology and culture, interaction with modern cultures.

3710 Literature of English Bible (3) (Same as English 3710.)

3711 Literature of the English Bible (3) (Same as English 3711.)

3713 Religion in the Middle Ages (4) Study of medieval religion and its role in European culture between 590 and 1500.

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.

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 once for credit.

4640 Topics in Early Christianity and Hellenistic Religions (4) Selected topics, issues, and institutions. Senior and graduate students only, except by consent of department. Prereq: Consent of instructor. May be repeated for credit to a maximum of 12 hrs.

4670 Topics in Eastern Religions (4) Selected topics, issues, and institutions. Senior and graduate students only, except by consent of department. Prereq: 3650-50-70. May be repeated for credit to a maximum of 12 hrs.

4610-20-30 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 religion, such as grand gods, cultural heroes, initiations and ascensions.

3021 Religious Myth, Symbol, and Ritual (4) Study of interrelation of myths, symbols, and rituals among preliterate peoples through a specific motif, such as solar, lunar, and communal.

3600-10 Religious Ethics (4, 4) Historical and critical survey of religious ethics; basic theories and their impact on social problems.

3611 Religious and Philosophical Issues in 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 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 European and American 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.

3750 Theology and Literature (3) Exploration of issues raised for religious inquiry by phenomenon of literature. Relation of religious and moral considerations to problems of literary criticism. Relation of religious language to certain forms of human expression (symbol, metaphor, myth, image) identified in study of literature.

3780 Eastern Religions and Western Thought (3) Critical consideration of influences of Hindu and Buddhist philosophy on Western thought.

3780 The Literature of Dissent (3) Critique of religious thought in Western thought. Aspects of atheism, rebellion, and revolution in such thinkers as Lucretius, Spinoza, and Feuerbach, Marx, Nietzsche, Russell, and Camus.

4010 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (1-16) See page 187.

4103 Independent Study (1-16) See page 187.

4111-21 Modern Religious Philosophies (4, 4) Examination of the religious thought of modern thinkers and movements. 4111—Nicolas of Cusa to Hume. 4121—Kant and the nineteenth century. Prereq: 9 hrs of philosophy other than logic. (Same as Philosophy 4111-21.)

4370-71 Theoretical Issues in Medical Ethics (4, 4) (Same as Philosophy 4370-71.)

4410 American Religious Thought (4) Selected figures, movements and problems in American religious thought from colonial period to present.

4540 Social and Religious Change (4) (Same as Sociology 4540.)

4610 Topics in Western Religious Thought and Institutions (4) Selected figures, issues, and institutions. Senior and graduate students only, except by consent of department. Prereq: 3601-71. May be repeated for credit to a maximum of 12 hrs.

4610-20-30 Readings and Research in Religious Studies (3-4, 3-4, 3-4)

4850 Proseminar in Religious Studies (3) For advanced students in religious studies; staff of department will participate. Specific topics, e.g., nature and function of myth in religions, proponent thinkers and movements. 4850—Nicolas of Cusa to Hume. 4861—Kant and the nineteenth century. Prereq: Consent of instructor. May be repeated for credit. Maximum 9 hrs.

4940 Sociology of Religion (4) 3 a sem as Sociology 4940.)

4950 Theory of Religion (4) Elements for the construction of a theory of religion drawing on resources from fields of history, philosophy, psychology, sociology of religion, cultural anthropology, theology and comparative religion.

4960 Tradition, Change and Modernity in Asia (4) Comparative study of processes of religious and social change seen in historical context in Asian societies. Comparative focus of course will vary each year (e.g., China and Japan, India and South Asia, etc.). May be repeated once for credit. (Same as Sociology 4960.)

GRADUATE

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5103 Independent Study (1-12)

5310-20 Topics in Religion and Society (4, 4)

5510-20 Topics in the History of Religion (4, 4)

5710-20 Topics in Religious Thought (4, 4)

RELATED LANGUAGE STUDIES

3140-50-60 Elementary Classical Hebrew (3, 3, 3) 3140—Basic elements of Hebrew, phonology, script, morphology and 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.
Latin American Studies. See Cultural Studies.
Certification for Teaching French or Spanish in Tennessee
Consult Certification Clerk, Room 212
Claxton Education Building.

Arabic (127)
1510-20 Spoken Arabic (4, 4) Must be taken in sequence. Dialnet will vary depending on instructor. Class meetings and 2 laboratory periods.
2110-20-30 Elementary Modern Standard (3, 3, 3) Must be taken in sequence. 3 class meetings and 2 laboratory periods.
3510-20 Intermediate Modern Standard (4, 4)
3610 Islamic Literature in English Translation (4) Survey from origins to modern period of major Islamic, Arabic, Persian, and Turkish. Readings include The Arabian Nights, The Rubaiyat of Omar Khayyam and Gibran's The Prophet.
4101 Foreign Study (1-16) See page 187.
GRADUATE
5670-60 Hispano-American Literature and Culture (3, 3)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)

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 or survey of literature, 9 hours); 3410 or 3420 or 3430 (intermediate composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 4220 or 4230 (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 or survey of literature, 9 hours); 3410 or 3420 or 3430 (intermediate composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 4220 or 4230 (advanced grammar, 3 hours); 6 hours selected from courses 3410-20-30 (intermediate composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 4220 or 4230 (advanced grammar, 3 hours); 6 hours selected from courses 3410-20-30 (intermediate composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 4220 or 4230 (advanced grammar, 3 hours); 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 or survey of literature, 9 hours); 3410 (intermediate composition and conversation, 3 hours); 4210 (phonetics, 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. 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 hrs and 2 labs.
1510-20 Elementary French (4, 4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.
1518-28 Honors: Elementary French (4, 4) Honors course for students of superior ability. 1518 not open to students who have taken French in high school. Freshmen are admitted on the basis of a diagnostic test or conference with the instructor, high school averages, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. This class will cover the normal French program for the first year, but will be enriched whenever possible. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular class. Potential majors and minors in French are urged to take this course. Students who pass 1510 with a grade of B or higher may take 2528 instead of 1520.
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 hrs and 2 labs.
2510-20 Intermediate French (4, 4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.
2518-28 Honors: Intermediate French (4, 4) Honors course for students of superior ability in French. Incoming freshmen are admitted on the basis of a diagnostic test, high school average, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. Students will follow an enriched program with continuing emphasis upon speaking ability with special emphasis on reading, including literary selections. Must be taken in sequence. Students who earn a grade of A or B in 2528 automatically receive credit for French 3000. Prereq: French 1110-20-30, 1510-20, 1519-20, or 2518-28 equivalent.
2610-20 Panorama of French Culture (4, 4) 2610: Topics include cultural forces which produced the French nation; art, literature, architecture, music under Francis; benefit from addictions; and the culture. 2620: Deals with arts in Age of Reason and trends in French culture during the Revolution and Age of Romanticism, in bourgeois art of nineteenth century, and in modern movements of surrealism, dadaism, and existentialism.
3000 French Transition (3) Development of linguistic skills necessary for satisfactory work in courses above 3000. Recommended for students who feel they want additional training beyond 2130 or 2520 in basic skills of reading, speaking and writing French.
3010-20-30 Elements of French 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 upper-division students desiring reading the latter part of the language. No credit for students who have had 1110-20-30, 1510-20 or equivalent. No credit towards graduation.
3210-20-30 French Literature in English Translation (3, 3, 3, 3) 3210—From the origins...
through the Renaissance: Life of St. Alexis, Song of Roland, Romance of the Rose, Rabelais, Du Bellay, 3220—The Classical Period and the Age of Reason: The great dramatists, La Princesse de Cleves, Voltaire, Rousseau. 3230—The Nineteenth and Twentieth Centuries: Balzac, Flaubert, Proust, Camus. No change in credit hrs after add deadline. Option of 4 hrs credit may apply as appropriate amount of extra work above that required for 3 hrs.

3240 Women in French Culture (4) Influential role of women in shaping French history and culture. Feminists (George Sand); royal mistresses (Mme. de Maintenon); intellectuals (Mme. de Stael); actresses (Sarah Bernhardt); scientists (Marie Curie) will be among the important figures studied.


3410-20-30 Intermediate Composition and Conversation (3, 3, 3) Grammatical analysis of modern French prose; review of grammatical principles and their application in translations from English to French, both written and oral; exercises in free composition. Prereq: 2130 or 2520.

3110-20-30 Aspects of French Literature (3, 3, 3) Study of selected (sociocultural) periods of the literature; emphasis upon genres (poetry, novel, drama) varies. Prereq: 2130, 2520 or equivalent. Recommended for literature majors.

3810-20-30 Survey of French Literature (3, 3, 3) Chronological study of various genres (poetry, novel, drama) by periods, from medieval period to the present. May be taken in place of 3110-20-30. Prereq: 2130, 2520 or equivalent.

4010 Masterpieces of French Literature in English Translation (3) No foreign language credit.

4020 Masterpieces of French Drama in English Translation (3) No foreign language credit.

4101 Foreign Study (1-16) See page 187.

4110-20-30 French Literature of the Seventeenth Century (3, 3, 3) Prereq: 2130, 2520 or equivalent.

4150 Theatrical French (1-3) Performance in one or more French plays. May be repeated for credit with consent of instructor. Prereq: 2130, 2520 or equivalent and consent of the 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. Prereq: Completion of 9 hrs of courses on 3000 level.

4210-20-30 Phonetics and Advanced Grammar (3, 3, 3) Prereq: 2130, 2520 or equivalent.

4250 Introduction to Descriptive Linguistics (3) Phonetics and phonemics, morphology and syntax. Types of languages, linguistic groups, dialects and dialect geography. Application of descriptive linguistics—field linguistics, dialect study; its practical use in learning languages and in language teaching. Introduction to transformational grammar. Prereq: 9 hrs of upper-division English or 9 hrs of upper-division courses in a modern or ancient language (exclusive of German and French 3010-20-30, courses in literature in translation, and general courses in Latin and Greek requiring no knowledge of these languages), or consent of department. (Same as Spanish, German, and Russian 4250.)

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

4270 Romance Linguistics (3) Development of classical Latin through vulgar Latin into major Romance languages. (Same as Spanish 4270.)

4310-20-30 French Literature of Eighteenth Century (3, 3, 3) Prereq: 2130, 2520 or equivalent.

4350-60-70 Medieval French Literature (3, 3, 3) Medieval works in modern French texts. Prereq: 2130, 2520 or equivalent.

4410-20-30 French Civilization (3, 3, 3) Prereq: 2130, 2520 or equivalent.

4510-20-30 French Literature of Nineteenth Century (3, 3, 3) Prereq: 2130, 2520 or equivalent.

4610-20-30 Readings in French Literature (3, 3, 3) 4618-28 Honors: Readings in French Literature (3, 3) For students who have completed 3130 or equivalent and have at least 3.0 on all university work. No credit for grade less than B.

4640-50-60 French Literature of Sixteenth Century (3, 3, 3) Prereq: 2130, 2520 or equivalent.

4710-20-30 French Literature of Twentieth Century (3, 3, 3) Prereq: 2130, 2520 or equivalent.

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)

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5103 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)

5310-20-30 French Directed Readings (3, 3, 3)

5550-60-70 The Philosophes (18th Century) (3, 3, 3)

5410-20-30 The French Novel (3, 3, 3)

5450-60 Lyric Poetry of Nineteenth Century (3, 3)

5470 Baudelaire and the Symbolists (3)

5510-20-30 The French Drama (3, 3, 3)

5810-20-30 Trends in Contemporary French Literature (3, 3, 3)

5850-60 Advanced Syntax and Stylistics (3, 3)

5870 Problems in Romance 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 hrs in 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 hrs); 3110-20-30 or 3510-20 (aspects of Italian literature, at least 8 hrs); 9 hrs 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 hrs in courses numbered 3110 or above, to include the following: 3410-20-30 (advanced grammar, composition, and conversation, 9 hrs); 3110-20-30 or 3510-20 (aspects of Italian literature, at least 6 hrs); 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.

1510-20 Elementary Italian (4, 4) Must be taken in sequence. 4 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 Renaissance. 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 2520 in basic skills of reading, speaking and writing in Italian.

3110-20-30 Aspects of Italian Literature (3, 3, 3) Prereq: 2520 or equivalent. Recommended for literature majors.

3210-20 Civilisation and Culture (3, 3, 3) Prereq: 2520 or equivalent.

3310-20 Italian Literature in English Translation (3, 4, 4) 3310—Siicilian School, the Florentine School, Dante, Petrarch, Boccaccio, Machiavelli, Ariosto, Tasso. 3320—From the Baroque through nineteenth century, commedia dell'arte, Vico, Leopardi. 3330—Twentieth century, Carducci, Pirandello, Quasimodo, D'Annunzio, Croce, Moravia. No change in credit hrs after add deadline. Option of 4 hrs credit must present appropriate amount of extra work above that required for 3 hrs.

3410-20 Advanced Grammar, Composition, and Conversation (3, 3, 3) Laboratory work, drills, and tapes. Prereq: 2520 or equivalent.

3510-20 Aspects of Italian Literature (4, 4) Prereq: 2520 or equivalent. Recommended for literature majors.

4010 Italian Drama in English Translation (3, 4, 4) 4010—La commedia dell'arte and major works of Machiavelli, Metastasio, Alfieri, Goldoni. 4020—Twentieth-century theatre: operatic drama, the Grottesco, Pirandello, De Filippo, Frati. No change in credit hrs after add deadline. Option of 4 hrs credit must present appropriate amount of extra work above that required for 3 hrs.

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 187.

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. Prereq: Completion of 9 hrs of courses on 3000 level.

4220 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 Pulci to Tasso, the Quattrocento and the Cinquecento. Prereq: 3130, 3520 or equivalent. 4530 The Modern Novel (3) Prereq: 2520 or equivalent. 4540 The Modern Theatre (3) Prereq: 2520 or equivalent. 4610 Contemporary Theatre (3) Prereq: 2520 or equivalent. 4620 Contemporary Poetry (3) Prereq: 2520 or equivalent. 4630 Contemporary Prose (3) Prereq: 2520 or equivalent. GRADUATE See Graduate Catalog for requirements. 5011 Techniques in Literary Analysis (2) 5101 Foreign Study (1-12) 5102 Off-Campus Study (1-12) 5103 Independent Study (1-12) 5151-61-72 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. 3510-20 Aspects of Portuguese Literature (4, 4) Prereq: 2520 or equivalent. Recommended for literature majors. 4101 Foreign Study (1-16) See page 187. 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 36 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: 3310-20-30, 3510-20, or 3610-20 (aspects of Spanish American literature, or aspects or survey of Spanish literature, 8 hours); 3410 plus 3420 or 3430 (composition and conversation, 6 hours); 4210 (phonetics, 3 hours); 9 hours of literature at the 4000 level; 3 hours of civilization; sufficient additional hours selected from courses in literature, language, or civilization to fulfill the major requirement. Students whose primary interest is language must have a minimum of 8 hours in the following sequences: 3310-20-30, 3510-20, or 3610-20 (aspects of Spanish American literature, or aspects or survey of Spanish literature, 8 hours); 3410 (composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 9 hours selected from courses 3420-30 (composition and conversation), 4220-30 (advanced grammar), or 4520-60-70 (language) 3 hours of civilization; sufficient 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 3310 or above, including a minimum of 8 hours chosen from the following sequences: 3310-20-30, 3510-20, or 3610-20 (aspects of Spanish American literature, or aspects or 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 are the equivalents 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 hrs and 2 labs. 1510-20 Elementary Spanish (4, 4) Must be taken in sequence. 4 class meetings and 2 laboratory periods. 1518-28 Honors: Elementary Spanish (4, 4) Honors course for students of superior ability. 1518 not open to students who have taken Spanish in high school. Freshmen are admitted on the basis of a diagnostic test or conference with the instructor, high school average, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. This class will cover the normal Spanish program for the first year, but will be enriched whenever possible. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular class. Potential majors and minors in Spanish are urged to take this course. Students who pass 1510 with a grade of B or higher may take 1520 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 hrs and 2 labs. 2510-20 Intermediate Spanish (4, 4) Must be taken in sequence. 4 class meetings and 2 laboratory periods. 2518-28 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. This class will be held to a maximum of 15 so that each student may receive more attention. Students will take an enriched program with continuing emphasis upon speaking ability and with special emphasis on reading, including literary selections. Must be taken in sequence. Students who earn an A or B in 2528 automatically receive credit for Span- ish 3310. Prereq: Spanish 1110-20-30, 1510-20, 1518-28, or equivalent. 2610-20 Panorama of Hispanic Culture (4, 4) 2610—Peninsular Spain from Roman invasion through 15th 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 feel they would benefit from additional training beyond 2130 or 2520 in basic skills of reading, speaking and listening Spanish. 3010-20-30 Spanish and Spanish American Literature in English Translation (3, 3, 3, 3) 3010—Masterpieces of Classical Spanish Literature: Cervantes, realism and the picaro novel, religious mystics, Golden Age Theatre. 3020—Masterpieces of Twentieth-Century Spanish Literature: Unamuno, Lorca, Baroja, Ortega. 3030—Contemporary Spanish American Fiction: Marquez, Borges, Fuentes, Asturias. No change in credit hours after add deadline. Option of 4 hrs credit must present an appropriate amount of extra work above that required for 3 hrs. 3310-20-30 Aspects of Spanish American Literature (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 3510-20 or 3610-20. Prereq: 2130, 2520 or equivalent. 3410-20-30 Intermediate Composition and Conversation (3, 3, 3) Not offered for graduate credit. 3510-20 Aspects of Spanish Literature (4, 4) Study (not usually chronological) of various periods of the literature; emphasis upon the genres (poetry, novel, drama) varies. Prereq: 2130, 2520 or equivalent. Recommended for literature majors. 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 19th century. May be taken in place of 3310-20-30 or 3510-20. Prereq: 2130, 2520 or equivalent. 4030 Masterpieces of Spanish Literature in English Translation (3) No foreign language credit. 4040 Spanish Drama in English Translation (3) No foreign language credit. 4050-80-70 Hispano-Arabic Literature and Culture (3, 3, 3) 4101 Foreign Study (1-16) See page 187. 4110-20-30 Spanish Literature of the Golden Age (3, 3, 3) The picaro novel; Cervantes, the Comedia. 4150 Theatrical Spanish (1-3) Performance in one or more Spanish plays. May be repeated for credit with consent of instructor. Prereq: 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. Prereq: Completion of 9 hrs of courses on 3000 level.
4210-20-30 Phonetics and Advanced Grammar (3, 3, 3) Prereq: 2130, 2520 or equivalent.

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

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

4270 Romance Linguistics (3) (Same as French 4270.)

4410 Spanish Civilization (3) Prereq: 2130 or equivalent.

4420-30 Latin American Civilization (3, 3) Prereq: 2130, 2520 or equivalent.

4450-60-70 Studies in Modern Spanish Style (3, 3, 3) Prereq: 3410-20-30 or consent of instructor.

4510-20-30 Spanish Literature of Nineteenth Century (3, 3, 3) Prereq: 2130, 2520 or equivalent.

4618-28-28 Honors: Readings in Literature (3, 3, 3) Prereq: 3330, 3520, 3620 or equivalent and at least 3.0 on all university work. No credit for grade less than B.

4710-20-30 Spanish Literature of Twentieth Century (3, 3, 3) 4710—Non-dramatic Prose. 4720—Drama. 4730—Lyric Poetry. Prereq: 2130, 2520 or equivalent.


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)

5212-22-32 Golden Age Prose (3, 3, 3)

5231 The Exemplary Novels, Persiles y Sigismunda (3)

5250-60 The Generation of '98 (3, 3)

5270 The Contemporary Novel (3)

5310-20-30 Directed Readings (3, 3, 3)

5311-21-31 Special Topics in Spanish or Spanish American Literature (3, 3, 3)

5340 Problems in Hispanic Culture (3)

5510-20-30 Spanish Theatre after the Golden Age (3, 3, 3)

5550-60-70 Golden Age Theatre (3, 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)

5810-20-30 Spanish Lyric Poetry (3, 3, 3)

5910 Literary Criticism: Foundations of Romance Criticism (3)

6000 Doctoral Research and Dissertation

6210-20-30 Seminar in Spanish 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; W.E. Cole (Emeritus), Ph.D. Cornell; L. Ebersole (Vice Chancellor for Planning and Administration), Ph.D. Pennsylvania; W.B. Jones (Emeritus), Ph.D. Vanderbilt; J.B. Knox (Emeritus), Ph.D. Harvard; S.E. Wallace, Ph.D. Minnesota.

Associate Professors:

D.M. Betz, Ph.D. Michigan State; D. Cieland, Ph.D. Michigan State; D.W. Hastings, Ph.D. Massachusetts; T.C. Hood, Ph.D. Duke; R.G. Perrin, Ph.D. British Columbia; N.E. Shover, Ph.D. Illinois (Urbana).

Assistant Professors:

S. Kurth, Ph.D. Illinois (Chicago); S.E. Norland, Ph.D. Iowa; T.J. Weirath, Ph.D. Wisconsin (Madison).

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 52.

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

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) Processual analysis of such collective phenomena as crowd behavior, social epidemics, fads, fashions, popular crazes, and mass movements; nature of the public, functional analyses of public opinion; problems of democracy as viewed from standpoint of organizing collective action.

3030 Political Sociology (3) Sociological analysis of American political system. Attention given to consideration of concept of power, elitist-pluralist controversy, end-of-ideology debate, and related topics.

3130 Social Psychology (4) Social basis of human behavior; socialization; social status and social roles; personality; social adjustment.

3140 Deviance and the Social Order (4) Examination of relationships 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 Sociology of Sex Roles (4) Sociological examination of the structure of current American sex roles, roles of women in the family, and the effect of sex role expectations and social movements such as feminism are considered.

3160 Sociology of Medicine (4) Introduction to sociological approach to study of health and medicine. Emphasis on relationship of demographic characteristics to the prevalence of disease, organization of health care facilities and staff-patient relationships.

3220 The Family (4) Origin and ethnicity of the family; background of modern American family; the nuclear family; family changes and family; family social pathology of the family; reorganization and future of the family system.

3230 Sociology of Mass Communication (4) Sociological dimensions of mass communication and mass media, nature of mass communications organizations as structures of power, and effects of mass communication on social behavior are examined.

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

3340 Sociology of Poverty and Inequality (3) Factors contributing to conditions of poverty and social consequences of being poor. (Same as Black Studies 3340.)

3350 Social Stratification (4) Study of economic class, prestige, life style, and power hierarchies; causes and consequences of structured social inequality.

3410 Urban Environment (4) Introduction to urban environment includes: emergence of the city; cities of New World; rise of metropolitan America; urban society; social worlds within urban environment.

3420 Urban Problems (4) Crises and the urban conscience; urban problems and interventions; housing, urban renewal and neighborhood conservation; the urban poor, the dispossessed and alienated; planning for urban youth; the urban elderly; the social and physical planning process; new towns.

3510 Juvenile Delinquency (4) Critical assessment of nature of the delinquency problem, major sociological causes and their implications for control and administration of juvenile justice.

3810 Sociology of Occupations (4) Introduction to occupational roles and their relation to the individual and society; technology and occupations; unequal rewards and occupations; social organization and occupations.

3820 Occupations as Organizations (4) Occupations as interest groupings; their impact on work settings and the wider community.
3672 Religion and Society in Japan (4) (Same as Religious Studies 3672.)

3690 Sociology of Aging (4) The aged as social minority and subculture in society; role changes in middle age and old age; significance of increase in proportion of aged in terms of employment, welfare, retirement, and political power.

3810 Sociological Theory (4) Survey and analysis of development of sociological theory from time of Comte to present.

3910 Introduction to Social Research (4) Scientific method applied to social phenomena; formulating testing hypotheses; techniques for collecting data; measuring social variables; interpreting research findings. Lectures and laboratory.

3920 Elementary Statistical Methods (4) Statistics used in social research; elementary descriptive techniques; measures of central tendency, dispersion; elementary statistical inference; tests of significance for parametric and non-parametric data.

4000 Special Topics (4) Student-generated course offered at convenience of department upon student initiative. Scope of subject matter determined by instructor and instructor with consent of department. Elective credit only. Prerequisite determined by department.

4030 Society and Law (4) General treatment of socialization and consequences of law and legal process. Particular emphasis is placed on problems of law and social change, and on structure and functioning of legal sanctions. Some attention is paid to law and law-like phenomena in formal organizations and primitive societies.

4050 Sociology of Sport (4) Social organization and meaning of sport. Topics to be considered are the differences between sport and play and games, social stratification and sport, sport as an occupation, place of sport in mass culture, sport subcultures, and reciprocal influences of sport and cultural milieu.

4102 Off-Campus Study (1-16) See page 187.

4103 Independent Study (1-16) See page 187.

4110 Population Problems (4) Demographic factors and social structure; trends in fertility, mortality, population growth, migration, distribution, and composition; population policy.

4120 Topics in Social Psychology (4) (Same as Psychology 4125.)

4130 Sociology of Punishment and Corrections (4) Traces development of correctional movement, develops a critical sociological perspective on contemporary correctional programs, and provides overview of evaluative research in corrections.

4310 Criminology (4)

4330 Urban Ecology (4) Examination of public, private, collective, and individual space. Classical school of ecology, its neoclassical revisers, social area analysis, and cognitive symbolic ecology emphasized.

4410 Educational Sociology (3) (Same as Education C & 4410.)

4530 Community Organization (4) Structure; functions; linkages; change and development and important community studies are reviewed and discussed. Emphasis on sociological analysis, not on implementation of change.

4540 Social and Religious Change (4) Critical review of historical and contemporary theories and methods employed in study of social change. Attention given to change at macro and micro level.

4560 Formal Organization (4) Analysis of bureaucratization process, division of labor, delegation of authority, channeled communication under system of rationality.

4820 American Minorities Groups (4) Minority groups and social structure in American society; analysis of intergroup relations with attention given to both past and present relationships of selected groups to broader society.

4930 Social Movements (4) Development, organization, and function of social movements; attention is given to ideology, leadership and organization of political, religious and other types of social movements.

4940 Sociology of Religion (4) Interrelationship of society, culture, and religion. (Same as Religious Studies 4940.)

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

4968 Honors: Sociology (4) Intensive study and research under faculty direction, including writing of senior thesis. Course credit may be split into two quarters. Candidacy is open only to majors who have shown a marked capability for independent study and have grade point averages of at least 3.0 in the College of Liberal Arts and 3.2 in the department. Prerequisite: Senior standing.

GRADUATE

Standards for graduate majors and minors are prescribed by the Graduate School and by the department. Students who do not have adequate preparation in sociology may be required to take additional courses at the undergraduate level prerequisite to graduate study.

The Master's Program

The general requirements for the Master's degree are given in the Graduate Catalog. A detailed statement of requirements is given in the department's graduate manual.

The Doctoral Program

General requirements for the degree of Doctor of Philosophy are described in the Graduate Catalog. A detailed statement of requirements is given in the department's graduate manual.

5000 Thesis

5040 Methodological Issues in Social Research (3)

5050 Seminar in Political Sociology (3)

5060-70 Special Social Investigation (3, 3)

5200 Seminar in Collective Behavior and Social Movements (3)

5210, 5420-30 Social Theory (3, 3, 3)

5220 Social Control (3)

5230 Seminar in Sociology of Medicine (3)

5240 Theory and Research in Human Migration (3)

5250 Selected Topics in Migration Research (3)

5310 Seminar in Methods of Sociological Research (3)

5320-30 Social Statistics (3, 3)

5520 Crime, Law, and Social Control (3)

5530 Seminar in Community (3)

5550 Seminar on Community Power (3)

5560-70 Field Research in Deviance (3, 3)

5580 Sociology of Mental Disorders (3)

5590 Social Differentiation and Stratification (3)

5610-20-30 Seminar in Occupations (3, 3, 3)

5640 Social Structure and Personality (3)

5670 Social Organization (3)

5720 Small Group Theory and Research (3)

5730 Seminar in Research Problems in Intergroup Relations (3)

5810 Seminar in Race and Culture (3)

5910 Urban and Regional Sociology (3)

5920 Seminar in Social Attitudes (3)

5940 Delinquency and the Social Structure (3)

5950 Seminar in Population Theory (3)

5960 Demographic Techniques (3)

5970 Sociology of Development and Modernization (3)

6000 Doctoral Research and Dissertation

6040 Experimental Research (3)

6050 Experimental Methods in Sociology and Social Psychology (3)

6070 Problems in Field Research (3)

6080 Research Problems in the Study of Social Groups (3)

6090-6100 Survey Design and Analysis (3, 3)

6120 Selected Topics in Deviance and Law (3)

6130 Seminar in Mass Behavior and Related Topics (3)

6140 Advanced Reading in Sociological Theory (4)

6150 Advanced Reading in Sociological Methods (4)

6160 Advanced Special Social Investigation (4)

6170 Cross-cultural Aspects of Human Fertility (3)

6180 Theory and Method in Human Ecology (3)

6190 Advanced Special Social Investigation (4)

6510 Advanced Issues in Criminological Theory (3)

6520 Sociology of Deviance (3)

6530 Sociology of Law (3)

6540 Readings in Criminology and Deviance (3)

6550 Advanced Studies in Community (3)

6610 Seminar in Formal Organization (3)

6710 Seminar in Class and Status (3)

6810 Advanced Studies in Social Psychology (3)

6840-50 Social Change (3, 3)

6940 Advanced Studies in Urban Sociology (3)

Spanish

See Romance Languages.

Speech and Theatre


Associate Professors: R.L. Convilie, Ph.D., Louisiana State; R.C. Field, M.A., Miami (Ohio); R.W. Glenn, Ph.D., Northwestern; A.J. Harris, Ed.D., Tennessee; R.R. Masbourn, M.A., Tennessee.
Assistant Professors: R.S. Amber, Ph.D., Ohio State; J.E. Buckley, Ph.D., Northwestern; N.C. Cook, M.A., Alabama; M. Custer, M.F.A., Wisconsin; B.V. Daniels, Ph.D., Cornell; F.D. Julian, Ph.D., Tennessee; L.W. Lester, Ed.D., Tennessee.


UNDERGRADUATE

Major: The major, speech and theatre, offers three 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 2021, 2311 (or 3551 by permission), 2331, 2351; thirty additional hours in speech courses numbered 2000 and above, twelve hours of which may be cognate areas approved by the department and twenty-four 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 2111, 2211-21, 2231, 3252-53-54, nineteen additional hours of theatre courses numbered 2000 or above, twelve 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. Coreq: 9 hours from courses listed in the Dramatic Arts option of the Language, Literature, Arts Triad.

Concentration in General Speech: Designed for students who anticipate teaching in broadly based high school programs or who desire a wide exposure to the whole field of speech. Prerequisite is a minimum of two courses selected from Audiology and Speech Pathology 3040, Broadcasting 2750, Communications 1111, Speech 1211, 1221, Speech and Theatre 1441, Theatre 1310. The concentration consists of Speech 2311 (or 3551 by placement); one course selected from Speech 2021, 2331, 2351; thirty-six additional hours in courses numbered 2000 and above, no more than twenty of which can be in any one department or division (audiology and speech pathology, broadcasting, speech, and theatre, or theatre). At least twenty-four hours must be earned in courses numbered 3000 and above.

Minors: Two minors are offered: speech and theatre. Speech 1211-21 is prerequisite to a minor in speech which consists of twenty-four hours in speech courses numbered above 2000. Theatre 1320-30-40 is prerequisite to a minor in theatre which consists of twenty-four hours in theatre courses numbered above 2000.

Certification for Teaching Speech or Speech and English. Consult Certification Clerk, Room 212, Claxton Education Building.

GRADUATE

The Department of Speech and Theatre offers the Master of Arts. Requirements are described in the Graduate Catalog.

Speech (943)

1211 Introduction to Rhetoric and Public Address (4) Major theories of communication from Plato to present; methods for describing and evaluating public address.

1221 Introduction to Speech Communication (4) Fundamental theories and practices with particular emphasis on interpersonal communication, persuasion, semantics, psycholinguistics; legal and ethical dimensions of communication.

2021 Voice and Diction (3) 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 Deliberation in Assemblies (4) Various techniques for coming to collective decisions; parliamentary procedure.

2351 Interpersonal Communication (4) Communication theory in its application to informal face-to-face situations.

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: logical, psychological, and cultural dimensions.

3012 Persuasion: Projects (2) Material presented in Speech 3011 is applied to on and off-campus projects. Emphasis on analysis of the persuasive situation, application of the relevant communication principles, and understanding and evaluating the results. May be repeated for credit.

3021 Group Communication (4) Communication theory in its application to small groups, especially discussion groups; communication barriers, nonverbal 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.

3410-20-30 Intercollegiate Forensics (1, 1, 1) Continuation of 2410-20-30. Prereq: Consent of instructor for specified situations.

3541 Rhetorical Theory and Criticism (4) A survey of Western rhetorical theory; contemporary approaches to criticism of public address. Recommended: 1211

3551 Persuasive Speaking (4) Speech forms; principles and practice of speech composition.

4222 Advanced Argumentation and Debate (4) Prereq: 2331 or consent of instructor.

4861 Quantitative Research Methods in Speech Communication (4) Designing experiments; planning field studies; using statistical analysis.

4551 Southern Oratory (4) Historical and critical study of public address in the South.

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.

4571 British Oratory (4) Historical and critical study of British public address.

4582 Public Discussion of Race (4) History and criticism of racial advocacy in America.

4591 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.

4911-21 History of American Public Address (4, 4) 4911—Colonial period to 1865, 4921—1865 to present.

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)

5430 Studies in Tennessee Oratory (3)

5440 Organizational Communication (3)

5450 Studies in Collection and Use of Recorded Discourse (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—Play analysis. 1330—Arts of performance (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.

2211-21 Stagecraft (4, 4) 2211—Techniques of scenery construction. 2221—Fundamental methods of stage lighting. Crew assignments on major productions.

2231 Basic Stage Costuming (4) Costume history and its application to the stage; basic techniques in costume construction.

3121-22 Advanced Acting (4, 4) Historical styles of acting, 3121—Renaissance, 3122—Seventeenth and eighteenth centuries. Prereq: Consent of instructor.

3151-52 Major Productions (1-4, 1-4) Supervised work on departmental productions. Available only to members of summer company by consent of instructor.

3153 Outdoor Repertory Productions (4) Supervised work on productions at Hunter Hills Theatre, available only to members of summer company by consent of instructor.

3221-22 Introduction to Scene Design (4, 4) Descriptive drawing as an approach to three-dimensional design; theatrical graphic standards; problems in stage design with reference to lighting, movement, scale, and style. Prereq: 2211-21 or consent of instructor. Must be taken in sequence.


3262-63 History of the American Theatre (3, 3) Development of the theatre in American life. 3262—From its beginnings to 1900. 3263—From 1900 to present.

3231-22 Introduction to Lighting Design (4, 4) Methods 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) Must be taken in sequence. Prereq: 2211.
4170-80-30 Film History and Theory (3, 3, 3) Analysis of cinematic form and trends. 4170: Narration, 4180: Exposition and persuasion. 4190: Experimental form; 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)

Statistics
See faculty list page 95.

Liberal arts students may major or minor in statistics under the supervision of the faculty of the statistics department in the College of Business Administration. The major is designed to prepare students for graduate studies in statistics or for professional work in various applications of statistical methods, including applications in the natural and social sciences, business, and industry. It is highly recommended that a student majoring in statistics have a minor in an area of application.

Major:
(a) Required courses: 27 hours to consist of Mathematics 2840-50-60; Statistics 3450-60, 4750; Computer Science 4310; Statistics 3550 or Mathematics 4650 or 4750.
(b) Statistics electives: 12 hours from upper-division statistics courses not listed in part (a) above.
(c) Electives: 12 hours to be selected from no more than two of the following groups: Computer Science 3150, 3510, 3520, 4320; Industrial Engineering 3430, 3510, 3520, 3530, 4590; Industrial Management 4610, 4620; Mathematics 3780-90, 4660-70, 4510-20-30 (or 4518-28-38), 4690-70.

Minor:
(a) Required courses: 21 hours to consist of Mathematics 2840-50-60; Statistics 3450-60; Computer Science 4310.
(b) Statistics electives: 9 hours from upper-division statistics courses not in part (a) of the minor.

University Studies (984) (Non-Departmental)

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

3010 Technology and Society (3) Interdisciplinary lectures and discussion concerning science and technology, their interaction with contemporary social and political institutions and their impact upon human values. May be repeated for credit to a maximum of 9 hrs.

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. Topical focus will change from quarter to quarter. May be repeated with approval of instructor.

Women's Studies
See Cultural Studies.

Zoology (995)

Professors:
J.C. Daniel, Jr. (Head), Ph.D. Colorado; D.L. Bunting, II, Ph.D. Oklahoma State; J.G. Carlsson, Ph.D. Pennsylvania; A.C. Cole, (Emeritus), Ph.D. Ohio State; R.C. Fraser, Ph.D. Minnesota; N. Gengoizan, Ph.D. Wisconsin; R.F. Grell, Ph.D. Tennessee; B. Hochman, Ph.D. California (Berkeley); J.C. Howell, Ph.D. Cornell; K.W. Jeon, Ph.D. London (England); A.W. Jones, Ph.D. Virginia; J.N. Liles, Ph.D. Ohio State; L.E. Roth (Visiting Assistant for Graduate Studies), Ph.D. Chicago; G.A. Shivers, Ph.D. Michigan State; J.T. Tanner, Ph.D. Cornell; S.R. Tipton (Emeritus), Ph.D. Duke; G.L. Whitson, Ph.D. Iowa.

Associate Professors:
H.M. Ambrose III, Ph.D. Cornell; R.M. Bagby, Ph.D. Illinois; K.D. Burnham, Ph.D. Iowa; D.A. Etter, Ph.D. Minnesota; J.R. Kennedy, Ph.D. Iowa; M.C. Whiteside, Ph.D. Indiana.

Assistant Professors:
P.P. Coudoul, Ph.D. France; A.G. Echternacht, Ph.D. Kansas; D.J. Fox, Ph.D. Hopkins; M.A. Handel, Ph.D. Kansas State; A.M. Jungreis, Ph.D. Minnesota; J. MacCabe, Ph.D. California (Davis); M.L. Pan, Ph.D. Pennsylvania; S.E. Riechert, Ph.D. Wisconsin; G.L. Vaughan, Ph.D. Duke.

11*Alumni Distinguished Service Professor.

UNDERGRADUATE

Prerequisites to upper-division courses: Biology 1210-20-30 is a prerequisite 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 no more advanced than those in the 3000s except as may be indicated by prerequisites.

Major: Consists of Biology 3110, 3120, 3130; 18 hours of upper-division zoology courses (except 3010-20-30), and 3 quarters of chemistry or biochemistry at the 2000 level or above. Of the 18 hours of upper-division zoology courses a minimum of 6 hours must be at the 4000 level, including at least one laboratory or field course. Prerequisites to this major are:
Biology 1210-20-30 or Zoology 1118-28 (Biology 2920-30 may be substituted for Zoology 1118 or Biology 1220), and Chemistry 1110-20-30. Corequisites are Mathematics 1841-51, or 1840-50 or 1550-60 (Mathematics 1841-51 is the recommended choice); and a year sequence in physics (except 1410-20-30).

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

Minor: Consists of 24 hours of zoology, or zoology and biology, courses. (Zoology courses must be at the upper-division level; but 2000-level biology courses may be used, e.g. Biology 2110, 2120, 2130.) 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 Honors: General Zoology (6, 6) Course designed for superior students in any major field who are interested in obtaining a solid foundation in zoology. This two-quarter sequence is equivalent to the three-quarter Biology 1210-20-30 sequence and students may register for the core biology sequence (Biology 3110-20-30) following its completion. Honors zoology is open to students of any curriculum with a minimum ACT composite score of 28, or with a minimum grade point of 3.2 in college. Students must achieve at least a B in whichever quarter is completed to be eligible for the second quarter. Students who do not satisfy this requirement must complete the sequence with appropriate quarters of Biology 1210-20-30. The basis of life and organismal biology; origin and diversity of organisms. 1128—Genetics and biology of populations and human genetics. Students of combined lecture and lab. Students who receive credit for 1118-28 may not also receive 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 human anatomy and physiology. 2 hrs and 1 lab.

2461-71-81 Human Anatomy and Physiology for Nurses (4, 4, 4) Same as 2460-70-80 except 2 hrs and 2 labs.


2920-30 Human Physiology (4, 4) Fundamentals of physics, principles of human physiology and anatomy. Must be taken in sequence. Prereq: One year of college chemistry. 2 hrs and 2 labs.

3040 Natural History of the Vertebrates (5) Behavior, life history, phylogeny, and classification. 3 hrs and 3 labs or field periods.

3050 Comparative Vertebrate Embryology (5) Developmental morphology of selected vertebrates. 2 hrs and 3 labs.

3600 Comparative Vertebrate Anatomy (4) Anatomy of organ systems. Dogfish shark and cat used in laboratory. 2 hrs and 2 labs.

3701 Immunology (3) (Same as Microbiology 3071.)

3800 Principles of Animal Physiology (5) Physiology of organ systems of animals including man. Prereq: Biology 3120; coreq: Chemistry 3221. Physics 2210-20-30 recommended. 3 hrs and 1 lab.

3900 Biology and Human Affairs (3) (Same as Botany 3090.)

3110 General Entomology (5) Introduction to insects. Basic structure, development, behavior; classification of insect orders and representative families; interpretation and use of keys. Prereq: Biology 3130, or consent of instructor. 3 hrs and 2 labs.

3150 Invertebrate Zoology (5) Biology of invertebrates (except insects) with emphasis on ecology and behavior. Prereq: Biology 3130. 3 hrs and 2 labs.

3220 Physiology of Reproduction (3) (Same as Animal Science 3220.)

3320 Histology (4) Study of animal tissues. Prereq: Biology 3130. 2 hrs and 2 labs.

3410 Bioethics (3) Relationship between biological discoveries and human values. Open discussion of selected dilemmas arising from new knowledge about medicine, behavior, resources, and technology.

3520 Introduction to Microbiology II: Immunology (2) (Same as Microbiology 3520.)

3920 Hormones and Endocrine Function in the Human (4) Basic course in human endocrinology with emphasis on the practical diagnosis of hormone levels for analysis of glandular function and treatment of endocrine abnormalities. 3 lectures and 1 discussion. Prereq: A course in physiology.

4007-4010-11-12-13-14-15-16-17 Minicourse in Zoology (2, 2, 2, 2, 2, 2, 2, 2) Selected, advanced topics in zoology, concentrated in time and subject material for actual topics offered. Prereq: As posted. May be repeated for credit.

4050 Developmental Biology (4) Experimental morphogenesis, fertilization, cellular interactions, hormonal effects and related topics with examples drawn primarily from invertebrates and vertebrates. Prereq: Biology 3130. 3 labs and 2 hrs.

4110-20-30 Undergraduate Research Participation (2, 2, 2) 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. Approval of departmental permit required. 1-3 hrs per week. Prereq: Biology 3110, 3120, 3130 and senior standing.

4190 Mammalogy (4) Classification, evolution, distribution, reproduction, populations, and behavior. 2 hrs and 2 lab or field periods. (Not open to students with credit for 3190.)

4200 Ichthyology (5) Classification, collection and identification, distribution, life histories, and economic importance of fishes. Prereq: Biology 2130, or consent of instructor. 2 hrs and 2 lab or field periods. (Not open to students with credit for former 3200.)

4210 Cell Physiology (5) Development of modern concepts in cell physiology from point of view of information and control which examines kinetics and integration of cellular activities. Prereq: Cell biology or any physiology, and organic chemistry. Biochemistry recommended. 3 lectures and 1 lab.

4240 Animal Ecology (4) Environmental factors determining distribution and numbers of animals; intra-specific relations; problems and methods. Prereq: Biology 3130. 2 hrs and 2 labs.

4250 Comparative Animal Physiology I (3) Environmental mechanics and their relation to ability of animals to survive in diverse physical environments. Prereq: Biology 3120-30, 2 years of chemistry. 3 hrs.

4259 Comparative Animal Physiology Laboratory I (1 credit) 4250. 1 hr.

4260 Comparative Animal Physiology II (3) Sensory, effector and integrative physiology. Prereq: 4080.

4268 Comparative Animal Physiology Laboratory II (1) Prereq: 4080 and consent of instructor; coreq: 4260.

4270 Advanced Immunology (2) (Same as Microbiology 4270.)

4280 Comparative Endocrinology (5) Comparative analysis of the physiology and morphology of endocrine glands in vertebrates and invertebrates. Their role and interaction in maintenance of the organism and species. Prereq: 3920 or 3920. 3 hrs and 1 (3-credit) lab.

4290 Herpetology (4) Classification, distribution, life histories, collection and identification of amphibians and reptiles, primarily of local species. 2 hrs and 2 lab or field periods. (Not open to students with credit for 3210.)

4300 Ornithology (4) Morphology, physiology, behavior, reproduction, populations, evolution, field identification. 2 hrs and 2 labs or field periods. (Not open to students with credit in 3200.)

4310 Nuclear Cytology (4) Chromosome structure and behavior in mitosis and meiosis. 1 hr lecture and 3 labs. Prereq: Biology 3110.

4320 Microtechnique (4) 3320 recommended. 2 hrs and 2 labs.

4330 General Cytology (4) Study of cellular organization in the light and electron microscope. Basic levels and the functioning of these organelles. Prereq: Biology 3120.

4369 General Genetic Laboratory (2) Mainly Drosofila experiments designed to illustrate basic principles of inheritance. Prereq: Biology 3110. 2 labs.

4380 Organic Evolution (3) Modern concepts of animal evolution. Prereq: Biology 3110.


4410 General Parasitology (4) Morphology, taxonomy, and ecology of parasitic worms and protozoa, with emphasis on host-parasite relationships. 3 hrs and 2 labs. Prereq: Biology 3130 or consent of instructor.

4430 Medical Entomology (4) Distinctive morphological features, distribution, life histories, and control of arthropods that parasitize man or serve as vectors of human pathogens. Prereq: Agricultural Biology 3210 or Biology 3130. (Not open to students with credit for 3430.)


4610-20 Comparative Animal Pathology (2, 2) Abnormal morphological changes and their causes. 4610—Cell and tissue changes. 4620—Organ, organ system, and organism changes. Recommended: 3080, 3200, 3060.

4619-29 Comparative Animal Pathology (2, 2) 4619—Cell and tissue changes. 4629—Organ, organ system, and organism changes. Cor: 4610-20.

4680-70 Limnology (4, 4, 4) Effects of origin, age, location, human activities, and climate and chemical nature. 4670—Lake communities, productivity and pollution. Prereq: Chemistry 1130-30, 3130, Biology 1110-20-30 and Physics 1210-20-30 recommended. 3 hrs and 2 labs (4660); 3 hrs and 1 lab (4670). Must be taken in sequence, except with consent of instructor. Not open to students with credit in 3650 or 4560.

4700 Arachnology (4) Biology of spiders, mites, scorpions, and relatives. Prereq: 3110 or 3150. 2 hrs and 2 labs.

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

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

4810-20-30 Insect Morphology and Taxonomy (4, 4, 4) 4810—Internal morphology of both generalized and specialized forms. 4820—Taxonomy of major orders. 4830—Taxonomy of minor orders and immature forms. Prereq for 4820-30: 3110, or consent of instructor. 2 hrs and 2 labs.

4940 Physiology of Exercise (4) Functions of body in muscular work; physiological aspects of fatigue, learning, and physical fitness. Prereq: 2920-30 or 3080. 3 hrs and 1 lab. (Not open to students with credit for 3940.)
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