For students planning careers in chemistry, the recommended courses (from the list above) are Mathematics 141-142, Physics 131-231, and Chemistry 473-483; although not required, certain additional courses are strongly suggested for students planning to become chemists: Mathematics 241-251 and Chemistry 231-321 and 401. Because professional chemists need a reading knowledge of foreign languages, intermediate level competency should be acquired in German, French or Russian. Students who are undecided about their career goals are advised to consult a chemistry faculty advisor at the earliest opportunity.

Unlike the Bachelor of Science in Chemistry, the regular B.S. degree is not approved by the Committee on Professional Training of the American Chemical Society.

A minor in chemistry shall consist of the successful completion of 15 hours of chemistry courses numbered 200 and above including 310, 319 (4 hours) and at least one of the following sets of courses: 350-360, 369 (8 hours); or 471-481, 479 (8 hours); or 473-483, 479 (8 hours).

Cooperative Program
A cooperative program is available to students who are chemistry majors. After the freshman year, the student alternates a semester in school with a semester in a job in the chemical industry. The program normally requires five years and involves a total of four work semesters and eight school semesters. Students are required to have at least a 2.5 average to enter and remain in the program. Some opportunities are available to enter the program later than the end of the freshman year. Interested students should make application to the head of the department at least one semester in advance of the beginning of the first work period. Further information will be supplied on request.

Placement in General Chemistry Sequences
The sequences which meet all requirements of the general chemistry and which serve as prerequisites for upper-division courses are 120-130, 121-131, and 128-138; chemistry majors are strongly encouraged to take either of the latter sequences. Courses 100 and 110 emphasize the chemical concept and may be used as prerequisite only for 431.

It is possible to move from one sequence to another if permission for substitution is obtained in advance. For example, a student who finds a need to complete the 120-130 series after having completed 100 may substitute 100 for 120 with approval of the Department of Chemistry and may then take 130. Credit may be received for only one of the courses 100, 120, 121, or 128.

In any chemistry course above the freshman level which has Chemistry 130 as a prerequisite, 110 may be used as a prerequisite only if approved by the Department of Chemistry.

Chemistry 128-138 is an honors course designed for the student who has already made considerable progress in science. Class size is 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 128 will complete the year's work by taking 130 or 131.

Beginning students who have had high school chemistry and who have had additional experience (e.g., summer institute study, special research projects, home laboratory) are invited to apply during the summer to the head of the department for permission to take a proficiency examination in one or more areas of general chemistry. If satisfactory grades are obtained, credit will be allowed for the semester (or course) for which the exam was taken. The Department of Chemistry gives credit in general chemistry to students who present satisfactory scores on the Chemistry Advanced Placement Examination.

CHINESE
See Interdisciplinary Programs (Asian Studies).

CLASSICS

Profsessors:
H.C. Rutledge (Head), Ph.D. Ohio State; G.C. Gesell, Ph.D. North Carolina (Chapel Hill).

Associate Professors:
C.P. Craig, Ph.D. North Carolina (Chapel Hill); S.D. Martin, Ph.D. Michigan; J.E. Shelton, Ph.D. Vanderbilt; D.W. Tandy, Ph.D. Yale.

The B.A. major concentration in Greek consists of 27 hours including 21 hours of Greek language courses numbered above 200, and including 3 hours of Classics 422 (capstone); 6 hours chosen from Classics 221-222, 331, 334, 491. The student majoring in Greek is strongly encouraged to have as background History 310 before taking the capstone course. The student concentrating in Greek is encouraged to begin or take advanced work in Latin.

There are two intermediate options in the Greek program, both of which fulfill the Liberal Arts Language requirement and prepare students for advanced work in the third and fourth years. The Classical Option is 261 followed by Upper Division. The New Testament Option in second year Greek is 261-262.

The Greek minor consists of 18 hours including 12 hours of Greek language courses numbered above 200, and 6 hours chosen from Classics 221-222, 331, 334. The student minoring in Greek is encouraged to take Classics 422 (capstone).

The B.A. major concentration in Latin consists of 36 hours including 21 hours of Latin language courses numbered above 200, and including 3 hours of Classics 422 (capstone): 6 hours chosen from Classics 221-222, 331, 334, 491. The student majoring in Latin is strongly encouraged to have as background History 310 or 311 before taking the capstone course. The student concentrating in Latin is encouraged to begin or take advanced work in Greek.

The Latin minor consists of 18 hours including 12 hours of Latin language courses numbered above 200, and 6 hours chosen from Classics 221-222, 331, 334. The student minoring in Latin is encouraged to take Classics 422 (capstone).

Placement Examination. Students who transfer to UT, Knoxville 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 freshman orientation 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 from the Department 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 exams in a sequence may receive credit for it by passing the appropriate proficiency examination.

COMPARATIVE LITERATURE
See Interdisciplinary Programs.

COMPUTER SCIENCE

Professors:
J.H. Poore (Head), Ph.D. Georgia Tech; Jack Dongarra, Ph.D. New Mexico; R.C. Gonzalez (ECCE), Ph.D. Florida; G.R. Sherman, Ph.D. Purdue; M.G. Thomason, Ph.D. Duke.

Associate Professors:
J.D. Case, Ph.D. Illinois; B.W. Char, Ph.D. Berkeley, M.A. Langston, Ph.D. Texas A&M; B.J. MacLennan, Ph.D. Purdue.

Assistant Professors:
J.R.S. Blair, Ph.D. Pittsburgh; D.C. Mutcher, Ph.D. Duke; D.W. Straigh, Ph.D. Texas; M.D. Voisi, Ph.D. Texas; M. Zemankova, Ph.D. Florida State.

Instructor:
J.W. Mayo, M.S. Tennessee.

The undergraduate major in computer science contains five areas of concentration: Computer Systems, Information Systems, Scientific Computing, Theory of Computation, and Machine Intelligence. Some courses are applicable to more than one concentration; consult the Department for details.

100 or 102 and 111, 112 are prerequisite to a major in computer science which consists of 219, 311, four out of 320, 340, 360, 380, Mathematics 371, plus fifteen hours at the 300 and 400 level. All students must take at least 9 of the 15 hours in one of the concentration areas and must also meet the requirements for the concentration as specified by the Undergraduate Committee.

Mathematics 141-142, 221-222, Physics 151-152 and English 456 or 459 are also required. Students must elect a two-semester lab science sequence in either Biology or Chemistry, or a sequence approved by the Computer Science Department.

It is highly recommended that all Computer Science majors own a personal computer with communications capability.

An undergraduate minor in Computer Science consists of 111 and 112 plus fifteen hours of 300 or 400 level courses.

Progression to the Major:
A student may progress to the major or minor program only after completing courses specified by the department. These courses are listed in the Undergraduate Handout available in the department. Students who
have completed the specified courses with a minimum GPA of 3.0 and have an opportunity to the major or minor program must apply to the departmental office. This should be done as soon as the stated requirements are met so that a decision can be reached prior to the registration date for the next semester. Those who are not accepted into the Computer Science degree program will be counseled and advised of educational alternatives.

For undergraduate Computer Science majors who have taken at least three computer science courses at UT, Knoxville, grades in all computer science courses at UT, Knoxville, excluding service courses, will be averaged. If a course is repeated, all grades received for the course will be counted.

A student must have a Computer Science grade point average (as described above) of 2.50 or better in order to be retained in the major. If a student’s Computer Science grade point average drops below 2.50, the student will be given a warning. If after one more semester’s grades have been received, the student’s Computer Science average has not risen to 2.50, the student will be dropped as a major in Computer Science.

A student who desires to be readmitted after being withdrawn as described above must attain an average in Computer Science courses (computed as described above) of at least 2.70.

**ECOLOGY**

**Director:** Dewey L. Bunting

**Basic Faculty:**


**Economics Program Faculty**

The Graduate Program in Economics offers Master of Science and Doctor of Philosophy degrees. This intercollegiate program 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, the National Park Service, and the Tennessee Valley Authority provide advisors and research facilities. The Great Smoky Mountains, Cumberland Plateau, valley and ridge topography, TVA lakes and wild rivers provide locally a spectrum of natural habitats and consequent biological diversity that is truly unique. In addition, faculty research programs provide opportunities for student research elsewhere on this continent and abroad.

**ECONOMICS**

See faculty listing the College of Business Administration.

The program in economics combines a broad liberal education with the rigorous study of current issues of the day such as employment, inflation, poverty, wealth, and the benefits and costs of economic growth.

The department of Economics of the College of Business Administration provide opportunity for a major or minor in economics in the College of Liberal Arts.

**Requirements for a B.A. major in economics consist of:**
1. Economics 201 or equivalent honors courses as a prerequisite to the major and (2) Economics 311 and 313 plus 21 additional hours in upper division economics courses. Majors are encouraged to satisfy Part II of the Natural Science Distribution Requirement with one of the mathematics packages Mathematics 115-121, 121-122, or 141-142. Students planning graduate work in Economics should elect Mathematics 141-142.

**A minor consists of:**
1. Economics 201 and (2) 9 additional hours in economics at the upper-division level.

**ENGLISH**

**Professors:**
- D.M. Sloan (Head), Ph.D. North Carolina; P.G. Adams (Young Professor and Emeritus), Ph.D. Texas; J.M. Armstrong, Ph.D. Duke; E.W. Bratton (Associate Head), Ph.D. Illinois; D.A. Carroll, Ph.D. North Carolina; D.R. Cox, Ph.D. Missouri; K. Curby (Emeritus), Ph.D. Yale; J.O. Drake, Jr., Ph.D. Yale; W. Dykeman (Adjunct), B.A. Northwestern; A.R. Ensor, Ph.D. Indiana; R.J. Finneran (John C. Hodges Professor), Ph.D. North Carolina; J.H. Fisher (John C. Hodges Professor Emeritus), Ph.D. Pennsylvania; N.M. Goslee, Ph. D. Yale; T.J.A. Heffernan, Ph.D. Cambridge; R.M. Kelly (Young Professor), Ph.D. Duke; K.L. Kinckbrocker (Emeritus), Ph.D. Yale; M.A. Lofaro, Ph.D. Maryland; F.D. Miller (Emeritus), Ph.D. Virginia; R.B. Miller, Ph.D. Brown; A.R. Penner, Ph.D. Colorado; J.E. Rease, Ph.D. Kentucky; N.J. Sanders (Young Professor), Ph.D. Shakespeare Institute, Stratford-on-Avon; J.S. Schrader (Distinguished Service Professor, Ph.D. Northwestern; W.R. Shurr (Humanities Professor), Ph.D. North Carolina; B.T. Stewart (Emeritus), Ph.D. Northwestern; J.B. Trahern, Jr., Ph.D. Princeton; R.H. Walker (Emeritus), M.A. Texas; T.V. Wheeler, Ph.D. North Carolina; J.M. White (Young Professor), M.A. Cambridge; N. Wright (Emerita), Ph.D. Yale.

**Associate Professors:**

**Assistant Professors:**

**Instructors:**

**Prerequisites and Corequisites:**
1. English 101 and 102, or the equivalents, are prerequisites to all English courses at the 200, 300, and 400 levels; and (2) as a graduation requirement for a B.A., each English major must complete the equivalent of the second year of a foreign language, maintaining a grade average of C in the courses used to fulfill this requirement (D’s in some of these courses can be counted if the overall average is C or better). If a student earns less than a C average, he or she must repeat courses and/or petition the department for a waiver.
Major Requirements: At least 36 semester hours of course work in the English Department, 30 of which must be at the 300 or 400 level. For all English Majors: (1) English 201-202 (British Literature), 221-222 (Literature of the Western World), or any two of 231-232-233 (American Literature). This requirement should be satisfied, if possible, before the student takes courses at the 300-400 level; and (2) English 371 or 372 (study of the English language).

Concentration in Literature: Nine English courses at the 300-400 level, including: (1) English 376 (Colloquium in Literature), to be taken, if possible, near the beginning of the student’s major program; (2) at least four courses in literature before 1900, including at least two before 1800 (see departmental brochure, Undergraduate Study in English, for a course list); and (3) four other courses, at least one of which is based on an approach to literature other than literary history (see departmental brochure, Undergraduate Study in English, for a course list).

Concentration in Writing: Nine English courses at the 300-400 level, including: (1) a two-course sequence in expository, technical, or creative writing; (2) three other courses in writing; and (3) four other courses, at least three of which must be literature courses selected in consultation with the advisor.

Individualized Program: The Director of Undergraduate Studies is empowered to approve individualized programs developed by students in consultation with their advisors. These programs should be designed to achieve academically sound objectives that are not addressed by the above requirements.

Honors: For students who qualify, the English Department offers specially designed coursework in upper division courses, junior and senior levels. The freshman and sophomore honors courses are enriched versions of regular sections in composition, in introduction to the various genres, and in American, British, and world literatures. To be given "Honors" in English on the transcript, a student must have achieved a 3.0 or better GPA, a 3.5 or better grade point in English scores, and grades of A or B in English 399, 499, 486, and 488. An English minor consists of at least 15 semester hours of English courses at the 300-400 level.

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

Graduate Study: Students wishing to enter a graduate program in English should address inquiries to the Dean of the Graduate School. To be accepted for graduate study in English, the student should in general have had at least eighteen semester hours in English courses above the freshman and sophomore level with a better than B average and a B average in all other undergraduate courses. Students who lack eighteen semester hours of undergraduate English may be required to take and pass with a grade of B or better a designated number of undergraduate courses at The University of Tennessee before being admitted to graduate study. Admission is also dependent on satisfactory GRE scores. Consult the Graduate Catalog for specific requirements.
should consult the department before registering for the foreign study courses.

B.A. Major in German: Majors or minors in German should carefully prepare their programs in consultation with a departmental faculty advisor. German 201-202 or the equivalent is a prerequisite to the major. The major shall consist of at least 24 hours of German in courses numbered above 300, including German 363 and usually including German 301-302. Courses in English translation or German 292 do not count toward the major. In order to graduate, majors will be required to take a proficiency test in German. It is recommended that German majors also take History 151-152 or 334-335 and 6 hours of 200 level English courses. Majors are also strongly urged to consider a minor in some other area of the humanities.

Minor in German: German 201-202 or its equivalent is a prerequisite to the minor. The minor in German consists of at least 18 hours of German courses numbered above 300, which normally include German 301-302 and 12 additional hours of courses numbered above 300 (excluding 331-332 and courses in English translation). Students interested in a minor in a language should consult the departmental office, 701 McClung Tower, or the program office, 601 McClung Tower.

Major in German with a Concentration in Language and World Business: Students who wish to prepare for careers in international business may complete (a) a special major in German, (b) a professional emphasis in either International Business or International Logistics and Transportation, and (c) some form of practical experience related to the concentration. Admission is with the permission of the program advisor. For more information contact the departmental office, 701 McClung Tower, or the program office, 601 McClung Tower.

(a) Language Major: The German major with a concentration in Language and World Business consists of 28 hours. The following are required: German 199, 301-302, 311-312, 363, 485, 3 hours from either 491 or 493, and at least two courses chosen from among German 321, 322, 326, 420-424, 425, or 435-36. 411-12 is strongly recommended.

(b) Professional Emphasis:

(1) International Business students will take 25 hours. The following are required: Accounting 201 or 207, and 321; Business Administration 311 and 495, Management 471, Logistics and Transportation 441, and an elective from a related business area chosen in consultation with an advisor.

(2) International Logistics and Transportation students will take 25 hours. The courses required are: Accounting 201, Economics 201 or 207, Business Administration 311 and 495, Management 471, and Logistics and Transportation 302 and 303.

(c) Practical Experience: Through German 491 or 493 each LWB student must undertake study abroad, an internship, or a relevant research project for a minimum of 3 hours (included in the requirements for a concentration in Language and World Business).

Additionally, LWB students must consult an advisor in the Department of Germanic and Slavic Languages for help in selecting relevant courses under the Basic Skills and Distribution requirements of the College.

B.A. Major in Russian: Russian 201-202 is a prerequisite to the major. Russian majors should prepare their programs in consultation with the departmental faculty advisor. The major in Russian shall consist of at least 30 hours of Russian courses, including Russian 301-302, 311-312, 401-402, 451-452; and 6 hours from Russian 221, 222, 226, 321, 322, 326, 371, 372, or other courses numbered above 400. It is recommended that majors also take Russian History 340-341 and 6 hours of sophomores' English. Majors are urged to consider a minor in some other area of the humanities.

Minor in Russian: Russian 201-202 is a prerequisite to the minor. The minor in Russian shall consist of at least 18 hours of Russian courses, including Russian 301-302, 311-312; and 6 hours from Russian 221-222 or other Russian courses numbered above 300.

GREEK
See Classics.

HEBREW
See Religious Studies.

HISTORY

Professors:
P.H. Bergeron, Ph.D. Vanderbilt; E.V. Chmielewski, Ph.D. Harvard; J.C. Cobb (Bardendite Schmidt Professor); Ph.D. Georgia; J.R. Finger, Ph.D. Washington; L.P. Graf (Benwood Distinguished Service Professor and Emeritus); Ph.D. Harvard; Y.P. Hao (Lindsay Young Professor); Ph.D. Harvard; A.G. Haas, Ph.D. Chicago; R.W. Haskins (Emeritus); Ph.D. California (Berkley); C.O. Jackson (Associate Dean, Liberal Arts College); Ph.D. Emory; M.M. Klein (Alumni Distinguished Service Professor, Lindsay Young Professor and Emeritus), Ph.D. Columbia; M.J. McDonald, Ph.D. Pennsylvania; L.A. Rolter (Dean, Liberal Arts); Ph.D. Cornell; W.B. Wheeler, Ph.D. Virginia.

Associate Professors:

Assistant Professors:
P.H. Brummett, Ph.D. Chicago; T.A. Dicon, Ph.D. Wisconsin; W.W. Farrier, S.H. Harvard; P.R. Gavitt, Ph.D. Michigan; C.L. Lansing, Ph.D. Michigan; B.L. Plummer, Ph.D. Maryland; C.D. Matson, Ph.D. Columbia.

The department's program is designed to provide students with a knowledge of their cultural traditions and of and of their world, past and present, and thus to prepare them for the responsibilities of citizenship in today's complex society. Students take history courses to develop their skills in thinking, reading, writing and speaking; to understand the links between past, present and future; and to assist them in their search for personal identity.

B.A. Major: Majors in history should prepare their programs in consultation with a department faculty advisor. History 151-152 (or their honors equivalents) or 161-162 are prerequisites to a major which consists of 27 hours, including: (1) 6 hours of History 251-252 (or their honors equivalents), and (2) 21 upper-division hours. The distribution of the upper-division courses shall be in such a way that they include at least one course dealing predominantly with a period prior to 1750 and at least one course from each of the following areas: (a) Europe-Latin America, (b) United States, and (c) Asia-Africa.

Minor: History 151-152 (or honors equivalents) are prerequisites to a minor which consists of 15 hours of courses numbered 200 or above, including at least: (1) 6 hours in United States history; and (2) 9 upper-division hours.

History for Non-Majors: The department welcomes non-majors in its courses. Few history courses have formal prerequisites.

HONORS PROGRAM: The Department of History offers honors sections of the Western Civilization and United States history survey course. Some entering freshmen are invited to participate; other interested students may apply. These survey courses are open to nonmajors. An honors major requires successful completion of two special courses at the junior-senior level (307-308 or 407-408). The honors major consists of 33 hours, including 27 hours as outlined above, plus 307-308. All rising Juniors who are declared history majors with an overall GPA of at least 3.0 are invited to join the Junior-Senior Honors Program. Students interested in honors work should consult the department's honors coordinator.

INTERDISCIPLINARY PROGRAMS

Director:
Jack Armstead (College of Liberal Arts)

In keeping with the philosophy that integration of knowledge is as important as proficiency in a given field, the College of Liberal Arts has combined the resources of several departments to offer a series of interdisciplinary minors and majors. These programs are as follows: American Studies, Ancient Mediterranean Civilizations, Asian Studies, Cinema Studies, Comparative Literature, Latin American Studies, Linguistics, Medieval Studies, Russian Studies, Urban Studies, Urban Studies, Women's Studies. See individual program descriptions below for the major and/or minor requirements.

AFRO-AMERICAN STUDIES

Director:
Dr. Cynthia G. Fleming (History and Afro-American Studies)

Assistant Professor:
Dr. Margaret P. Hartseil

The Afro-American Studies Program offers both a major concentration and a minor in Afro-American Studies. AAS courses are offered not only by the program itself but also by numerous departments within the College of Liberal Arts and some other colleges as well. This diversified sponsorship of AAS courses
enables the University to offer a particularly varied range of courses in the field of Afro-American Studies.

Major concentration: Afro-American Studies 201-202 are required in the concentration which consists of 24 hours from the Afro-American Studies curriculum. At least 15 hours must represent upper division credits. Majors are required to take AAS 431, preferably in their senior year. A maximum of 6 hours in AAS 492 and 493 combined may be applied toward the AAS major. In planning their program majors must include courses from at least 2 other departments which crosslist courses with Afro-American Studies in addition to the AAS core offering.

Minor: Afro-American Studies 201-202 are required in the minor which consists of 15 hours at least 9 of which must be upper division credits. A maximum of 3 hours in AAS 492 and 493 combined can be applied to a minor. In planning their programs minors must include courses from at least 2 other departments which crosslist courses with Afro-American Studies in addition to the AAS core offerings.

AMERICAN STUDIES

Chair: Dr. George B. Hutchinson (English)

Major concentration: English 231 and either 232 or 233 are prerequisite to a major concentration in American Studies which consists of 27 upper-division semester hours including American Studies 310 and 440; at least one approved American History course beyond History 440; and six hours of approved courses chosen from the following disciplines: anthropology, economics, political science, or sociology. Additional courses in the major will be chosen in consultation with an American Studies advisor, from a list approved by the program, in such a way that at least 3 courses (9 semester hours) help the student achieve a focus within the field. At least one course in the student's curriculum must specifically focus upon one or more American ethnic minority cultures. An additional 3-6 hours of American Studies 493 (Independent Study) are recommended for majors in their senior year. A list of approved elective courses is published annually.

All majors and prospective majors should contact the Chair of the program.

ANCIENT MEDITERRANEAN CIVILIZATIONS

Chair: Dr. David W. Tandy (Classics)

Co-chair: Dr. W.L. Humphreys (Religious Studies)

The major concentration in Ancient Mediterranean Civilizations consists of Classics 381 and 382, History 366, and 18 additional hours from the following list, distributed in such a way that no more than 12 hours are in any one of the three divisions: (a) Ancient Near Eastern Cultures: Religious Studies 311, 312, 326; (b) Greek Culture: Classics 221, 222, 232, 233, 235, 331, 334, 383; History 310; Philoso-

phy 120, 320; Political Science 475; Religious Studies 321, 322, 326; and (c) Roman Culture: Classics 222, 233, 254, 383, 462; History 311; Philosophy 120, 320; Political Science 475; Religious Studies 321, 322, 326, 416.

A minor in Ancient Mediterranean Civilizations consists of 18 hours, including at least two of the three core courses (Classics 381, 382; History 366). No more than nine of the remaining hours can come from one division. Courses of variable content, topics courses, reading and research, off-campus, or foreign study in the Departments of Art, Classics, History, Philosophy, or Religious Studies can be applied to the three divisions as approved. Students are encouraged to satisfy the foreign language requirement with Greek, Latin, or Classical Hebrew.

ASIAN STUDIES

Chair: Dr. Walter C. Neale (Economics)

The Asian Studies major concentration consists of 26 credit hours from the upper-division courses of Asian Studies and approved departmental offerings. Twelve of the hours must be taken from courses listed within one of the four geographical-cultural areas (Islamic World; South Asia; China; Japan), and of those 12 hours must come from Subdivision A or Subdivision B. Subdivision A includes Art, Literature, Music, Philosophy, and Religious Studies; Subdivision B includes Anthropology, Economics, Geography, History, Political Science, and Sociology.

Six of the 26 hours must be taken from courses listed for other geographical-cultural areas.

Prerequisite to the concentration is Asian Studies 101-102. Corequisites to the major concentration is competence in a major Asian language of the chosen geographical-cultural area. Competence is defined as the successful completion of the 200-level sequence of that language, or by demonstration of equivalent mastery.

The Asian Studies minor consists of Asian Studies 101-102 and 15 credit hours at the 200 level and above. Twelve credit hours must be taken from courses within one of the four geographical-cultural areas. Six credit hours must come from Subdivision A and 6 from Subdivision B. Three hours must be taken from courses in another geographical-cultural area.

CINEMA STUDIES

Chair: Dr. Charles Maland (English)

The Cinema Studies minor consists of fifteen hours, including English 281 Introduction to the Film Studies Program and Art 292 Film Design. It is strongly recommended that Introduction to Film Studies and Film Design be taken before selection of electives provided for in the minor.

For further information consult the chairperson of the Cinema Studies Program, Charles Maland, English Department. Other related courses in such departments as history, philosophy, and speech communication may be approved through consultation with Dr. Maland.

LATIN-AMERICAN STUDIES

Approved Area Courses are: Art 292 Film Design (3); Art 392 Intermediate and Advanced Film Design (3-6); Broadcasting 275 Introduction to Broadcasting (3); Broadcasting 430 Producing for Television (3); English 281 Introduction to Film Studies (3); English 334 Film and American Culture (3); English 489 Special Topics in Film (3); French 420 French Cinema (3); German 323 German Film (3); Political Science 312 Popular Culture and American Politics (3).

COMPARATIVE LITERATURE

Chair: Dr. H.C. Rutledge (Classics)

A major concentration in comparative literature consists of 27 hours including Comparative Literature 201 and 401-402, and 9 hours of literature in a foreign language in courses numbered 300. The remaining 9 hours should include literature courses, either in English or in a foreign language, numbered 300 or above, from at least two of the following departments: Classics, English, Germanic and Slavic Languages, Religious Studies, Romance Languages, and Slavic Languages. Certain courses in Philosophy and Speech Communication may be substituted with the approval of the chairperson of the Comparative Literature Program. Students concentrating in comparative literature are strongly encouraged to acquire a working knowledge of a second foreign language, especially if they hope to pursue comparative literature on the graduate level.

A minor in comparative literature consists of 18 hours including Comparative Literature 201 and either Comparative Literature 401 or 402, 6 hours of literature in a foreign language in courses numbered 300 and above, and 6 hours of literature courses numbered 300 and above in a different department. These 6 hours may be either in English or in a foreign language and should be chosen from the following departments: Classics, English, Germanic and Slavic Languages, Religious Studies, and Romance Languages. Certain Philosophy and Theatre courses may be substituted with the approval of the chairperson of the Comparative Literature Program. Minors in comparative literature are strongly encouraged to continue study of a foreign language beyond the minimum requirement.

LATIN-AMERICAN STUDIES

Chair: Dr. Michael H. Handelsman (Spanish)

The major concentration consists of 27 hours including Latin American Studies 401 and 402, three hours of either History 360 or 361, three hours of an approved Spanish or Portuguese literature/culture course at either the 300 or 400 level, and fifteen additional hours selected from courses offered by three different participating departments. Majors are strongly urged to take as a prerequisite Latin American Studies 251-252.

The minor consists of 18 hours including Latin American Studies 251-252, three hours of an approved Spanish or Portuguese literature culture course at either the 300 or 400 level,
and nine additional hours selected from courses offered by three different participating departments.

A practical working knowledge of Spanish or Portuguese acquired independently is a prerequisite for majors and minors. All students are strongly encouraged to earn credit hours through UT, Knoxville's Latin American Studies Abroad Program at the Federal University of Ceara in Fortaleza, Brazil. Other foreign study programs are also available for Brazil and Spanish-speaking Latin America.

For further information, consult with Dr. Michael Handelsman (501 McClung Tower), Chairperson of the Latin American Studies Program.

LINGUISTICS

Chair:
Dr. Bethany K. Dumas (English)
Dr. Henry Kratz (German)

This major concentration offers a broad exposure to the various fields of linguistics (including historical, descriptive, theoretical and applied linguistics) along with an opportunity to study areas where linguistics overlaps with other disciplines such as psycholinguistics, sociolinguistics, and speech pathology. The program of study 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. The program of study provides the additional possibility of emphasizing the teaching of English as a second language for the student interested in language-related deployment at the B.A. level.

Students should consult program advisors early in planning a Linguistics major or minor. Linguistics 200 is highly recommended.

Audiology and Speech Pathology 305 should be taken as soon as possible. Other 300-level courses should, if possible, be completed before 400-level courses are begun.

Corequisites: (a) Students must complete a third year of foreign language study (literature) which satisfies the Foreign Studies requirement of the B.A. level.

(b) A two-semester sequence of non-Indo-European language to be selected from the following: Asian Studies 121-122 (Arabic); Classics 131-132 (5,5) (Chinese); Asian Studies 141-142 (4,4) (Hebrew); Asian Studies 151-152 (5,5) (Japanese); Religious Studies 309-310 (3,3) (Hebrew); other non-Indo-European language sequences approved by the Linguistics Committee (required).

The concentration shall consist of 30 hours distributed as follows: (a) 24 hours composed of Audiology and Speech Pathology 305 (3); English 371, 372, and 471 (3,3,3); French, German, Russian or Spanish 425-426 (3,3); and Linguistics 420-430 (3,3); and (b) 6 hours of the following, selected in consultation with the Linguistics Committee: 411 (3); Audiology and Speech Pathology 320, 465, 579, (3,3,3); Educational Curriculum and Instruction 457 (3); Special Education and Rehabilitation 522 (3), 532-533 (3,3); English 371, 372, 472, 475, 485, 508-509, 580 (3 hours each); French 421, 422, 521-522 (3 hours each); German 435-436 (3,3), 571-572 (3,3); Linguistics 400 (3); Philosophy 477 (3); Psycholinguistics 450, 482, 543, (3 hours each); Spanish 421, 422, 531-532 (2,3,3,3).

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

A minor in Linguistics shall consist of 18 credit hours composed of (1) either English 471 (3) or 3 hours from section (b) of the minor, selected in consultation with the Linguistics Committee; and (2) 15 hours as follows: Audiology and Speech Pathology 305 (3); English 371 (3) or 372 (3); French, German, Russian or Spanish 425 (3) or 426 (3); and Linguistics 420-430 (3,3).

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

MEDIEVAL STUDIES

Chair:
Dr. Paul Barrette (French)

A major concentration in Medieval Studies consists of Medieval Studies 201 and 403 and 21 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 theatre. Courses should either form a related pattern (for example, courses in the literature and history of Medieval England or Italy), or should revolve around a particular discipline or two closely related disciplines (for example, courses in the history of art and architecture)

A concentration in Medieval Studies focuses upon culture and society from the collapse of the Roman Empire to the 16th century. Such a concentration offers the opportunity to deepen one's self-awareness and broaden one's view of the range of human possibilities by studying a very different and remote culture: its conditions of life, social and political institutions, values and ideals, and modes of perception and expression. Latin is the most appropriate language for students in the Medieval Studies concentration and is essential for those who plan to continue their studies in graduate school. In addition, students planning to go on to graduate schools are strongly advised to supplement their Medieval Studies concentration with extensive work in one or more traditional disciplines.

A minor in Medieval Studies consists of Medieval Studies 201 and 403 and 12 additional hours distributed among the categories listed above for the major. Each student's program, major or minor, must be approved in advance by the Medieval Studies Coordinating Committee, chairperson Dr. Paul Barrette.

Category #1—History, Philosophy, and Political Science: History 312 Medieval History: 300-1100 (3); History 313 Medieval History: 1100-1400 (3); History 330 History of England to 1688 (3); History 334 History of Germany to 1815 (3); History 369 History of the Middle East (3); History 474 Studies in Medieval and Early European History (3); Philosophy 322 Medieval Philosophy (3); and Political Science 475 Ancient and Medieval Political Thought (3).

Category #2—Language and Literature: Classics 435 Medieval Latin (3); English 371 Foundations of the English Language (3); English 401 Medieval Literature (3); English 402 Chaucer (3); French 410 Medieval French Literature (3); Italian 401 Dante and Medieval Culture (3); and Italian 402 Petrarch and Boccaccio (3).

Category #3—The Arts: Architecture 415 Seminar in Medieval Architecture (3); Art 371 Early Christian and Byzantine Art to 1350 (3); Art 372 Northern European Painting, 1350-1600 (3); Art 381 Medieval Art of the West, 800-1450 (3); Art 382 The Art of Italy, 1250-1400 (3), and Music History 210 History of the Music to 1750 (3).

RUSSIAN AND EAST EUROPEAN STUDIES

Chair:
Dr. William Fiernan (Political Science)

The major concentration consists of 30 hours from the following: Geography 375, six hours from History 340-341, Philosophy 393; Political Science 459 and four additional hours from Political Science 469, 574; Russian 311-312; Russian and East European Studies 410; and additional hours in courses numbered 301 and above offered by the Russian section of the Department of Germanic and Slavic Languages. Recommended prerequisites to the major concentration are the completion of Russian 201-202 and Russian Culture 371-372.

URBAN STUDIES

Chair:
James A. Spencer (Graduate School of Planning)

Urban Studies is a valuable major concentration for students who plan to work in such areas as housing, real estate, development, neighborhood organization, and environmental design.

A major concentration in Urban Studies consists of a minimum of 30 semester hours, including Urban Studies 250, 350, 450, 460, and at least 15 additional semester hours from the Urban Studies curriculum.

A minor consists of 18 semester hours, including Urban Studies 250 and 350 plus additional semester hours from the Urban Studies curriculum. Curricular planning should be done with an advisor in Urban Studies. For more information, contact the chairperson of the Urban Studies Committee.

Approved courses in other departments: Geography 365 Geography of Appalachia; Rural Sociology 380 Rural Sociology; Sociology 363 The City, 465 Urbanization; and Transportation 302 Transportation Principles and Policies.

WOMEN'S STUDIES

Chair:
Dr. Martha L. Osborne (Philosophy)

Women's Studies encourages inquiry into the full range of the human experience by raising new questions and opening new areas of research concerning women. The discipline enriches the traditional liberal arts curriculum
by adding new perspectives on women's lives and accomplishments. Women's Studies can broaden the education of both male and female students by helping them to understand the limitations placed on both sexes by narrowly defined sex roles. Wherever there is a need to broaden the education of both male and female students, Women's Studies can enhance a student's career by adding new perspectives on women's lives and accomplishments. Women's Studies may also be applied toward a major or minor. Courses in these areas are offered to students with credit for more than 12 hours in Women's Studies within an Interdisciplinary Program major or minor.

The major concentration in Women's Studies consists of 30 semester hours including one of the Images of Women in Literature courses (either 210 or 215), Women in Society (220), Emergence of the Modern American Woman (310), at least three hours of Independent Study (493), and at least one course from each of the three major areas: Women's Heritage (324, 360, 383, 432, 453, 466, 489), Comparative Issues courses (375, 382, 410, 425, 434), and Literature and the Arts (330, 332, 422). As its content varies, 400 may be included in any of these areas. Students are encouraged to take at least nine hours in one of these areas.

The Women's Studies minor consists of one of the Images of Women in Literature courses (either 210 or 215), Women in Society (220), and an additional 12 hours of upper-division Women's Studies courses. Approved special topics courses related to Women's Studies may also be applied toward a major or a minor.

ITALIAN

See Romance Languages.

JAPANESE

See Interdisciplinary Programs (Asian Studies).

LATIN

See Classics.

LATIN AMERICAN STUDIES

See Interdisciplinary Programs.

LINGUISTICS

See Interdisciplinary Programs.

MATHEMATICS

Professors: G.S. Gordon (Acting Head), Ph.D. Wisconsin; G.E. Albert (Emeritus), Ph.D. Wisconsin; D.F. Anderson, Ph.D. Chicago; G.A. Baker, Ph.D. Cornell; J.S. Bradley, Ph.D. Iowa; J.H. Carruth, Ph.D. Louisiana State; C.E. Clark, Ph.D. Louisiana State; R.J. Daverman, Ph.D. Wisconsin; D.J. Dessart, Ph.D. Maryland; B.E. Dobbs, Ph.D. Cornell; E.D. Eaves (Emeritus), Ph.D. Texas; H. Frandsen, Ph.D. Illinois; T.G. Hallam, Ph.D. Missouri; D.B. Hinton, Ph.D. Tennessee; A.S. Householder (Emeritus), Ph.D. Chicago; L.S. Husch, Ph.D. Florida State; K. Johansson, Ph.D. Bielefeld, West Germany; G.S. Jordan, Ph.D. Wisconsin; B.A. Kupershmidt (Space Institute, Tullahoma), Ph.D. Massachusetts Institute Technology; H.T. Mathews, Ph.D. Tulane; R.M. McConiel, Ph.D. Duke; D.D. Miller (Emeritus), Ph.D. Michigan; B.S. Rajput, Ph.D. Illinois; K.C. Reddy (Space Institute, Tullahoma), Ph.D. Indian Institute of Technology; P.W. Schaefer, Ph.D. Maryland; S.M. Serbin, Ph.D. Cornell; K. Soni, Ph.D. Oregon State; F.W. Stallmann (Emeritus), Ph.D. Giesian (Germany); K.R. Stephenson, Ph.D. Wisconsin; E. Wachspress, Ph.D. Rensselaer Polytechnic Institute; W.R. Wade, Ph.D. California (Riverside); C.G. Wagner, Ph.D. Duke; S. Richter, Ph.D. Michigan.

Associate Professors: V. Alexiades, Ph.D. Delaware; N. Alilkakos, Ph.D. Brown; J. Dydk, Ph.D. Warsaw (Poland); I. Fertil, Ph.D. Cornell; O. Karakashian, Ph.D. Harvard; K. R. Kimble (Space Institute, Tullahoma), Ph.D. Ohio State; Y. Kuo, Ph.D. Cincinnati; S. Lenhart, Ph.D. Kentucky; J. Rosinski, Ph.D. Wroclaw University; H. H. Row, Jr., Ph.D. Wisconsin, H. Simpson, Ph.D. California Institute of Technology; J. Smith, Ph.D. California (Berkeley); B.K. Soni (Space Institute, Tullahoma), Ph.D. Texas; P.P. Soni, Ph.D. Oregon State; C. Sundberg, Ph.D. Wisconsin; M. Thistethwaite, Ph.D. Univ. Manchester (England).


Instructor: C.G. Doss, M.A. Tennessee.

B.S. Major: Mathematics 141-142 (or the Honors version, 147-148) is prerequisite to a minor in Mathematics. Majors must also have computer programming skills sufficient to take 371; students without other computing experience should take Computer Science 100, 101, or 102. The courses required for the major are: 221 Discrete Mathematics I (3); 231 Differential Equations I (3); 241 calculus III; or 247 Honors: Calculus III (4); 251 Matrix Algebra I; or 257 Honors: Matrix Algebra I (3); 323 Probability I (3); 341 Analysis I (3); 351 Algebra I (3); 371 Numerical Algorithms I (3); and nine additional hours selected from Mathematics 496 and Mathematics courses numbered 421 through 472.

Honors B.S. Major: Candidates for an honors degree in Mathematics must fulfill all of the requirements for the B.S. degree in Mathematics, but 12 hours (beyond Calculus III) of Mathematics 496 and Mathematics courses numbered 421 through 472. The grade point average computed on the 24 hours of Mathematics courses consisting of 323, 341, 351, and 371, and nine additional hours selected from Mathematics 496 and Mathematics courses numbered 421 through 472, will determine the honors category: GPA at least 3.4 - Honors; GPA at least 3.6 - High Honors; GPA at least 3.8 - Highest Honors.

Students with credit for more than 12 hours in Mathematics 496 and Mathematics courses numbered 421 through 472 may designate the 12 hours to be included in the above average.

Minor: Mathematics 141-142 (or 147-148) is prerequisite to a minor in Mathematics. A minor in Mathematics consists of (1) 241 and 251; (2) 221 or 231; and (3) nine additional hours in Mathematics courses numbered 300 or higher. The grade in each of the above courses must be at least C.

MEDIEVAL STUDIES

See Cultural Studies.

MEDICAL BIOLOGY/ MEMORIAL RESEARCH CENTER

The Department of Medical Biology of The University of Tennessee College of Medicine-Knoxville Unit was formed from the faculty of the University Memorial Research Center and Hospital in 1978. The Research Center was established in 1956. The faculty has research, education, and service interests in cancer, blood diseases, metabolism, neuroscience, birth defects, cytogenetics, and clinical genetics. Courses in these areas are offered to students at the graduate and undergraduate levels. Elective courses are also available to students in the College of Medicine. The faculty with the College of Veterinary Medicine participates in the graduate program leading to M.S. and Ph.D. degrees in Comparative and Experimental Medicine. Other advanced degree students can do thesis research in the department by arrangement with other life science departments at the University.

MICROBIOLOGY

Professors: Dwayne C. Savage (Head), Ph.D. California (Berkeley); A. Brown (Emeritus), Ph.D. Chicago; R.W. Beck, Ph.D. Wisconsin; J.M. Becker, Ph.D. Cincinnati; D.A. Bili, Ph.D. D.V.M. Michigan State; T.C. Montie, Ph.D. Michigan; W.S. Riggsby, Ph.D. Yale; B.T. Rouse; Ph.D. Guelph (Canada); B.V.Sc., Bristol (England); G.S. Sayler, Ph.D. Idaho; D.C. White (Distinguished Scientist), M.D. Tufts, Ph.D. Rockefeller; J.M. Woodward (Emeritus), Ph.D. Kansas; C.J. Wust, Ph.D. Indiana.

Associate Professor: D. Bennis, Ph.D. Cornell; R.N. Moore, Ph.D. Texas (Austin); G. Stacey, Ph.D. Texas (Austin).

Assistant Professors: Robert J. Villafane, Ph.D. New York; J.P. Weir, Ph.D. Vanderbilt.

B.S. Major: Prerequisites are Biology 150 or 110-120, Chemistry 120-130, and Mathematics 151-152 or 141-142. The major consists of Biology 210-220, Chemistry 350-360,369.
Biochemistry 410, Microbiology 310, 319, 410, 429, 430, 439 and 8 additional hours of 400-level Microbiology courses, of which at least 1 hour must be a laboratory course.

**MEDICAL TECHNOLOGY**

Courses in this major are open only to qualified students who have completed the first three years of the Science-Medical Technology Curriculum, described in the College of Liberal Arts curricula section of this catalog, and who have been approved by the Medical Technology Admissions Committee.

**MUSIC**

**Professors:**

**Associate Professors:**

**Assistant Professors:**

**Bachelor of Music Degree:** The Department of Music offers curricula leading to the Bachelor of Music degree for those students who have a strong interest in music, but desire a Bachelor of Arts degree with a major and minor in Music. Bachelor of Arts degree candidates are required to complete a comprehensive liberal studies program.

**Bachelor of Arts Major in Music**

Bachelor of Arts (a) Concentration in Applied Music - consists of 17 hours in courses numbered 200 and above, distributed as follows: Music History 200, 8 hours in applied music, and 6 hours in music electives. Prerequisites are Music General 100 or equivalent, and two semesters of applied music study (Music Performance) at the 103-190 levels. (b) Concentration in Music History and Literature - consists of 17 hours in courses numbered 200 and above, distributed as follows: Music History 200, 9 hours in Music History and Literature courses, and 5 hours in music electives. Prerequisites are Music General 100 or equivalent and two semesters of applied music study at the 103-190 levels.

**B.M. Curriculum in Sacred Music (Organ or Piano)**

- **Music General 100**
- **Music Performance 110**
- **Music Performance 210**
- **Music Theory 110**
- **Music Theory 210**
- **Music Theory 310**
- **Music Theory 410**
- **Music Theory 510**
- **Music Theory 610**

- **Applied Music Fees:** $45 per semester for 1-hour lesson (1 credit hour) $90 per semester for 2-hour lesson (2 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 and spring semesters and the first day of the summer terms in order to be accepted for applied music study.**

**Applied music fees are not refundable after the second day of classes of the fall and spring semesters.**

**Bachelor of Arts Degree:** The Department of Music offers curricula leading to the Bachelor of Arts degree with a major and minor in Music, designed for those students who have a strong interest in music, but desire a comprehensive liberal studies program.

**Music Minor**

(a) Concentration in Applied Music - consists of 17 hours in courses numbered 200 and above, distributed as follows: Music History 200, 8 hours in applied music, and 6 hours in music electives. Prerequisites are Music General 100 or equivalent, and two semesters of applied music study (Music Performance) at the 103-190 levels. (b) Concentration in Music History and Literature - consists of 17 hours in courses numbered 200 and above, distributed as follows: Music History 200, 9 hours in Music History and Literature courses, and 5 hours in music electives. Prerequisites are Music General 100 or equivalent and two semesters of applied music study at the 103-190 levels.

**Hours Credit**

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### B.M. Curriculum in Sacred Music (Voice)

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### B.M. Curriculum in Sacred Music (Voice)

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### B.M. Curriculum in Sacred Music (Voice)

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### B.M. Curriculum in Music History and Literature

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**Total: 128 hours**

1. Humanities-Arts (Non-music), Literature, Philosophical Perspectives or Interdisciplinary Studies.

2. Foreign Language (Non-music), Literature, Philosophical Perspectives, Interdisciplinary Studies.

### B.M. Curriculum in Music Theory

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**Total: 129 hours**

1. Humanities-Arts (Non-music), Literature, Philosophical Perspectives or Interdisciplinary Studies.

### B.M. Curriculum in Organ

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**Total: 131 hours**

1. Humanities-Arts (Non-music), Literature, Philosophical Perspectives, Interdisciplinary Studies.

### B.M. Curriculum in Piano

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**Total: 130 hours**

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**B.M. Curriculum in Piano Pedagogy and Literature**

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Total: 126 hours

1. Humanities-Arts (non-music), Literature, Philosophical Perspectives, Interdisciplinary Studies.

**B.M. Curriculum in Strings**

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Total: 130 hours

1. Must take 1 year of 2 languages chosen from French, German or Italian.

**B.M. Curriculum in Woodwind, Brass and Percussion Instruments**

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Total: 124-128 hours

1. Humanities-Arts (non-music), Literature, Philosophical Perspectives, Interdisciplinary Studies.

**Organizational Psychology Program**

See Graduate School.
PHILOSOPHY

Professors: G.G. Brequent (Head), Ph.D. Michigan; R.E. Aguila, Ph.D. Northwestern; L.B. Cepek, Ph.D. Nebraska; J.W. Davis, Ph.D. Emory; R.B. Edwards, P.D. Emory; G.C. Graber, Ph.D. Michigan; B.C. Postow, Ph.D. Yale; D. Von de Vate, Ph.D. Yale.


Assistant Professors: H.P. Hamlin, Ph.D. Georgia.

Major Prerequisite: Three hours of logic, normally 130 or 135. Requirements: 24 hours of courses numbered 200 or above, including three hours of ethics, normally 240 or 440, and six hours in the history of philosophy, three in ancient, normally 320, and three in modern, normally 324. Majors are required to discuss their programs with a member of the Philosophy faculty.

Minor: 18 hours in courses 200 or above. Minors should discuss their program with a member of the Philosophy faculty.

PHYSICS AND ASTRONOMY

Professors: W.M. Bugg (Head), Ph.D. Tennessee; C.R. Bingham, Ph.D. Tennessee; W.E. Blass, Ph.D. Michigan State; M.A. Brazeale (on leave), Ph.D. Michigan State; J. Burgdorfer, Ph.D. Freie Universitat Berlin; T.A. Callcott, Ph.D. Purdue; R.W. Childers, Ph.D. Vanderbilt; L.G. Christophorou, Ph.D. Manchester (England); F.E. Close (Distinguished Scientist, Science Alliance Center of Excellence, On leave), Ph.D. Oxford (England); G.T. Condor, Ph.D. Illinois; W.E. Weeds (Emeritus), Ph.D. Ohio State; K.E. Duckett, Ph.D. Tennessee; K. Fox, Ph.D. Michigan; N.M. Galler (Emeritus), Ph.D. Ohio State; S. Geachman, Ph.D. Manchester (England); M.W. Guidry, Ph.D. Tennessee; E.G. Harris (Alumni Distinguished Service Professor), Ph.D. Tennessee; E.L. Hart, Ph.D. Cornell; H.C. Jacobson, Ph.D. Yale; D.T. King (Emeritus), Ph.D. Bristol (England); R.J. Lovell, Ph.D. Vanderbilt; G.D. Mahan (Distinguished Scientist, Science Alliance Center of Excellence), Ph.D. Tennessee.

Lecturers: M.R. Fitzgerald, Ph.D. Oklahoma; R.A. Grossman, Ph.D. New York; V.R. Iredell, Ph.D. Chicago; W. Lyons, Ph.D. Oklahoma; H. Plaa, Ph.D. Utah; N.M. Robinson (Emeritus), Ph.D. Syracuse; T.A. Smith, Ph.D. Ohio State; O.H. Stephens, Jr. (Alumni Distinguished Service Professor), Ph.D. Johns Hopkins; T.D. Unger, Ph.D. Iowa; D.M. Welborn, Ph.D. Texas.

Associate Professors: R.B. Cunningham, Ph.D. Indiana; J.W. Dodd, Ph.D. Tulane; G.C. Evans, Ph.D. Columbia; W. Fierman, Ph.D. Harvard; P.K. Freeman, Ph.D. Wisconsin; M.M. Gant (Head), Ph.D. Michigan State; R.L. Peterson, Ph.D. Yale; J.M. Scheib, Ph.D. Florida; T.M.H. Simpson, Ill, Ph.D. Johns Hopkins.


B.A. Major: Political Science 101 or 107 and 102 are prerequisites to the major which consists of 24 hours of courses numbered 300 and above. These 24 hours must include at least one course in each of the four areas of the discipline: United States Government and Politics/Public Administration: 310, 312, 315, 320, 321, 322, 330, 331, 340, 374, 410, 411, 412, 420, 421, 422, 431, 432, 441, 442, 450, 451.


International Relations: 365, 366, 370, 455, 463 and 470.

Political Theory: 301, 475 and 476.

Majors must earn a "C" or better in prerequisite courses.

Minor: Prerequisites to the minor are Political Science 101 or 107 and 102. The minor consists of 15 hours of courses numbered 300 and above.

Honors in Political Science: The Honors concentration encourages highly motivated students to obtain a superior liberal education and more rigorous preparation in the discipline. Admission is selective. The Honors concentration is normally a two year program. Political Science 101 or 107 and 102 are prerequisites to the major which consists of thirty-six hours, Political Science 301, 387-388, 487-488, and 21 additional hours numbered 300 and above. These 21 hours must include at least one course in each of the four areas of the discipline: United States Government and Politics/Public Administration; Comparative Government and Politics; International Relations; and Political Theory.

To graduate with Honors in Political Science, the student must have a minimum GPA of 3.3 in Political Science, and a minimum cumulative GPA of 3.0.

Major in Political Science with a Concentration in Public Administration: Students majoring in Political Science who wish to prepare for a career in the public service may select to follow the concentration in Political Science. Political Science 101 or 107 and 12 hours of upper division course work in Economics. In Political Science, students must include one course in each of the four fields of Political Science: American Government and Politics/Public Administration, Comparative Government and Politics, International Relations, and Political Theory.

PHYSICS

B.S. Major: The undergraduate physic major provides a thorough introduction to all of the core disciplines of physics so that students are prepared to pursue related specialties at a later point in their career. Students with special interests are encouraged to pursue those interests through research projects and/or independent study under the direction of members of the physics faculty through Physics 493.

Prerequisites to the major are: Physics 131-132 or 137-138; Mathematics 141-142.

The major consists of: Physics 231-232 or 237-238; Mathematics 231 and 241; Physics 311 (students intending to pursue graduate studies in Physics should also take 312 and 421 as electives); Physics 321, Physics 431-432, Physics 411-412 (340 and 341 or 342 may be substituted for students who do not intend to pursue graduate study); 361-362 or 461-462-463. Physics 401-402 are recommended. Total major hours: 42-43.

Minor: A minor in physics shall consist of Physics 231-232 or 237-238 and 10 hours from physics and astronomy courses numbered 300 and above. Substitution provisions in the major statement also apply to the minor.

POLITICAL SCIENCE

Further details on the major and on department courses are available in the department office, located in 501 McClung Tower, or from any member of the religious studies faculty.

Minor: Fifteen hours of courses at the 300 level or above, not including related language courses. It is recommended that students minoring in religious studies discuss their program with a member of the department faculty.

ROMANCE LANGUAGES

Professors: John B. Romeiser (Head), Ph.D. Vanderbilt; P.E. Barrett, Ph.D. California (Berkeley); P. Brady, Ph.D. Université de Paris (Sorbonne); O. Cazenave, Ph.D. Penn State; C.W. Cobb, Ph.D. Tulane; J.C. Elliott, M.A. Illinois; M.H. Handelsman, Ph.D. Florida; W.H. Helfin, Jr., Ph.D. Florida State; T.B. Irving (Emeritus), Ph.D. Princeton; F.D. Maurino (Emeritus), Ph.D. Columbia; R.C.M. Pinsky (Emeritus), Ph.D. California (Berkeley); M. Petrovska, Ph.D. Kentucky; Oscar Rivera-Rodas, Ph.D. California; A.M. Vazquez-Biggi (Emeritus), Ph.D. Minnesota; A.H. Wallace, Ph.D. North Carolina; Y.M. Washburn, Ph.D. North Carolina.

Associate Professors: E.J. Campion, Ph.D. Yale; R.M.E. DeRycke, Ph.D. Illinois; S. DeMaria, Ph.D. Wisconsin; D.M. DiPuccio, Ph.D. Kansas; C.K. Duncan, Ph.D. Illinois; K.D. Levy, Ph.D. Kentucky.

Assistant Professors: F. Brizzi, Ph.D. Washington; O. Cazenave, Ph.D. Penn State; Charlotte G. Cox (Emeritus), M.A. Tennessee; C. Holmlund, Ph.D. Wisconsin; E. Johnson, Ph.D. Tennessee; Margo Milleret, Ph.D. Texas (Austin); A. Rodriguez, Ph.D. Brown; Paula Wilson (Emeritus), M.A. Tufts; Dolly Young, Ph.D. Texas.

Instructors: A. McKeeby, M.A. Tulane; M.T. Rabot, Cert. de Lic. Poitiers.

French Major: Consists of 31 hours in courses numbered 311 and above. All majors must have the following courses (or their equivalent with consent of the department): 311-312, 313, 341 or 342, 345, 421, 422, 440.

Literature concentration students must also have 6 hours of literature at the 400 level, 3 hours of which must be either 410, 411, 412, 413, 414, or 415. 3 hours of language oriented or civilization courses at the 300 or 400 levels.

Language concentration students must also have 9 hours of language-oriented or civilization courses at the 300 or 400 levels.

French Minor: The minor consists of 18 hours in courses numbered 311 and above distributed accordingly: 311-312, 313, 341 or 342, 421; plus 3 hours of electives at the 300 or 400 levels.

Italian Major: Consists of 27 hours in courses numbered 311 and above. All majors must take 311, 312, 341, 342, and 401.

Italian Minor: Consists of 18 hours in courses numbered 311 and above. Students pursuing a minor must consult with a departmental advisor.
Portuguese Minor: Consists of 18 hours in courses numbered 300 or above. Students pursuing a minor must consult with a departmental advisor.

Spanish Major: Consists of 30 hours in courses numbered 311 or above. The following are required: 311; 312; 421; 422, 459-460. Students must also have a minimum of 3 hours of civilization, either 431 or 471; a minimum of 6 hours of conversation and composition from 323, 324, 422, 423 or 424; and a maximum of 6 hours of literature from 432, 433, 435, 436, 450, 472, 473, 474, 479. Majors are encouraged to take as many hours as possible, especially the surveys, 435-436 and 473-474. Students must also take 459 and 460.

Spanish Minor: Consists of 18 hours in courses numbered 311 or above, including 311 and 312; 422; one course in conversation and composition from among the following: 323, 324, 423, 424, and the remaining courses to be chosen among conversation and composition, civilization, phonetics, or literature. Students pursuing a minor are strongly advised to consult with a departmental advisor.

Courses within the equivalents of the foregoing may be substituted with the consent of the department. Courses in Spanish literature in English translation, however, may not be counted toward either a major or minor.

Major in French or Spanish with a Concentration in Language and World Business: Students who wish to prepare for careers in international business may complete (a) a special major in either French or Spanish, (b) a professional emphasis in either International Business or International Logistics and Transportation, and (c) some form of practical experience related to the concentration. Admission is by permission of the program director.

(a) Language Major: (1) French major consists of 32 hours. The following are required: French 199, 311-12, 313, 341, 345, 420, 421; or French 211 and 421, and 3 hours of 491 or 493. (2) Spanish major consists of 32 hours. The following are required: Spanish 199, 311-12, 323, 345, 422, 423, 431 or 471, 459-60, 3 hours of 491 and any 400-level literature course.

(b) Professional Emphasis: (1) International Business students will take 25 hours. The following are required: Accounting 201, Economics 201 or 207 and 321, Business Administration 311 and 495, Management 471, Logistics and Transportation 441, and an elective from a related business area chosen in consultation with an advisor. (2) International Logistics and Transportation students will take 25 hours. The following are required: Accounting 201, Economics 201 or 207, Business Administration 311 and 495, Management 471, and Logistics and Transportation 301, 302, and 441.

(c) Practical experience: Through French 491 or 493, or Spanish 491, each LWB student must undertake study abroad, an internship, or a relevant research project for a minimum of 3 hours (including in 311 or 411).

Additionally, LWB students must consult an advisor in the Department of Romance Languages for help in selecting relevant courses under the Basic Skills and Distribution requirements of the College.

For further information, inquire in 601 McClung Tower.

Placement Examination: Students who have had two or more years' work in French, Italian, or Spanish in high school or one year's work in another college should register in French, Italian, or Spanish 211. During the first week of the semester a placement test will be given, and students will be advised if a change in registration is indicated.

Proficiency Examinations: Students who have acquired a knowledge of French, Italian, or Spanish through private study, tutoring, residence in foreign countries, or the like should initiate a request for a proficiency test in the Office of the Dean of Admissions and Records. A student earning a grade of C or better on such a test will receive credit for a limited number of courses. Superior students are advised to apply for credit as rapidly as their achievement permits.

Study Abroad: Four summer study abroad opportunities are available to students through the Department of Romance Languages. The department sponsors programs in Brazil (Fortaleza), France (Lille), Italy (Urbino), and Spain (Madrid). Students can earn up to six credit hours by participating in these programs. In most cases, the courses will fulfill part or all of the foreign language requirement (completion of the elementary or intermediate level). Courses in literature, culture, and language are also available at the third- and fourth-year levels, so that students can earn credit toward minors and majors. Participation in these programs will also satisfy the foreign study requirements for the Language and World Business concentrations. A faculty member accompanies students on the program. In addition to formal classes held at a major university in the city, group excursions to cultural and historical sites are an integral part of the programs. For more information concerning prerequisites, lodging arrangements, costs, and dates of an individual program, contact the Department of Romance Languages, 601 McClung Tower, Telephone #974-2011.

RUSSIAN

See Germanic and Slavic Languages.

RUSSIAN AND EAST EUROPEAN STUDIES

See Interdisciplinary Programs.

SOCIOLGY

Professors: T.C. Hood (Head), Ph.D. Duke; Michael L. Benson, Ph.D. Illinois; D.M. Betz, Ph.D. Michigan State; J.A. Black, Ph.D. Iowa; D.J. Champion, Ph.D. Purdue; D. Clelland, Ph.D. Michigan State; D.W. Hastings, Ph.D. Massachusetts; D.R. Ploch, Ph.D. North Carolina; N.E. Shover, Ph.D. Illinois (Urbana); S.E. Wallace, Ph.D. Minnesota.

Associate Professors: S. Kurth, Ph.D. Illinois (Chicago); R.G. Perrin, Ph.D. British Columbia.

Assistant Professors: S. Cable, Ph.D. Pennsylvania State; John P. Gaventa, Ph.D. Oxford (England).

Instructor: D.K. Harris, M.A. Tennessee.

Major: Prerequisites to the major are six lower-division hours in sociology which must include either 100 or 110, followed by 200. The major consists of 24 upper-division hours in sociology and must include 321 and 331. Students should complete these two courses by the end of their junior year.

Concentration in Criminal Justice: All prerequisites and upper-division courses required for general majors are required for this concentration. In addition, the concentration consists of 18 hours of upper-division sociology as follows: 350, 351, 451, 459, 492 (3), and one course selected in consultation with advisor.

Minor: The minor consists of 12 upper-division hours in sociology and must include 321 and 331. Prerequisites to the minor are six lower-division hours in sociology which must include 200.

COLLEGE SCHOLARS HONORS

Director: Dr. Harry C. Jacobson

College Scholars is a major with selective admission. For details contact the director. All Scholars must enroll in one of the College Scholars Seminars 317-318 each term. They are encouraged to complete work in College Scholars Honors 491-492-493. Each student must complete a substantial piece of research, scholarship or creative imagination. College Scholars 498 is the appropriate course to use to receive credit for this work.

SPANISH

See Romance Languages.

SPEECH COMMUNICATION


Assistant Professors: R.S. Ambler, Ph.D. Ohio State; J.W. Haas, Ph.D. Kentucky.

Major: Speech Communication 100 is prerequisite to a major which consists of Speech Communication 270, 300, 310, 330, either 350 or 460, and 12 additional hours in Speech Communication courses, of which 9 hours must be in courses numbered 300 and above. No more than 5 hours from Speech Communication 200, 271-272, 371-372, 491, 492, and 493 may be counted toward the major. Students interested in broad applications (e.g., teacher certification or religious
training) may complete their required hours from a wide range of Speech Communication courses. In addition, specially designed options are available in (1) Interpersonal/Organizational Communication and (2) Public Communication. Students should inquire in the Department Office for information and recommended advisors.

Minor: Speech Communication 100 is prerequisite to a minor which consists of 18 additional hours of Speech Communication courses at least 12 of which must be at the 300 level and above. No more than 3 hours from Speech Communication 200, 271-272, 371-372, and 491-492-493 may be counted toward the minor. Additional information for planning minor areas of focus which will complement a wide variety of majors in other Liberal Arts fields as well as in other colleges is available in the Department Office.

STATISTICS
See faculty list in the College of Business Administration.

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. Contact the Statistics Department for further information on careers in statistics and appropriate courses to take. It is highly recommended that a student majoring in statistics have a minor in an area of application.

Major: (a) Required courses consist of 25 hours from Mathematics 241, 251; Statistics 251, 252, 261, Statistics 461, 462, Statistics 471 or Mathematics 323; (b) Statistics elective consists of 3 hours from upper-division statistics courses not listed in part (a); and (c) Electives consist of 6 hours to be selected from two of the following groups: Computer Science 111, 112, 401, 402, 403, 404; Industrial Engineering 301, 402, 406; Management 481; Mathematics 371, 421, 423, 425, 433 (other quantitative courses may be substituted as Electives with the faculty advisor's approval).

Minor: (a) Required courses consist of 16 hours from Mathematics 241, 251; Statistics 251, 252, 261; and (b) Statistics electives consist of 3 hours from upper-division statistics courses not in part (a) of the minor.

THEATRE


Major: Theatre 100 and 220 are prerequisites to a concentration which consists of (1) Theatre 210, 211, 245, 250, 260, 310, 311, 430; (2) three chosen from the following 481, 482, 483, 484, 485; (3) 5 additional hours of Theatre courses numbered 200 or above, 4 of which may be in cognate areas approved by the department; (4) at least one half of the hours in the major must be at the 300 level or above.

Minor: Theatre 100 and 220 are prerequisites to a minor which consists of 430 and 15 additional hours of Theatre courses numbered 300 or above, 6 of which must be in history and criticism.

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

WOMEN'S STUDIES
See Interdisciplinary Programs.

ZOOLOGY

Professors: A.C. Echternacht (Head), Ph.D. Kansas; R.M. Bagby, Ph.D. Illinois; D.L. Bunting, Il, Ph.D. Oklahoma State; J.G. Carlson (Emeritus), Ph.D. Pennsylvania; D.A. Etnier, Ph.D. Minnesota; M.A. Handel, Ph.D. Kansas State; B. Hochman (Emeritus), Ph.D. California (Berkeley), K.W. Jeon, Ph.D. London (England); D.C. Joy (Distinguished Scientist, Science Alliance Center of Excellence), Ph.D. Oxford (England); J.R. Kennedy, Ph.D. Iowa; J.N. Liles, Ph.D. Ohio State; J.A. MacCabe, Ph.D. California (Davis); G.F. McCracken, Ph.D. Cornell; S.L. Pimm, Ph.D. New Mexico State; S.E. Riechert, Ph.D. Wisconsin; L.E. Roth, Ph.D. Chicago; C.A. Shivers, Ph.D. Michigan State; J.T. Tanner (Emeritus), Ph.D. Cornell; G.L. Vaughan, Ph.D. Duke; H.G. Whelch (Emeritus), Ph.D. Florida; G.L. Whitson, Ph.D. Iowa.

Associate Professors: K.D. Burnham (Emeritus), Ph.D. Iowa; T.T. Chen, Ph.D. Florida; D.J. Fox, Ph.D. Johns Hopkins; N.B. Greenberg, Ph.D. Rutgers; M.L. Pan, Ph.D. Pennsylvania.

Assistant Professors: C. Boake, Ph.D. Cornell; J.L. Gittleman, Ph.D. Sussex (Brighton, England); J. Drake, Ph.D. Purdue; J.C. Hall, Ph.D. Illinois; R. Ganguly, Ph.D. Nebraska.

Research Associate Professors T. Ashley, Ph.D. Florida State; R. Tindall, Ph.D. Pennsylvania State.

Prerequisites to upper division courses: Biology 110-120 or Biology 150 or Zoology 117-118 are prerequisites for all upper division courses (with the exception of 480). Additional prerequisites are included with course descriptions.

Major: Prerequisites to the major are Biology 110-120 or Biology 150 or Zoology 117-118 and Chemistry 120-130. Corequisites are Mathematics 121-122 or 151-152 or 141-142 and a year sequence in physics (except 141-142). Physics 221-222 are recommended and are required for admission to some professional schools.

The major consists of Biology 210-220-230, 18 hours of upper division Zoology courses and two semesters of chemistry or biochemistry at the 200 level or above. (Acceptable second year chemistry sequences include: Chemistry 350-360-369, Chemistry 350 and 310-319; Chemistry 350 and Nutrition 200; Chemistry 350, 431 and Biochemistry 310; Chemistry 310-319 and Biochemistry 310). All Zoology majors are required to take at least 4 hours at the 400 level, including at least one laboratory or field course. The upper division Zoology courses must include at least one course from three of the following four areas: (1) Cellular and Developmental Biology (330, 420); (2) Physiology (440, 445); (3) Animal Diversity (350, 360); and (4) Evolution and Behavior (450, 460).

Minor: Prerequisites to the minor are Biology 110-120 or Zoology 117-118 and Chemistry 120-130 or 100-110. The minor consists of Biology 210-220-230 and 9 hours of upper division Zoology.

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 specific semesters. Students should plan in advance the proper sequence. Information on the semesters a course is to be offered is available in the departmental office.
The baccalaureate nursing program has as its central focus and frame of reference human beings, society, and health. It is based on the belief that nursing has equal concern for the prevention of illness, the promotion of health, and the care of the sick. General education courses, nursing courses, and electives are organized in a manner designed to promote and develop creative thinking and other cognitive, affective, and psychomotor processes that are essential for effective nursing practice and for full and meaningful involvement as a contributing member of society.

A broad base of general education, a thorough study of human behavior, emphasis on health maintenance, health promotion, and health restoration and a strong family and community orientation are essential components of baccalaureate education in nursing. By maintaining a high quality, relevant program that is responsive to the increasing complexity of health care delivery, the ever-changing health needs of society, and the changing and expanding role of the nurse, graduates of the program are able to: (1) assume beginning leadership positions in nursing in a variety of settings; (2) work collaboratively with other health professionals; (3) function as socially conscious and contributing citizens; and (4) pursue advanced education on either a formal or an informal basis.

GENERAL REQUIREMENTS
In order to obtain a Bachelor of Science in Nursing degree students are required to successfully complete eight semesters of full-time study or the equivalent in part-time study. Students may complete the entire program at UT, Knoxville or they may take most or all of the lower division component of the program at any regionally accredited college or university. One-hundred-twenty semester hours are required for graduation. The program is designed to accommodate high school graduates, transfer students from within or external to UT, Knoxville, and registered nurses who hold associate degrees in nursing or who are graduates of diploma nursing programs.

PROGRESSION POLICIES AND PROCEDURES
(1) During the spring semester of the year the student expects to meet all lower division course requirements, she/he must complete a Petition for Progression form and submit it to the college's Student Affairs Office no later than the second Friday of UT, Knoxville's spring semester. If the number of students that can be accommodated exceeds the number of students that can be accommodated students will be selected on the basis of: (a) cumulative GPA for courses completed; (b) grades in required courses; (c) number of course withdrawals and repetitions; (d) grade improvement over time; and (e) probability of completing all lower division requirements prior to the following fall.

(2) If a student is selected for progression to upper division nursing courses but then fails to successfully complete all lower division requirements prior to the fall semester, the student will not be permitted to enroll in upper division courses and must submit another petition the following year.

(3) Registered nurses must also complete all lower division courses but, at the discretion of the faculty RN advisor, they may enroll in Nursing 301 and 305 once they are within 12 semester hours of meeting these requirements. Nursing 301 and 305 must be successfully completed before RN's may challenge or take Nursing 312. Nursing 304 and 312 are pre- or co-requisite to Nursing 315. All junior level courses are pre-requisite to the senior year.

GRADING AND CONTINUATION POLICIES
(1) The minimum acceptable grade for all courses in the curriculum is a "C". The satisfactory/no credit grading option is not available for nursing courses.

(2) No nursing course may be repeated more than once. If a "D" or "F" grade is earned on the second attempt the student will be required to withdraw from the program.

(3) Any student who receives a grade of "D" or "F" for more than two nursing courses will be required to withdraw from the program even if previous courses for which "D"s or "F"s were
awarded have been repeated with a grade of "C" or higher.

(4) If a student receives an Incomplete "I" in a nursing course, the "I" must be removed prior to enrolling in any course for which the uncompleted course is a prerequisite.

(5) If a student's clinical performance for any nursing course is found to be unsatisfactory, the grade for that course will be an "F" regardless of any other grades earned in other components of the course. If the unsatisfactory clinical performance is characterized by unethical, unprofessional, or unsafe behavior, behavior that actually or potentially places the client in jeopardy, the student will be required to withdraw from the program.

(6) Requirements for competence or certification in cardio-pulmonary resuscitation are included in the Undergraduate Student Handbook.

HEALTH AND INSURANCE REQUIREMENTS

Students must meet specific physical examination and immunization requirements as specified by state law and by the rules and regulations set forth by the various clinical agencies. All non-nurse students must participate in the college's group malpractice and liability insurance program. All registered nurses must provide proof that they have appropriate malpractice-liability insurance coverage. Specific information concerning these requirements will be provided to the students at appropriate times by the nursing faculty and the Associate Dean for Student Affairs.

COURSE LOAD

The maximum credit hours per semester for which a nursing student may register without special permission is 18.

THE BACHELOR OF SCIENCE IN NURSING CURRICULUM

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td></td>
</tr>
<tr>
<td>English 101, 102</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics 110, 115</td>
<td>6</td>
</tr>
<tr>
<td>Chemistry 100, 110</td>
<td>8</td>
</tr>
<tr>
<td>Humanities</td>
<td>6</td>
</tr>
<tr>
<td>Psychology 110</td>
<td>3</td>
</tr>
<tr>
<td>Sociology or Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
</tr>
<tr>
<td>Zoology 240</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 230</td>
<td>5</td>
</tr>
<tr>
<td>Microbiology 210</td>
<td>3</td>
</tr>
<tr>
<td>Nutrition 300</td>
<td>3</td>
</tr>
<tr>
<td>Child and Family Studies 210</td>
<td>3</td>
</tr>
<tr>
<td>Sociology or Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>History</td>
<td>6</td>
</tr>
<tr>
<td>Multicultural or Integrative Studies</td>
<td>3</td>
</tr>
<tr>
<td>Junior</td>
<td></td>
</tr>
<tr>
<td>Philosophy 345</td>
<td>3</td>
</tr>
<tr>
<td>Nursing 301, 302, 304, 311, 313</td>
<td>29</td>
</tr>
<tr>
<td>Senior</td>
<td></td>
</tr>
<tr>
<td>Multicultural or Integrative Studies</td>
<td>3</td>
</tr>
<tr>
<td>Nursing 401, 403, 404, 411</td>
<td>24</td>
</tr>
<tr>
<td>Total: 120 hours</td>
<td></td>
</tr>
</tbody>
</table>

Registered nurses must successfully complete all of the non-nursing courses listed above as well as the nursing courses listed below. Courses with an asterisk may be challenged.

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>*301 Pharmacology</td>
<td>3</td>
</tr>
<tr>
<td>304 Nursing Assessment and Health Promotion</td>
<td>6</td>
</tr>
<tr>
<td>305 Transition to Professional Nursing</td>
<td>4</td>
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<tr>
<td>*312 Acute Care Nursing Theory</td>
<td>6</td>
</tr>
<tr>
<td>313 Nursing Research</td>
<td>3</td>
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<tr>
<td>315 Clinical Nursing Practicum</td>
<td>2</td>
</tr>
<tr>
<td>*402 Family Health Nursing Theory</td>
<td>3</td>
</tr>
<tr>
<td>403 Community Health Nursing</td>
<td>4</td>
</tr>
<tr>
<td>404 Nursing Management and Strategies</td>
<td>8</td>
</tr>
<tr>
<td>*412 Psychosocial Long Term Nursing Theory</td>
<td>3</td>
</tr>
<tr>
<td>Validation Examinations or Nursing Electives</td>
<td>11</td>
</tr>
<tr>
<td>Total: 53 hours</td>
<td></td>
</tr>
</tbody>
</table>

Registered nurses may earn up to eleven semester hours of upper-division nursing credits by means of validation examinations that are designed to measure prior learning. More information about the examinations may be obtained from the Student Affairs Office or from the faculty advisor for registered nurses.

The following courses are open to all university students: 202, 214, 301, 317.

GRADUATE

General requirements for the Master of Science in Nursing degree are given in the Graduate Catalog.
The College of Social Work

GRADUATE PROGRAM

The College of Social Work offers a fully accredited two year graduate professional degree at the master's level (MSSW). The College also offers a graduate program leading to a Doctor of Philosophy in Social Work (Ph.D.). Information concerning graduate programs is given in the College of Social Work Bulletin and also in the Graduate Catalog. Masters Degree Programs are offered on the campus in Knoxville and in Nashville and Memphis. The Ph.D. Program is offered in Knoxville.

GRADING POLICY

The satisfactory/no credit option is not permitted in the major. The minimum acceptable grade for all social work courses is a C. Courses, other than field, in which a D or F is achieved may be repeated once. Field courses must be completed with a C or better, and may not be repeated. A student receiving an incomplete (I) in any social work course must remove the incomplete before enrollment in subsequent field practice.

COURSE LOAD

The maximum credit hours per semester allowed for any student is 18. Special permission must be obtained for any over load.

PROGRESSION REQUIREMENTS

Students admitted to the University may request a faculty advisor from the College of Social Work. Students in the College must move through Initial and Full Progression. The following factors identify progression criteria for all social work students:

REQUIREMENTS

Students admitted to the College of Social Work must complete the following requirements before enrollment in subsequent social work courses:

COURSES

Courses which must be completed with a C or better, and may be repeated once:

Courses, other than field, in which a D or F is achieved may be repeated once. Field courses must be completed with a C or better, and may not be repeated.

A student receiving an incomplete (I) in any social work course must remove the incomplete before enrollment in subsequent field practice.

FACILITIES

The College of Social Work is housed in Henson Hall, located on the corner of Cumberland Avenue and Volunteer Boulevard on the UT, Knoxville campus in Knoxville. This building houses the administrative and faculty offices, along with classrooms for the BSSW, MSSW and Ph.D. programs. Video and computer resources are available to facilitate instruction.

118
INITIAL PROGRESSION
1. Successful completion of Social Work 200 and 250 with a grade of C or better.
2. Cumulative grade point average of 2.0 or above.
3. Successful completion of a minimum of 60 semester hours. Initial progression must be completed prior to enrollment in any 300-level social work courses.
4. Favorable review of the student’s application for entry into the junior level social work courses by the faculty admissions committee. The application requires an essay discussing the student’s interest in and preliminary understanding of the profession.

FULL PROGRESSION
1. Successful completion of junior level social work courses with a grade of C or better.
2. Cumulative grade point average of 2.0 or above.
3. Successful completion of a minimum of 90 semester hours. Full progression must be completed prior to enrollment in 400-level social work courses.
4. Favorable approval by the BSW faculty prior to entry into senior level classes. This process will include a review of the student’s performance in junior field practice.

Full progression is based on the recognition that social work has an intensive field component in which students demonstrate aptitude and ability to work with other people. While review is ongoing, full progression provides an additional opportunity to review the students’ potential for entry-level practice.

CURRICULUM

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>English 101, 102</td>
</tr>
<tr>
<td></td>
<td>Foreign Language (Intermediate Level)</td>
</tr>
<tr>
<td></td>
<td>Mathematics 110</td>
</tr>
<tr>
<td></td>
<td>History 151-152 or 161-162</td>
</tr>
<tr>
<td></td>
<td>*Physiology or Biology Sequence with lab</td>
</tr>
<tr>
<td></td>
<td>Women’s Studies 220</td>
</tr>
<tr>
<td>Sophomore</td>
<td>Zoology 210, 220</td>
</tr>
<tr>
<td></td>
<td>Anthropology 130</td>
</tr>
<tr>
<td></td>
<td>*Humanities (Literature Package)</td>
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<td></td>
<td>*Humanities (Philosophy Package)</td>
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<tr>
<td></td>
<td>Psychology 220</td>
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<tr>
<td></td>
<td>Social Work 200, 250</td>
</tr>
<tr>
<td></td>
<td>Economics 201</td>
</tr>
<tr>
<td>Junior</td>
<td>Social Work 312, 313, 314</td>
</tr>
<tr>
<td></td>
<td>*United States Studies</td>
</tr>
<tr>
<td></td>
<td>*Foreign Studies</td>
</tr>
<tr>
<td></td>
<td>Political Science 101</td>
</tr>
<tr>
<td></td>
<td>Sociology 336 or Math 115</td>
</tr>
<tr>
<td></td>
<td>Social Work 310, 380</td>
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<tr>
<td></td>
<td>Child and Family Studies 220</td>
</tr>
<tr>
<td>Senior</td>
<td>Social Work 412, 416</td>
</tr>
<tr>
<td></td>
<td>Social Work 480, 481</td>
</tr>
<tr>
<td></td>
<td>Social Work 460</td>
</tr>
<tr>
<td></td>
<td>Anthropology 312</td>
</tr>
<tr>
<td></td>
<td>Electives</td>
</tr>
<tr>
<td></td>
<td><strong>Total: 124 hours</strong></td>
</tr>
</tbody>
</table>

*The following sequences may be selected: Astronomy 161-162; Botany 110-120; Chemistry 120-130; Geography 131-132; Geology 101-102; Physics 121-122.
*The following literature packages may be selected: Classics 253-254; English 201-202; English 221-222; English 231-232 or 233; Germanic and Slavic Languages 221-222; Religious Studies 312-313; French 291-292; Spanish 291-292.
*One course selected from Classics 221; Classics 222; Philosophy 220; Philosophy 111; Philosophy 120; Philosophy 121; Philosophy 240; Philosophy 344; Philosophy 380; Philosophy 382.
*One course selected from: Anthropology 310; Anthropology 315; Geography 362; History 379; History 380; History 440; Philosophy 390; Political Science 311; Political Science 374; Religious Studies 352; Sociology 343; Sociology 340; Speech 466.
*One course selected from: Anthropology 314; Classics 381; Classics 382; English 302; Geography 372; Geography 373; Geography 375; Geography 376; Germanic and Slavic Languages 363; History 320; History 374; Philosophy 306; Political Science 350; Political Science 361; Political Science 469; Religious Studies 332; French 432; Spanish 431; Spanish 471; Sociology 446.
TENNESSEE SCHOLARS PROGRAM
Each year, twenty-five outstanding high school students will be selected for a four-year program of honors work. These students may have any major in any college offering the Bachelor's degree. In addition, Tennessee Scholars' work includes: a minimum of four lower division honors courses; a close relationship with a faculty mentor; a one credit hour Tennessee Scholars seminar each term for four years; and a senior honors paper or project. The Tennessee Scholars Program is administered by the University Honors Committee which includes representatives from each of the ten baccalaureate colleges and schools. Students are selected on the bases of past academic performance and their potential for academic excellence. As Tennessee Scholars, they are expected to adhere to the written policies and requirements of the Tennessee Scholars Program and are encouraged to enroll in courses that will stimulate and challenge them as well as broaden their horizons. As a result, the University Honors Committee will not be concerned if grades in occasional courses fall below superior range. However, all Tennessee Scholars are expected to maintain a cumulative grade point average of 3.25.

Retention in Tennessee Scholars Program
Whittle Scholars are selected on the bases of leadership experience and skills, academic performance and promise, and extracurricular activities. As Whittle Scholars, they are expected to adhere to the written policies and requirements of the Whittle Scholars Program and are encouraged to enroll in courses that will stimulate and challenge them as well as broaden their horizons. As a result, the Whittle Scholars Committee for suggestions and approval.

WHITTLE SCHOLARS PROGRAM
The Whittle Scholars Program is made possible by a substantial endowment given the University by Chris Whittle, Chairman of Whittle Communications and a 1969 UT, Knoxville alumnus. Each year, twenty outstanding high school students will be invited to become Whittle Scholars. These students may have any major in any college offering the Bachelor's degree. In addition, Whittle Scholars' work includes two one credit hour seminars, one on contemporary issues and one on aspects of leadership; a one-year seminar preparatory to international travel/study/work; a required one-year international experience; and a senior honors project. Whittle Scholars will have two mentors: an academic/research advisor and a leadership mentor from outside the University. The Whittle Scholars Program is administered by the Whittle Scholars Committee, which includes faculty appointed by the Chancellor, representatives of the UT administration, and representatives of Whittle Communications. Students are selected on the bases of academic performance and potential, and extracurricular activities (including community service). Students selected to become Whittle Scholars receive full five-year scholarships. Whittle Scholars may have to supplement the scholarship during their year abroad.

Retention in Tennessee Scholars Program and Whittle Scholars Program
Whittle Scholars are selected on the bases of leadership experience and skills, academic performance and promise, and extracurricular activities. As Whittle Scholars, they are expected to adhere to the written policies and requirements of the Whittle Scholars Program and are encouraged to enroll in courses that will stimulate and challenge them as well as broaden their horizons. As a result, the Whittle Scholars Committee will not be concerned if grades in occasional courses fall below superior range. However, all Whittle Scholars are expected to maintain a cumulative grade point average of 3.25.

Whittle Scholars are selected on the bases of leadership experience and skills, academic performance and promise, and extracurricular activities. As Whittle Scholars, they are expected to adhere to the written policies and requirements of the Whittle Scholars Program and are encouraged to enroll in courses that will stimulate and challenge them as well as broaden their horizons. Whittle Scholars are expected to maintain a cumulative grade point average of 3.25.

A student in the Tennessee Scholars Program or Whittle Scholars Program whose cumulative GPA falls below 3.25 will be allowed to continue in the Program and receive its benefits so long as he or she earns a 3.25 GPA or better every semester, thus eventually raising the cumulative GPA to the required 3.25. If, while the cumulative GPA is less 3.25, a student falls to earn a 3.25 or better in any semester, he or she will be removed from the program and lose all its benefits, unless the student can demonstrate extenuating circumstances to the University Honors Committee or the Whittle Scholars Committee.

Senior Project Deadlines in Tennessee Scholars Program and Whittle Scholars Program
The following is a list of mandatory deadlines for the senior research project in the Tennessee Scholars Program:
1. No later than the end of the second year in residence, a student must have chosen a UT, Knoxville faculty member to serve as mentor for the senior research project, and that faculty member must have agreed in writing to serve as the student's mentor.
2. No later than the end of the third year in residence, a student, together with the faculty mentor, will chose two other faculty members who, together with the faculty mentor, will serve as the student's research project committee. The purpose of the committee is to aid students in formulating, designing and executing their projects and to evaluate the projects when completed. Similarly, by the end of the third year in residence, a student must submit a written abstract or proposal for the senior research project to his/her faculty committee for suggestions and approval.
3. No later than the end of the first semester of a student's senior year, a first draft of the senior research project must be submitted to the faculty mentor. The faculty mentor must report that fact to the University Honors Director. In addition, a student will be expected to present the results of his or her research to the Tennessee Scholars senior seminar.
4. Within four weeks of the end of a student's final semester, he or she will be expected to present the completed project to the student's committee, the student's peers in the Tennessee Scholars Program, and invited professors. If the student is unsatisfactory with the work, he or she will have the opportunity to revise and resubmit the project for approval.

*April 10 for students graduating in the Spring semester, and November 15 for students graduating in the Fall semester. Students graduating in August (at the end of summer school) are urged to complete their projects by the April 10 deadline, although, in special cases and with the written consent of the faculty mentor, exceptions to this rule may be made.
Upon the conclusion of the presentation, the student's faculty mentor will submit a letter to the Director of the University Honors Program certifying that the research project has been completed and has been accepted by the committee. One copy of the research project must be filed in the University Honors Office and additional copies should be given to the student's committee.

Failure to meet these guidelines will result in the delay of a Tennessee Scholar's graduation.

UNIVERSITY HONORS COURSES

Seminars and colloquia focused on various topics, issues, and problems, and limited in size to 15-20 students. These are taught by faculty from all ten undergraduate colleges and schools, and may be repeated. University Honors courses are open to all undergraduate students on the basis of high school GPA, ACT/SAT scores, UT, Knoxville GPA of 3.25 or better, or by strong professorial recommendation.

There may be types of projects that do not lend themselves to a formal (public) defense. Hence the decision whether or not to have a public defense should be decided by the research committee and the Director of the University Honors Program.
University Studies

Ralph Norman, Chair (Acting)

The University Studies Program has three general objectives: (1) to foster interdisciplinary teaching and scholarship, especially across college boundaries; (2) to promote active, integrative, and personal learning; and (3) to nurture the personal and intellectual development of faculty and students.

In pursuit of these objectives, University Studies sponsors two main types of activities: FACULTY COLLOQUIES, which are on-going, structured, interdisciplinary conversations on a topic or nexus of topics; and INTERDISCIPLINARY COURSES, often team-taught, many stemming from the colloquy discussions.

Faculty Colloquies explore important contemporary issues which are sufficiently fundamental to involve the attention of faculty and students from all colleges. Current colloquies are: Technology, Society and the Common Good; Aging and Society; Land and People (Tennessee Appalachian Forum); Learning, Thinking, Creating; Forum on International Development; Humanistic Perspectives on Science and Society; Appalachian Studies; and Freshman Year Experience.

The University Learning Community at the sophomore level has as its goals: (a) To form a community of learners, including both faculty and students; (b) To promote active involvement in learning by making use of case studies, active class exercises, small-group projects, and other alternatives to a lecture method of instruction; (c) To promote integrative learning by focusing on a common theme from the point of view of a variety of disciplines throughout a year-long series of courses; and (d) To integrate classroom learning with wellness activities and social interaction with other students and faculty of the learning community.

For further information, contact:
Dr. Ralph Norman, Acting Chair
University Studies Program
515 Andy Holt Tower
PHONE: 974-3265.
The military program at The University of Tennessee predates that of any other state university in the country, having been introduced in 1844. In that year, Professor Albert Miller Lea, a West Point graduate, organized an infantry company. With the outbreak of the Mexican War, the entire company, as well as thousands of other Tennesseans, volunteered for service in the war. Thus, Tennessee became known as the "Volunteer State". When The University of Tennessee reopened after the Civil War, a system of military discipline was adapted. A Code of Military Regulations was drawn up and a copy was provided each student when he matriculated. The whole institution was put under regular West Point discipline. The student body was organized into a battalion of cadets, which consisted of four companies fully officered, armed and equipped under the command of the commandant and his staff of cadet officers. The University of Tennessee continued to be taught, since the University of Tennessee was a Land Grant Institution and instruction in Military Science was required by the 1862 Act of Congress. The National Defense Act of 1916 changed the old military organization into a ROTC unit. For the first time, the Federal Government began to pay a part of the uniform cost for basic course students; uniforms and other equipment were provided by the Government for Juniors and Seniors, and a monthly subsistence allowance was given to advanced course students.

From 1928-1930, Major (later Brigadier General) Robert R. Neyland was the Professor of Military Science and football coach at The University of Tennessee. Today, Neyland Stadium stands in tribute to his great accomplishments. The purpose of Army ROTC is to provide professional education which will prepare students for appointment as commissioned officers in the Regular Army or the United States Army Reserve components. Objectives of the program are to provide students with an understanding of the fundamental concepts and principles of military art and science; to develop a basic understanding of associated professional knowledge, a strong sense of personal integrity, honor, and individual responsibility, and an appreciation of the requirements for national security; and to establish a sound basis for the students' future professional development.

ROTC draws young men and women for training from all geographical, economic, and social strata of our society as well as from the many educational disciplines required for the modern Army. The program insures that men and women educated in a liberal and broad spectrum of American institutions of higher learning are commissioned annually into the officer corps.

Satisfactory/No Credit Courses

Since Military Science is not a major course of study that leads to a degree in a specific academic discipline, the number of satisfactory/no credit courses is decided by the college of the student's academic major. All ROTC courses are offered on a letter grade basis only.

Course Load

No more than one Military Science course may be taken during any given semester, unless an exception to policy is approved by the Professor of Military Science on a case-by-case basis. Students enrolled in the advanced program (upper division Military Science 300 and 400 level courses) and ROTC scholarship cadets are required to be full-time students, taking at least 12 hours each semester.
scholarship applicants should contact the
four-year scholarship. Two- and three-year
their guidance counselors early in August or
four years. High school seniors should contact
and clothing are provided.
$490 for Basic Summer Studies, plus meals
summer studies each cadet receives approxi-
by the Army through the Military Property Offi-
commission in the United States Army.
of study are required of students seeking a
must complete prior to commissioning.
Students meet these prerequisites by
of study that students
states are strongly recommended but
required of students seeking a
A One course in written communications.
b. One course in human behavior.
c. One course in military history.
d. One course in a foreign language (scholarship students only).
e. One course in Math Reasoning.
f. One course in Computer Literacy.
Courses in management and national
are not required.
SPECIAL PROGRAMS
Pay and Entitlements All students enrolled
in the Army are furnished texts by the Army through the Military Property Offi-
c. Students enrolled in the ROTC Advanced Course receive uniforms and equipment plus
an allowance of $100 per month during the
academic year. While attending the ROTC
summer studies each cadet receives approxi-
mately $650 for Advanced Summer Studies,
$490 for Basic Summer Studies, plus meals and
clothing are provided.
Army ROTC Scholarship Program The
Army ROTC scholarship program offers finan-
cial assistance to outstanding young men and
women in the Army ROTC program who are
interested in the Army as a career. Each schol-arship provides for free tuition, textbooks sub-
sidy, and laboratory fees in addition to a sub-
stance allowance of $100 per month for the
period that the scholarship is in effect. Scholar-
ships may be awarded for either two, three or
four years. High school seniors should contact their guidance counselors early in August or
September of their senior year to apply for the
two-year scholarship. Two- and three-year
scholarship applicants should contact the
Professor of Military Science for further infor-
mation. Certain other privately financed
scholarships and grants are available to ROTC
cadets.
Simultaneous Membership Program The
"SMP" option combines the Army ROTC living
allowance ($100/month) with membership in the
Army Reserve or Army National Guard and
allows the student to receive pay from both
programs. ROTC cadets serve as "officer-trainees" in direct leadership/management
positions. SMP cadets participation with the
reserve forces is one weekend per month and
two weeks each summer.
Branch Selection The curriculum of the
Army ROTC Program is designed to qualify
the cadet for appointment as an officer.
Selection for assignment to the various
branches of the Army is based upon: the
personal interests of the cadet; the major
course of study; academic accomplishments;
leadership potential; and the needs of the
Service. Under this system a cadet may be
commissioned in any branch for which he or
she is qualified and in which a need for officers
exists. After graduation and commissioning,
the officer will attend a service school for
further specialized military training which will
qualify him or her for the branch to which he or
she is assigned.
Extra Curricular Activities Numerous
military-related activities are available to
cadets throughout the school year. These
include the Tennessee Rangers, Rifle
Company, UT Color Guard, Pershing Rifles
and Sponsor Corps. These organizations
provide both student to student contact and a
valuable opportunity to acquire military skills.
Additionally, each term, a number of Field
Training Exercises are conducted allowing
such military skills as Small Unit Tactics.

### MILITARY SCIENCE CURRICULUM

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Course</td>
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</tr>
<tr>
<td>Military Science 110, 120</td>
<td>5</td>
</tr>
<tr>
<td>Sophomore</td>
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</tr>
<tr>
<td>Military Science 210, 220</td>
<td>5</td>
</tr>
<tr>
<td>Junior</td>
<td></td>
</tr>
<tr>
<td>Military Science 310, 320</td>
<td>8</td>
</tr>
<tr>
<td>Summer</td>
<td></td>
</tr>
<tr>
<td>Military Science 400</td>
<td>4</td>
</tr>
<tr>
<td>Senior</td>
<td></td>
</tr>
<tr>
<td>Military Science 410, 420</td>
<td>8</td>
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<td><strong>Total:</strong></td>
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Basic Military Studies - Practicum

<table>
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<tr>
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<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td></td>
</tr>
<tr>
<td>Military Science 200</td>
<td>4</td>
</tr>
<tr>
<td>Junior</td>
<td></td>
</tr>
<tr>
<td>Military Science 310, 320</td>
<td>8</td>
</tr>
<tr>
<td>Summer</td>
<td></td>
</tr>
<tr>
<td>Military Science 400</td>
<td>4</td>
</tr>
<tr>
<td>Senior</td>
<td></td>
</tr>
<tr>
<td>Military Science 410, 420</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>24 hours</td>
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Advanced Placement

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Junior</td>
<td></td>
</tr>
<tr>
<td>Military Science 310, 320</td>
<td>4</td>
</tr>
<tr>
<td>Summer</td>
<td></td>
</tr>
<tr>
<td>Military Science 400</td>
<td>4</td>
</tr>
</tbody>
</table>

### DEPARTMENT OF AIR FORCE

**AIR FORCE ROTC PROGRAM**
Professor of Air Force Aerospace Studies: Colonel Rex W. Jones (Head), M.S.
University of Kentucky.

Assistant Professors:
Captain Louise W. Ewing, M.A. Webster
University; Captain James E. Goss, M.S.
University of Florida; Captain Richard L.
Modell, M.S. AF Institute of Technology.

**PURPOSE**
The Air Force Reserve Officers Training Corps (AFROTC) is an educational program
designed to provide the college student an op-
portunity to earn an Air Force commission as a
Second Lieutenant while completing the Uni-
versity requirements for a bachelor's degree.
The program provides education that will de-
velop the skills and attitudes vital to the profes-
sional Air Force officer. Upon successful com-
pletion of the program and graduation from the
University, students are commissioned as
Second Lieutenants and enter active duty.

### THE PROGRAMS
The Four-Year Program: Students enter-
ing the Four-Year Program may register for the
program at the same time and in the same
manner as they enroll in their other college
courses and there is NO MILITARY OBLIGA-
TION. During their freshman and sophomore years, students enroll in the General Military Course (GMC). They then may compete for entry into the Professional Officer Course.
(POC) which is normally taken during the last two years of college. Selection into the POC is highly competitive and is based on being medically qualified; scores achieved on the Scholastic Aptitude Test (SAT) or American College Test (ACT); scores achieved on the Air Force Officer Qualifying Test (AFOQT); successful completion of a four-week field training course at an Air Force base; and the recommendation of the Professor of Aerospace Studies.

The Two-Year Program: The Two-Year Program consists of the Professional Officer Course (POC), the last two years of the Four-Year Program. It is designed to provide greater flexibility to meet the needs of students desiring Air Force opportunities. The basic requirement is that applicants have two academic years remaining at either the undergraduate or graduate levels, or a combination of both. After being nominated by the Professor of Aerospace Studies, applicants seeking enrollment in the Two-Year Program are evaluated using the same criteria used for the four-year program except the length of the field training course is six weeks. Additionally, every POC applicant must agree to take and successfully complete a course in mathematical reasoning or its equivalent before graduation and commissioning.

Since the processing procedure must be completed approximately six months in advance of intended enrollment, interested students must apply early in the academic year preceding the fall term in which they intend to enter the program. Application should be made in person to the Department of Aerospace Studies.

WOMEN IN AFROTC
AFROTC at The University of Tennessee has been coeducational since 1970. Women complete the same courses as men and have the same opportunities. Upon successful completion of the AFROTC program and degree requirements, women are commissioned in the Air Force as Second Lieutenants. Pay and job opportunities are equal for women and men. Virtually all career fields in the Air Force are open to women, including pilot and navigator positions.

SCHOLARSHIP PROGRAM
Air Force ROTC Scholarships are available to qualified applicants in both the Four- and Two-Year Programs. Each scholarship provides full tuition, laboratory and incidental fees, and book fee. In addition, scholarship cadets receive a non-taxable $100 stipend each month during the school year while on scholarship status.

High School Students: Competitive four-year scholarships are available to high school male and female students who enroll in certain scientific and engineering career fields. Some scholarships are also available to male and female students who enroll in certain non-technical majors. Four-year scholarship applications are contained in the Air Force ROTC Four-Year College Scholarship Program Application booklet. Booklets may be obtained directly from Air Force ROTC Public Affairs, Maxwell, AFB, AL 36112.

College students: Other scholarship opportunities exist for students already in college. Three and one-half, three-, and two-year scholarships are available on a competitive basis and the student must have at least four, three, or two undergraduate or graduate years of study remaining in order to compete. Applications for these scholarships should be made directly to the Department of Aerospace Studies.

PAY AND ENTITLEMENTS
All cadets enrolled in AFROTC are furnished texts and uniforms. Enrollees are required to deposit $75 as security to the University against loss or damage to the uniforms. The deposit, minus a nominal fee to cover cost of shoes, is returned to the student upon early withdrawal or disenrollment from the program. Professional Officer Course cadets receive a subsistence allowance of $100 per month during the academic year. In addition they are paid mileage to and from field training, plus pay commensurate with active duty rates while at field training.

ACTIVE DUTY COMMITMENTS
Commissioned graduates going into non-flying duties will be required to serve four years of active duty. Those graduates going into pilot assignments will be required to serve eight years active duty after completion of pilot training. Those graduates going into navigator assignments will be required to serve five years active duty after completion of navigator training.
Advanced Studies

THE COLLEGE OF LAW

Marilyn Yarbrough, Dean
Mary Jo Hoover, Associate Dean
Julia P. Hardin, Associate Dean
Richard S. Wirz, Associate Dean
N. Douglas Wells, Assistant Dean

The College of Law has, since 1890, continuously sought to provide high quality legal education in a University community. The college offers a professional curriculum leading to the degree of Doctor of Jurisprudence. Two dual degree programs are available in conjunction with the College of Law: the J.D.-MBA program with the College of Business Administration and J.D.-M.P.A. program with the Department of Political Science.

Information regarding admission, financial aid, academic policies, extracurricular activities, and student services is available in the "College of Law Bulletin." A copy may be obtained from the Admissions Office, The University of Tennessee, College of Law, 1505 W. Cumberland Avenue, Knoxville, Tennessee 37996. Completed application should be received before February 1 of the year of expected admission.

THE GRADUATE SCHOOL

C.W. Minkel, Vice Provost and Dean of The Graduate School
Wayne T. Davis, Associate Dean of The Graduate School
Linda R. Painter, Associate Dean of The Graduate School
Diana Lopez, Director, Graduate Admissions and Records
S. Kay Reed, Graduate Recruitment Coordinator
Ann L. Lacava, Thesis/Dissertation Coordinator
Rose Ann Trantham, Assistant Director, Graduate Admissions and Records
Irene Kaplan, Assistant Director, Graduate Admissions and Records

The University of Tennessee is the official land-grant institution for the State of Tennessee with its main campus in Knoxville. It is a comprehensive research-oriented institution offering a wide range of graduate programs leading to the Master's and doctoral degrees. The University offers Master's programs in 85 fields of specialization and doctoral work in 52. Approximately 6,000 graduate students are enrolled, both on and off campus. Administration of graduate student policies and procedures, and associated record keeping, is the responsibility of the Dean of The Graduate School. Much of the day-to-day administration of graduate study is conducted by department heads or faculty advisors and committees responsible for particular programs. In addition to departmental units, numerous interdisciplinary programs, institutes and centers have been developed on campus and in locations throughout the state.

The Graduate School brings together faculty and graduate students as a community of scholars with a common interest in creative work and advanced study. Graduate programs are available to students desiring full-time study toward the Master's and doctoral degrees or professional certification, those interested in continuing education for updating and broadening knowledge, and those pursuing postdoctoral research. Traditionally, universities have provided graduate programs primarily for full-time, degree-oriented students. Serving the needs of students engaged full-time in intensive study and pursuit of a degree continues to be a major emphasis of UT, Knoxville's graduate effort. At the same time, the University employs a variety of modes, traditional and non-traditional, in offering quality programs designed to serve students.

Complete information concerning graduate study at The University of Tennessee, Knoxville is available in the Graduate Catalog published annually. For a copy, write or visit the Office of Graduate Admissions and Records, 218 Student Services Building, The University of Tennessee, Knoxville, Tennessee 37996-0220 or call (615) 974-3251.

GRADUATE SCHOOL OF BIOMEDICAL SCIENCES

Raymond A. Popp, Director

FULL-TIME FACULTY

Professor:
D.E. Olins, Ph.D. Rockefeller.

Research Professor:

Research Associate Professor:
E.C. Uberbacher, Ph.D. Pennsylvania.

Research Assistant Professors:
Robert S. Foote, Ph.D. Duke; Lan-Yang Ch'ang, Ph.D. Vanderbilt.
The Graduate School of Biomedical Sciences offers programs leading to the Master of Science and Doctor of Philosophy degrees. The School publishes supplementary information in addition to the regular Graduate Catalog. All inquiries concerning admission should be addressed to: Director, The University of Tennessee-Oak Ridge Graduate School of Biomedical Sciences, Biology Division, ORNL, P.O. Box Y, Oak Ridge, Tennessee 37831. Consult the Graduate Catalog for listing of graduate level courses.

COMPARATIVE AND EXPERIMENTAL MEDICINE JOINT GRADUATE PROGRAM

Coordinating Committee:
E.J. Fuhr; J.E. Lawler; C. Lozio.

The Comparative and Experimental Medicine degree program (M.S. and Ph.D.) is jointly administered by the College of Veterinary Medicine, the College of Medicine/Knoxville Unit, and the University of Tennessee, Knoxville Graduate School. The graduate program is intended to prepare students for teaching and/or research careers in the health sciences, emphasizing the comparative approach to the study of pathology, immunopathology, aberrant metabolism, oncology, genetic disorders. For complete information, refer to the Graduate Catalog where the UCHS College of Medicine/Knoxville Unit courses are listed.

ENERGY, ENVIRONMENT, AND RESOURCES CENTER

E. William Colglazier, Director

The Energy, Environment, and Resources Center was created to encourage interdisciplin ary research directed at solutions to problems related to energy and the environment. The Center provides assistance to faculty interested in developing research and public service projects, manages research and development projects that involve several dis-ciplines, and assists Tennessee government and industry in specific problems related to energy, environmental, resource, and technology policy issues. The Center has a close working relationship with Oak Ridge National Laboratory and the Tennessee Valley Authority.

GRADUATE SCHOOL OF LIBRARY AND INFORMATION SCIENCE

Gary R. Purcell, Director

Professors:
G.E. Estes, M.L.S. Kent State; Jose-Marie Griffiths, Ph.D. London (UK); E.F. Mauldin (Emeritus); M.L.S.L.S. Illinois; G.R. Purcell, Ph.D. Case Western Reserve; P. Wilson, Ph.D. Michigan.

Associate Professors:

Assistant Professors:
R.A. Palkoquist, M.A. Iowa; R. Pollard, Ph.D. Brunel (UK).

The Graduate School of Library and Information Science provides a program leading to the preparation of librarians and information scientists for work in all types of libraries and information centers.

THE UNDERGRADUATE PROGRAM

The undergraduate library education program leads to a minor in the College of Education or the College of Liberal Arts. Students in other colleges may elect a minor in library and information science with the approval of their faculty advisors. The undergraduate minor is planned for the following groups of people: (1) students preparing for positions as school librarians in elementary and secondary schools; (2) teachers who wish to become better acquainted with books and other instructional materials; (3) school administrators who wish to explore the place of the library in the instructional program; (4) prospective candidates for the graduate program in library education; (5) persons seeking a position at the level of Library Associate as described in the manpower policy of the American Library Association. The minimum requirements for a full-time position as school librarian in the state of Tennessee (both elementary and secondary) can be met through fulfilling the requirements for teacher certification and completion of the following library courses: 330, 340, 475, 510, 530, 551, 564, and 574.

THE GRADUATE PROGRAM

The goal of the program is to prepare graduates to function effectively in libraries and information centers. For further information, write to a Graduate Catalog.

LIFE SCIENCES

Coordinating Council:
H.J. Adler (Chair); Physiology: R. Bagby; Biotechnology: D.K. Dougall; Cellular, Molecular and Development Biology: J.M. Becker; Environmental Toxicology: W.R. Farkas; Ethology: G.B. Burghardt; Plant Pathology and Genetics: O.J. Schwarz.

The programs leading to the M.S. and Ph.D. degrees in Life Sciences are interdepartmental and intercollegiate programs which augment the programs of individual departments. The graduate program in Life Sciences supports studies and research in the following concentrations: physiology; biotechnology (M.S. only); cellular, molecular and development biology; ethology; environmental toxicology; and plant physiology and genetics. Students interested in any of these areas should contact either the chair of Life Sciences or the Director of the area of interest. For complete information, refer to the Graduate Catalog.

GRADUATE SCHOOL OF PLANNING

James A. Spencer, Director
Theodore J. Newsom, Ph.D. Penn State, Assistant Director

Professors:

Associate Professors:
G.E. Bowen, M.A. George Washington; P. Fisher, Ph.D. Florida State.

The Graduate School of Planning offers a program of studies leading to the professional degree of Master of Science in Planning. For complete information, refer to the Graduate Catalog.

SPACE INSTITUTE

Wesley L. Harris, Vice President
Richard M. Robards, Associate Dean

The Space Institute is a graduate education and research institution established in 1964 on a 365 acre lakeshore campus in Middle Tennessee. UTSI has evolved into an internationally recognized institution for graduate study and research in engineering, physics, mathematics, and computer science. The accredited academic programs and educational policies of the Space Institute have their origins in appropriate departments of The University of Tennessee, Knoxville. The more than 45 faculty members of the Institute carry out these accredited academic programs through classroom teaching, informal seminars, active research, and directing the research of their students in an environment of creative work and advanced study. Programs are available to students devoting full-time effort toward M.S. and Ph.D. degrees, those interested in continuing education for updating and broadening knowledge, and those who wish to pursue post-doctoral research.

Graduate degree programs are available with majors in Aerospace Engineering, Aviation Systems, Chemical Engineering, Computer Science, Electrical Engineering, Engineering Science, Industrial Engineering (engineering management concentration), Mathematics, Mechanical Engineering, and Physics. In addition to the fundamental studies characteristic of each discipline, research opportunities are available in many areas including aerodynamics, atmospheric science, fluid mechanics, advanced space propulsion, knowledge engineering, energy conversion processes, thermal sciences, coal combustion, magnetohydrodynamics, plasma physics, space systems, remote sensing, propulsion, computational fluid dynamics, and other aspects of atmospheric and space flight.
The Institute has an established Center of Excellence in Laser Applications and offers graduate studies and research opportunities in laser diagnostics, laser materials interactions, pico second processes, and coherent and non-linear optics.

The Institute was established in part to increase the research and engineering resources of Tennessee through education and practice in relevant scientific and technical areas and in part to interface University faculty and student research with the Air Force Arnold Engineering Development Center. The faculty, research activities, and facilities of the Institute and those available at Arnold Center through appropriate contractual arrangements provide students an unusual opportunity for significant research in these areas. Students who enroll at UTSI are admitted to The Graduate School, The University of Tennessee, Knoxville. Graduate Research Assistantships are available for qualified students. Further information may be obtained from the Dean, The University of Tennessee Space Institute, Tullahoma, Tennessee 37388.

**TRANSPORTATION CENTER**

Stephen H. Richards, Assistant Director

The Transportation Center was created in 1970 to foster and facilitate interdisciplinary research and public service in the field of transportation at The University of Tennessee. It began operating full-time in 1972 and since then has contributed greatly to the overall research program of The University.

The Center, 357 South Stadium Hall, is a University-level organization administratively positioned with the Office of the Vice Provost for Research at UT, Knoxville. The Center's staff is presently organized into eight research divisions: Energy and Environment; Systems Analysis and Data Management; Policy and Services; Rail and Water; Safety and Operations; Structures and Construction; Highway Engineering; and Training and Technology Transfer.

The Center has three goals. The first is to conduct a program of research in transportation that is recognized for its excellence, comprehensiveness, innovation, productivity, and national leadership. The second is to develop and sustain the technical expertise for high quality transportation research by the faculty and students within the various departments and colleges of UT. The third goal is to serve the transportation research, service, and training needs of state and local government, business, and industry in Tennessee, the southeast region, and the nation.

**WATER RESOURCES RESEARCH CENTER**

E. William Coiglazier, Director

The Water Resources Research Center is a federally designated institute for the conduct of water research for the state. The purposes of the Center are: (1) to assist and support all the academic institutions of the state, public and private, in pursuing water resources research which addresses a wide range of problems of interest to the state, region, and nation; (2) to provide information, dissemination and technology transfer services to state and local government bodies, academic institutions, professional groups, environmental organizations, and others, including the general public, who have an interest in water resources matters; and (3) to promote education in fields relating to water resources and to encourage the entry of promising students into careers in
### Majors and Degree Programs

<table>
<thead>
<tr>
<th>College of Agriculture</th>
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<tbody>
<tr>
<td>Agricultural Extension Education</td>
<td>M.S.</td>
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<tr>
<td>Agricultural Economics</td>
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<tr>
<td>Agricultural Engineering Technology</td>
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<td>Animal Science</td>
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<td>Entomology and Plant Pathology</td>
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<td>Food Technology and Science</td>
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<tr>
<td>Forestry</td>
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<tr>
<td>Ornamental Horticulture and Landscape Design</td>
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<tr>
<td>Plant and Soil Science</td>
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<tr>
<td>Wildlife and Fisheries Science</td>
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<td>Management Science</td>
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<td>Statistics</td>
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<td>Communications</td>
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<td>Art Education</td>
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<tr>
<td>College Student Personnel</td>
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<tr>
<td>Curriculum and Instruction Education</td>
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<td>Educational Administration and Supervision</td>
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<td>Educational Psychology</td>
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<td>Educational Psychology and Guidance</td>
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<td>Health Education</td>
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<td>Music Education</td>
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<td>Physical Education</td>
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<td>Public Health</td>
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<td>Recreation &amp; Leisure Studies</td>
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<td>Safety Education and Service</td>
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<td>Special Education</td>
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<td>Technological &amp; Adult Education</td>
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<td>Vocational-Technical Education</td>
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<td>Electrical Engineering</td>
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<td>Engineering Science</td>
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<td>Environmental Engineering</td>
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<td>Industrial Engineering</td>
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<td>Mechanical Engineering</td>
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<td>Metallurgical Engineering</td>
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<tr>
<td>Nuclear Engineering</td>
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<td>Polymer Engineering</td>
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<td>Child and Family Studies</td>
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<td>Food Systems Administration</td>
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<td>Home Economics</td>
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<td>Human Ecology</td>
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<td>Interior Design</td>
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<td>Nutrition</td>
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<td>Textiles and Apparel</td>
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<td>Aviation Systems (UTS I only)</td>
<td>M.S.</td>
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<td>Comparative and Experimental Medicine</td>
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<td>Ecology</td>
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<tr>
<td>Industrial and Organizational Psychology</td>
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<tr>
<td>Life Sciences</td>
<td>M.S., Ph.D.</td>
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<td>Management Science</td>
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<td>Anthropology</td>
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<td>Art</td>
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<td>Audiology</td>
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<td>Biochemistry</td>
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<td>Botany</td>
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<td>Chemistry</td>
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<td>English</td>
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<td>French</td>
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<td>Physics</td>
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<td>Sociology</td>
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<td>Spanish</td>
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<td>Speech and Hearing Science</td>
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<td>Speech Pathology</td>
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<td>Theatre</td>
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<td>Zoology</td>
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<td>Nursing</td>
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<td>School of Library and Information Sciences Library Science</td>
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<th>School of Planning Planning</th>
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<td>M.S.P.</td>
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</table>
Division of Continuing Education, Knoxville

DEPARTMENT OF CONFERENCES

Acting Director:
R. Reynolds, M.S., Tennessee

Assistant Director:
N. Dahlin-Brown, B. of Arch., M.S., Tennessee

Program Managers:
W. Brown, M.S. Tennessee
E. Keener, B.A. Temple University
L. Law, B.S. Tennessee
G. Mosby, M.Ed. Texas South. University
G. Trantham, B.S. Tennessee

Conference Services Supervisor:
M. Purdy

UT Conferences, is a department of the Division of Continuing Education, University of Tennessee, Knoxville. Housed in the new UT Conference Center, the staff provides management services to any individual or group who desires to hold a high quality convention, conference, or meeting anywhere in the state of Tennessee.

Utilizing the new Conference Center and state-wide University system facilities, major hotels and convention centers across Tennessee, UT Conferences provides a unique contribution to continuing education and public service. Programs are custom designed to meet the needs of the participants in order to achieve maximum learning benefits. Affordable services are tailored within the budget guidelines. The overall plan is administered with the participants personal and professional enhancement as the objective. Programs which meet appropriate criteria qualify for Continuing Education Credits. The Division of Continuing Education maintains a record of CEU's earned and provides records upon written request.

Conferences' staff provides professional guidance and management for small group meetings as well as for major conventions of several thousand delegates. Consulting services begin with the initial planning and budgeting. They continue as UT Conferences acts in the sponsor's behalf in negotiating and contracting all arrangements for lodging, food services, speakers, promotional material, travel, meeting rooms and the myriad of details that must be monitored in order to assure a successful event. The site management team is the first on the scene prior to the event and is prepared to register the early arrivals. Room sets, audio visual equipment, sound systems, refreshment breaks, tours, banquet - every detail is executed as planned and problem solving is made easy through experienced management. A final evaluation after the event reflects a positive performance, a balanced budget and a growth experience for your organization. This turn-key support allows the sponsors to concentrate on quality of program content and to serve as host to attendees.

UT Conferences has joined hands with UT Educational Video and Photography to provide teleconferencing services for the University and community. Professional groups and interested individuals may arrange to receive (downlink) satellite programming at the UT Conference Center or to transmit (uplink) to earth stations around the world. Additional information may be obtained from UT Conferences, P.O. Box 2648, Knoxville, TN 37901, or by calling (615) 974-0250. FAX (615) 974-0264.

ENGLISH LANGUAGE INSTITUTE

Director:
Dale A. Myers, Ph.D., Florida

Assistant Director:
Jan G. Hitt, M.S., Tennessee

Instructors:
Anwar F. Accawi M.Ed., Tennessee
Mostafa Rahbar, M.Ed., Tennessee

The English Language Institute (ELI) is a non-credit language-study program of the University of Tennessee, Knoxville. It is designed to assist students in their pursuit of career goals or educational objectives in the United States.

The ELI offers intensive courses for the improvement of student skills in the English language. International students, visitors, and professionals have successfully learned English through study in the ELI.

The courses emphasize the development of communicative ability in listening, speaking, reading, and writing. Faculty members are trained in teaching English to speakers of other languages with differing national backgrounds and varying proficiency in English.

The curriculum consists of eight proficiency levels: 101-108, Introductory through Pre-Academic.

Each level meets 4-5 periods each day with classes from the following:
English Structure (Grammar)
Listening Comprehension
Writing/Composition (Rhetoric)
Conversation Practice for Communicative Purposes
Reading and Vocabulary

In addition, classes also assist students in pronunciation, test-taking strategies, U.S., culture orientation, and university study skills. Additional information may be obtained at 907 Mountcaster Street; telephone (615) 974-3404.

NON-CREDIT PROGRAMS

Director:  G.D. Cooper, Ed.D., Tennessee

The Department of Non-Credit Programs provides a comprehensive array of courses and seminars designed and planned to serve the needs or demands of individuals in Knoxville and surrounding communities, as well as those of business and industry throughout Tennessee. Most courses are offered on a seasonal term (Fall, Winter, Spring, Summer) basis, in the evening on the University campus and at selected off-campus locations. The quality of these programs is maintained by utilizing University faculty where possible and citizens of the community who have gained a reputation for certain competencies or technical skills. Business seminars are offered to the public in the major cities throughout the state of Tennessee. These can also be delivered "on-site" for business or industrial clients, and instructional services are tailored to the needs of each individual group.

The types of courses offered by the department range from developing personal skills, such as communications, computer literacy, and management development, to human interest courses, such as plants and gardening, health, exercise and fitness. There are also courses which fulfill certain requirements of the state or other agencies for certification in given fields, such as real estate, aviation, CEBS (Certified Employee Benefit Specialist) and CCA (Certified Credit Administrator). The business component is "hands-on" computer training to topics pertinent to management development for business and industry. "In-house" courses delivered to business and industry help provide for professional development for the area workforce.

The department co-sponsors an ongoing program, the Smoky Mountain Field School, with the Great Smoky Mountains National Park. The School consists of intensive weekend and five-day field courses emphasizing outdoor exploration of the Smoky Mountains.

Continuing Education Units (CEU's) are awarded to students satisfactorily completing courses and seminars offered by the department. A CEU is defined by the Southern Association of Colleges and Schools as "ten contact hours of participation in an organized, continuing education experience under responsible sponsorship, capable direction, and qualified instruction." A permanent record of CEU's is maintained by the department. A transcript of all CEU's earned at The University of Tennessee, Knoxville, may be obtained upon written request.

Statewide legislation gives Tennessee citizens who are 60 years of age or older, or those who are totally disabled, the opportunity to audit courses at UT, Knoxville free of charge on a space available basis. Legal verification of either of these conditions is required for enrollment. Additional information may be obtained at The Hess Building, 600 Henley Street, Suite 105, Telephone (615) 974-0150.

UNIVERSITY EVENING SCHOOL

Director:  S.C. Bills, Ed.D., Tennessee
Associate Directors:  J.C. Sekula, Ph.D., Tennessee, M.K. Warden, Ed.D., Tennessee
Assistant Director:  L.U. Jurand, M.S., Tennessee
Administrative Assistant:  B.H. Beeler
Assistant Professor:  C.B. Mamatov, Ed.D., Tennessee
Director, Oak Ridge Resident Graduate Program:  S.C. Bills, Ed.D., Tennessee
Assistant Director, Oak Ridge Resident Graduate Program:  V. Maya, M.S., Tennessee

The University Evening School, in conjunction with academic colleges and departments, administers credit programs for those students attending classes on and off campus in a variety of non-traditional formats. Support services are provided to assist students in their educational pursuits.

On Campus Evening Program. Classes are offered during late afternoon and evening hours for those students who work or have other commitments during the day. The following undergraduate degrees are available:

- College of Business Administration
- Bachelor of Science in Business with majors in Accounting, General Business, Economics, or Management
- College of Liberal Arts
- Bachelor of Arts with majors in Art, Economics, Mathematics, Psychology, or Sociology

Some departments within the Colleges of Business Administration, Education, and Engineering offer all courses required for an advanced degree during the evening. The College of Business Administration also offers all courses required for the MBA degree with a concentration in Management and Venture Analysis. For other majors, consult the appropriate academic department.

Mini-Term. The University Evening School offers a Mini-Term during May. Students may enroll in one concentrated credit course during the Mini-Term period.

Courses and instructors listed for the Mini-Term are carefully selected to reflect a broad academic base of individualized offerings suited to an intensive program of study. Courses cover traditional material and information included in regular semester offerings; however, these courses may be supplemented with films, team teaching, field trips, independent research projects and specialized areas of study, affording students an opportunity to immerse themselves in the discipline selected.

Off Campus Programs. The Evening School conducts undergraduate and graduate courses in many locations away from the Knoxville campus. The courses are scheduled in response to requests and identifiable needs of adult part-time students who live some distance from the UT, Knoxville location. All course offerings and instructors are approved by the appropriate academic departments, and credit awarded is resident credit.

The College of Education (Off-Campus) offers a Bachelor of Science in Education with a major in Vocational-Technical Education and the following graduate degree programs are available: Doctor of Education with a major in Educational Administration and Supervision (Chattanooga); Specialist in Education with a major in Educational Administration and Supervision (Chattanooga); Doctor of Education with a major in Vocational-Technical Education (Chattanooga); Master of Science in Education with a major in Curriculum (Athens); Master of Science in Education with a major in Vocational-Technical Education (Statewide).

The Evening School administers an off campus center at Oak Ridge where courses leading to advanced degrees in science and engineering are offered. At Oak Ridge, Graduate Study Programs lead to a Master’s in Chemical, Electrical and Industrial Engineering (engineering management). Courses are offered in Nuclear Engineering (concentration in radiation protection), Environmental Engineering (concentration in hazardous waste management), Computer Science, Mathematics, Physics, Chemistry, Public Health and Mechanical Engineering.

Workshops. Credit workshops are coordinated through various academic departments of the University and provide students the opportunity to participate in short periods of intensive study. As a result, students may earn college credit within a shorter time frame than the traditional semester system.

Workshops offer flexibility of timing, location, and content. Summer workshops are particularly popular with teachers and school administrators. Although most workshops are held on the UT, Knoxville campus, geography is not a limiting factor.

Student Services. A comprehensive program of services is provided by the University Evening School for both on and off campus students.

Registration. Registration by mail is offered as a convenience to former Evening School students. Secondary registration at both on and off campus locations is also available.

Advising. An advising counseling program is available for the benefit of all evening students who need assistance with academic or related matters. The program provides individual and small group sessions during regular daytime hours (8:00-5:00) and in the evenings by appointment, as well as at various centralized off campus locations. The College of Liberal Arts, Business, Education, and Engineering also cooperate with the Evening School by providing extended hours several times a week to advise students. A veterans' advisor.
The University of Tennessee assists in academic planning for Evening School students who receive educational benefits under the G.I. Bill. Financial Aid. Evening School students who encounter difficulty in pursuing academic goals because of financial restrictions may be eligible for assistance through the Evening School Scholarship Fund. Interested students may also obtain applications for the Pell Grant in the Evening School Office.

ELDERLY AND DISABLED PERSONS
Legislation gives Tennessee citizens who are 60 years of age or older, or those who are totally disabled, the opportunity to attend courses at the University at no charge on an audit, space available basis. Legal verification of either of these conditions is required for enrollment. Students who are 65 or over, or who are totally disabled, and who desire to receive UT credit for their courses, may pay a reduced charge of $7 per credit hour up to a maximum of $75 for a full-time load. Registration for day and evening classes is handled by the Evening School.

The University Evening School office is located at 451 Communications and University Extension Building on the UT, Knoxville campus and may be reached by calling (615) 974-5361 or 1-800-334-1724. All inquiries concerning these programs are welcome.

DEPARTMENT OF INDEPENDENT STUDY
Director: David F. Holden, Ph. D. Kansas
Assistant Director: Samuel A. Cain, M.S. State University of New York (Stony Brook)

The UT, Knoxville Department of Independent Study administers the program of independent study by correspondence for all campuses of the University. The program includes college credit courses, high school courses (for credit or for college entrance requirements), and non-credit courses. College credit correspondence courses are based on regular UT campus courses, and the credit is recorded on the student's UT transcript. High school courses are based on the curriculum frameworks of the Tennessee Department of Education. Non-credit courses can be taken to meet personal or professional education goals. The courses utilize videotapes and audiotapes as well as traditional print materials. Through this program, The University of Tennessee is able to overcome geographic limitations in performing its services as Tennessee's land-grant institution of higher education. The program is open to UT students and to anyone who has the educational preparation required for a particular course. UT students must have the approval of their college advising center before they enroll in college credit courses. With the cooperation of a UT instructor, independent study through directed readings may also be arranged through this department for courses not listed in the Independent Study catalog.

The Department of Independent Study also serves as the Tennessee state office for Elderhostel, an education and travel program for people over 60. One-week, non-credit Elderhostel programs are available throughout Tennessee, the U.S., and many countries overseas.

For information and enrollment forms for correspondence courses or Elderhostel, contact: Department of Independent Study, 420 Communications Bldg., The University of Tennessee, Knoxville, TN 37996. Telephone: (615) 974-5134.
ACCOUNTING (009)

201 Principles of Financial Accounting (3) Introduction to financial accounting theory and practice with emphasis on preparation and reporting of financial information. Prerequisite to all other courses in accounting. Prereq: Mathematics 110 or 121. E

202 Principles of Managerial Accounting (3) Introduction to managerial and cost accounting concepts with emphasis on uses of accounting data by managers in planning operations, controlling activities, and decision making. Prereq: 201. E

311-312 Intermediate Financial Accounting (3,3) Theory, principles, and procedures related to valuation of assets, liabilities and equities; measurement of periodic income; and preparation of financial statements. Prereq: 202 for 311; and 311 with a grade of C or better and Management 303 for 312. E

321 Cost and Managerial Accounting (3) Analysis of costing for products, projects, and management control. Topics include cost behavior, cost prediction, budgeting, and responsibility accounting. Prereq: 202. Prereq or Coreq: Management 303. E

341 Accounting Information Systems (3) Development and use of accounting information systems for collection, organization, and distribution of economic information about organizations for internal and external decision making. Prereq: 321, Management 303, junior standing. Major exam may be given during the last class meetings. F, Sp

400 Special Topics (3) Critical consideration of selected current topics. May be selected from managerial/cost, financial, systems or auditing. May include written reports and cases. Prereq: 312, 321, and 341 and consent of instructor.

411 Auditing (3) Role of auditing in society, operational auditing, professional auditing standards, auditor's legal responsibilities, audit evidence and reporting, role of internal control and statistical sampling in auditing, applications to specific transaction cycles. Prereq: 312 with a C or better, 341, F, Sp

414 Advanced Accounting (3) Issues and alternatives in advanced theory and problem areas including financial accounting theory, partnership accounting, business combinations, consolidated financial statements, and non-for-profit accounting. Major writing requirement. Prereq: 312 with a C or better, or consent of instructor. E

431 Federal Income Taxation (3) Fundamentals of gross income, deductions, credits, and tax determination. Introduction to taxation of corporations and partnerships. Prereq: 311 with a C or better, or consent of instructor. E

ADVERTISING (012)

250 Advertising Principles (3) Survey of the role of advertising in American business and society. Relationship between advertising and marketing; functional components of the advertising process: research, media, creative, and management.

340 Advertising Research Methods (3) Secondary data and primary research techniques for advertising decisions. Prereq: 250 with a grade of C or better and Statistics 201.

350 Advertising Creative Strategy (3) Basic concepts of creative strategy with intensive practice in developing creative platforms, writing and designing advertisements, and judging creative work. Prereq: 250 with a grade of C or better.

360 Advertising Media Strategy (3) Assessment of markets, vehicle audiences and mathematical techniques for advertising planning. Instruction in media planning, buying, and evaluation. Prereq: 340 with a grade of C or better.

380 Advertising Professional Seminar (1) Exploration of career choices in mass communications. Resume and letter writing, interviewing, and portfolio preparation. Prereq: Progression as a major in the Department of Advertising.

450 Advertising Management (3) Case study approach to advertising decisions. Data analysis and interpretation, generating alternative strategies, oral and written presentation of recommendations. Prereq: 350 and 360 with grades of C or better. Open to marketing seniors in the College of Business Administration with consent of Head of Department of Advertising.

470 Advertising Campaigns (3) Group-based development, execution and evaluation of an advertising campaign for a regional or national client. Prereq: 450 with a grade of C or better.

490 Special Topics (3) Detailed study of a specialized area of advertising. Topics vary by semester and include advanced media strategy, advanced creative strategy, direct marketing, and advertising and social issues.

492 Advertising Practicum (1) Experience in a functional area of advertising. Ten hours laboratory each week. May be repeated once. Prereq: Progression as a major in the Department of Advertising. Satisfactory-No credit.

493 Independent Study (1-3) Individual study in a specialized area under the supervision of a faculty member. Prereq: Consent of instructor.

AFRO-AMERICAN STUDIES (022)

201 Introduction to Afro-American Studies (3) Multidisciplinary approach to the Afro-American experience through the Civil War period which examines such issues as traditional African societies, the institution of slavery, the development of Afro-American culture, the beginnings of Afro-American protest tradition, and the Civil War and Reconstruction.

202 Introduction to Afro-American Studies (3) Multidisciplinary approach to the Afro-American experience from the Civil War through the Civil Rights era which focuses on such topics as Afro-American rural and urban societies, the Afro-American church and education and Afro-American intellectual and protest movements.

310 Introduction to Afro-American Music (3) (Same as Music History 310.)

314 Peoples and Cultures of Africa (3) (Same as Anthropology 314.)

315 Afro-American Anthropology (3) (Same as Anthropology 315.)

322 Minority Group Politics in the United States (3) (Same as Political Science 322.)

343 Race and Ethnicity (3) (Same as Sociology 343.)

350 History of Jazz (3) (Same as Music History 350.)

352 Afro-American Religion in United States (3) (Same as Religious Studies 352.)

353 Topics in Afro-American Religion (3) (Same as Religious Studies 353.)

364 Contemporary Issues in Afro-American Education (3) (Same as Political Science 364.)

371-372 African History (3,3) (Same as History 371-372.)

373 African Religions (3) (Same as Religious Studies 373 and Anthropology 373.)

379 Geography of Africa (3) (Same as Geography 379.)

420 Families: Race, Class and Culture (3) (Same as Child and Family Studies 420.)
421 Comparative Studies in African and Afro-American Societies (3) Comparative studies of African and Afro-American societies in such areas as education, religion, government, and social problems. Credit is awarded for each course and the respective views Afro-Americans and Africans have of each other and the concept of Pan-Africanism. Writing-emphasis course; at least one in-class essay examination and 3000 words of writing outside the classroom. (Same as History 421.)

429 History and Philosophy of Afro-American Education (3) Focuses on attempts by Afro-Americans to secure an education for themselves and their children from the era of slavery to the Supreme Court decision in 1954. Examines black perceptions of the importance of education and special obstacles confronting Blacks who seek education on the primary, secondary, college, or graduate level. Writing-emphasis course; at least one in-class essay examination and 3000 words of writing outside the classroom.

431 Research Seminar in Afro-American Studies (3) Teaches basic approaches to the research process and development of research skills. Students design and implement a research project of their choice in the field of Afro-American Studies. May be repeated. Maximum 6 hours.

442 Comparative Property and Development (3) (Same as Sociology 442.)

445 The Afro-American Experience From the Colonial Period to the Present (3) (Same as History 445.)

450 Issues and Topics in Afro-American Studies (3) Topics vary, but include a variety of problems, issues, and individuals from the field of Afro-American Studies. May be repeated. Maximum 6 hours.

452 Black African Politics (3) (Same as Political Science 452.)

461 African Prehistory (3) (Same as Anthropology 461.)

473 Black Male in American Society (3) Examines historical images, myths, and stereotypes which have developed concerning Black males in American society. Includes the impact of such critical factors as Black feminism, violence, concepts of masculinity, the family, white males, white females, homosexuality, nationalism, and athletics on Black males in America.

480 Black Communities in Urban America (3) Evaluates the urban experiences and historical influences of three major institutions: the church, the family, and the school upon the African-American struggle to survive. Includes political, economic, and social factors utilized by Blacks in developing coping strategies and mechanisms. Writing-emphasis course; at least one in-class essay examination and 3000 words of writing outside the classroom.

483 Afro-American Women in American Society (3) Focuses on historical and contemporary sociopolitical factors in American society as they relate to the Black woman. Writing-emphasis course; Students design and implement a research project of their choice in the field of Afro-American Studies. May be repeated. Maximum 6 hours.

496 Biology of Human Variability (3) (Same as Sociology 496.)

496 Agricultural and Extension Education (3) Methods and techniques for teaching agriculture, preparing teaching plans and courses of study, and developing programs of activities for agriculture.

411 Fundamentals of Agricultural Extension (3) History; philosophy; organizational structure; clientele served; major areas of program philosophy-teaching methods, and relationships with other educational agencies. Sp.

420 Methods of Teaching Agricultural Mechanics (2) Methods for vocational agriculture students. Special competencies for planning, conducting and evaluating agricultural mechanics program. Prereq: Agricultural Engineering Technology 201 on consent of instructor.


482 Agricultural and Extension Education Internship (2-8) Supervised work experience in approved county Extension offices, agricultural businesses, or agricultural related agencies. (Requires living off-campus for a specified time.) Prereq: 411 and consent of instructor. Sp, Su.

493 Independent Study (1-3) Individualized study of a special project or problem in Agricultural and Extension Education, in consultation with the instructor. Prereq: Consent of instructor. May be repeated for credit. Maximum 6 hours. E.

AGRICULTURAL ECONOMICS (047)

110 Orientation to Agricultural Economics and Business (1) Primary for Agricultural Economics and Business majors. Introduces students to current issues, subject matter areas, and career opportunities in the field. Satisfactory/No Credit grading.

210 Introduction to Agricultural Economics (3) Application of economic principles of demand, supply, price determination, and market structure to agriculture, natural resources, rural community development, and international trade and development. Economic aspects of current issues and problems associated with production, marketing, consumption, resource use, and government intervention in the agricultural, rural, and international sectors. Prereq: Economics 201. F, Sp.

310 Farm and Agribusiness Law (3) Survey of law applicable to the farmer, agribusiness manager, and agricultural industry. Property, contracts, torts, drainage and water rights, landlord-tenant relationships, taxation and insurance, forms of business organization, estate planning, corporate and personal income tax planning, regulatory laws, and other selected topics. Prereq: Junior standing or consent of instructor. F.

342 Farm Business Management I (3) Principles and procedures in agricultural business enterprise forming, operation and control, and organization and operation of enterprise; nature of managerial processes; farm records and their uses; budgeting; economic aspects of asset management and management of capital, land, labor and machinery resources. Prereq: Economics 201 and Junior standing. F.

350 Marketing of Agricultural Products (3) Survey of U.S. food and fiber marketing system; marketing functions; industry structure; market channels; marketing options of farmers; basic analysis of marketing problems. Prereq: 210 or consent of instructor. Sp.

352 Commodity and Financial Futures Markets (3) Foundations and principles of futures market operation, function, and organizational characteristics common to most futures markets. Special topics on risk management, forward price discovery, securing operating capital and market capacity, for information use and dissemination. Course is intended for advanced undergraduate students.

410 Seminar in Agricultural Economics and Business (1) Primarily for Agricultural Economics and Business majors in their senior year. Analysis of contemporary problems in the field. Discussion of career objectives, opportunities, and placement process. Assignments for written and oral presentation.

412 Agricultural Finance (3) Macroe-finance, financial objectives, acquisition of debt and equity funds, capital investments, capital allocation, debt repayment, credit analysis, borrower and lender loan application analysis; insurance strategies, computer applications, kinds and sources of agricultural credit, and financial intermediation. Prereq: Economics 201; Junior standing or consent of instructor. F.

430 Agricultural and Trade Policy (3) Values, goals, and policy process; historical development and current characteristics of agriculture, credit, food, and trade policy; relationship between domestic and international agricultural policy. Prereq: 210 or consent of instructor. Sp.

440 Agricultural Production Economics (3) Applications of microeconomic theory to problem of resource allocation, enterprise selection, scale of operation of agricultural firms; economics interpretation of technical agricultural production relationships. Prereq: 210 and Economics 311. F.

442 Farm Business Management II (3) Advanced topics and methods for farm business analysis using micro and mainframe computers: linear programming applications in farm planning; spreadsheet analysis of whole farm business, systems analysis and management control; risk analysis and management; income tax management; farm growth and intergenerational transfer. Prereq: 342. Sp.

450 Agricultural Price Analysis (3) Demand and supply analysis; basic economic analysis of critical factors influencing natural resource use; externalities in natural resource use; factors influencing environmental quality; alternative public policy tools for influencing natural resource use or improving environmental quality. Prereq: 210 or consent of instructor. Sp.

493 Independent Study (1-3) Directed individual or team research and report writing. Off-campus intern experience and reporting. Special courses in specific topics. Student must arrange with instructor before registering. May be repeated. Maximum 6 hours. Prereq: Junior standing. E.

AGRICULTURAL ENGINEERING (066)

201 Specialty Areas of Agricultural Engineering (1) Activities and opportunities in five areas of specialization requiring one hour for each area; projected career activities. 1 hour. F.

300 Environmental Relationships (2) Applications of thermodynamics principles to agriculture. Psychrometries, thermodynamics cycles, biothermodynamics, the plant-animal-environment interaction. 2 hours. F.

310 Power Units and Machinery (2) Components and operating characteristics of internal combustion engines and tractor power transmission systems; functional analysis; capabilities of agricultural machines; tractor/implement system performance. Prereq: Mechanical Engineering 331; 1 hour and 1 lab. Sp.

320 Structures and Environment (2) Environmental control systems; methods and purposes of heat and moisture balances; heat loads and insulation; functional requirements of agricultural buildings; material selection and costs. Prereq: Junior standing. F.

330 Processing (2) Application of basic engineering sciences to processing and handling of agricultural products; physical properties; thermal processing, curing, drying, and post-harvest handling. Prereq: Biological Engineering Science and Mechanics 341, Nuclear Engineering 342. 1 hour and 1 lab. Sp.
Agricultural Engineering Technology (067)

201 Materials and Fabrication (3) Properties of materials including wood, metals, plastics, and rubber; drafting and print reading; fabrication techniques and processes involving hand tools, power equipment, and arc and gas welding. 1 hour and 2 labs. Prereq: Engineering Science and Mechanics 341. S

202 Surveying and Engineering Technology in Agriculture (3) Agricultural surveying including measurement of distances, angles, and areas; differential and profile leveling; topographic surveying and mapping; engineering fundamentals applied to problems in soil and water conservation, agricultural machinery, and structural systems; emphasis on techniques and problem solving. 2 hours and 1 lab. F

422 Food and Process Engineering Technology (3) Application of basic engineering principles to agricultural and food processes. Fluid handling, drying, evaporation, thermal processing, heating and cooling, refrigeration systems, and materials handling. Prereq: Physics 121, Mathematics 121. 2 hours and 1 lab. F

432 Agricultural Machinery and Tractors (3) Agricultural machinery and power units; adaptation to agricultural practices; management considerations; field efficiencies, capabilities, adjustment and servicing. Prereq: Mathematics 121. 2 hours and 1 lab. Sp

442 Agricultural Waste Management and Pollution Control (3) Waste renovation fundamentals: characteristics of animal manure, techniques for collecting, transporting, storing, and utilizing waste. Prereq: Mathematics 121. 2 hours and 1 lab. F

452 Small Internal Combustion Engines (3) Concepts and mechanics of small internal combustion engines: selection, operation, adjustment, troubleshooting, and repair of single-cylinder engines. Prereq: Physics 121 or consent of instructor. 2 hours and 1 lab. Sp

462 Agricultural Chemical Application Technology (3) Equipment for application of liquid, solid, and gaseous agricultural chemicals; system components; operational characteristics; calibration; selection and management; safety considerations; materials handling and disposal methods. Prereq: Physics 121 or consent of instructor. 2 hours and 1 lab. Sp

Agriculture (088)

101 Perspectives in Agriculture and Associated Natural Resources (3) History of agriculture, current national and international issues, and trends for the future. 3 hours.

300 Microcomputers in Agriculture (1) Microcomputer technology as related to agricultural applications. Topics include: microcomputer terminology, architecture, computer peripherals, operating systems, and an overview of application software.

301 Microcomputer Applications in Agriculture (2) Applications of microcomputers to specific tasks and situations for agriculture including system organization and selection, communications, data base management, electronic spreadsheets, graphics, and word processing application software. Prereq: Agriculture 300. 1 hour and 1 lab.

302 Special Topics in Computer Applications for Agriculture (1) Content varies. May be repeated for a maximum of 3 hours. Request approval for variable title on transcript.

480 Agricultural Management Systems Analysis (3) Interdisciplinary management oriented course for the application of systems analysis concepts to planning and operation of farm business. Team work, application of technical knowledge to a practical farm situation and evolution of internships among various sub-teams. Open to juniors and seniors by invitation only.

Air Force Aerospace Studies (094)


103-104 Leadership Laboratory (1,1) Initial leadership experiences and orientation to active duty. Instruction in: drill and ceremonies; Air Force standards, customs, and courtesies; the Air Force as a profession; and the environment in which the Air Force officer works. Coreq: 101-102. Satisfactory/No Credit only.

201-202 Air Force Aerospace Studies (1,1) Introduction to the study of air power from a historical perspective starting before the Wright Brothers and continuing into the 1980's. Coreq: 201-202. Satisfactory/No Credit only.

203-204 Leadership Laboratory (1,1) Intermediate leadership experiences and orientation to active duty. Instruction in: teaching/perfecting drill and ceremonies; Air Force standards, customs, and courtesies; the Air Force as a profession; and the environment in which Air Force officer works; and preparation for field training. Coreq: 201-202. Satisfactory/No Credit only.

205 Field Training (Academic Program) (1-4) Role of United States military forces in contemporary world, with particular attention to United States Air Force, its organization and mission, various component forces of U.S. military power, organization of America's defense structure, policies of major powers, and elements and processes in making of defense policy. Conducted at Field Training Bases throughout the country. Open only to two-year program applicants.

301-302 Air Force Aerospace Studies (3,3) Air Force leadership at junior officer level, including theoretical, professional, and legal aspects, with attention to communication skills, Military Management functions, principles, and techniques. Prereq: Air Force ROTC approval and completion of either 205 or 101-102, 201-202. Same as: 330-334.

401-402 Air Force Aerospace Studies (3,3) Role and function of professional officer in a democratic society; socialization process, public attitudes, and value orientations associated with professional military service; requisites for maintaining national security forces; decision-making processes of Department of Defense; political, economic, and social aspects of U.S. defense policy; impact of technological and international developments upon strategic preparedness; emphasis on developing communicative skills. Prereq: Air Force ROTC approval and completion of 301-304. Coreq: 403-404.

American Studies (099)

310 Introduction to American Studies (3) Explores dynamic and nature of the culture(s) of the United States through interdisciplinary study and interpretation. Considers both "mainstream" and "minority" cultures. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

334 Film and American Culture (3) Same as Cinema Studies 334 and English 334.

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

440 America: Mind, Mood, and Society (3) Same as History 440.

493 Independent Study (1-15)

Animal Science (113)

101 Orientation to Animal Science (1) For Animal Science majors and Prevet students in their first year. Discussion of student services, career and job opportunities, student participation in planning the college experience. Satisfactory/No Credit. Sp


482 Dairy Cattle Production and Management (3) Integration of principles of nutrition, physiology, and breeding into complete dairy cattle management programs. Structure of industry, enterprise establishment, systems of production, production practices and herd improvement programs. Alternates evaluated in terms of production responses and economic returns. Prereq: Completion of Animal Science sophomore and junior core courses or consent of instructor. 2 hours and 1 lab. F.

483 Pork Production and Management (3) Integration of principles of selection, nutrition, breeding, physiology and ethology into a comprehensive horse production system and management program. Structure of industry, enterprise establishment, systems of production, production practices and herd improvement programs. Alternates evaluated in terms of production responses and economic returns. Prereq: Completion of Animal Science sophomore and junior core courses or consent of instructor. 2 hours and 1 lab. F.

484 Poultry Production and Management (3) Structure of the poultry enterprises including rearing, housing, feeding, processing and marketing. Prereq: Senior standing and permission of instructor. Completion of Animal Science sophomore and junior core courses recommended. 2 hours and 1 lab. Sp.

485 Horse Production and Management (3) Integration of principles of selection, nutrition, breeding, physiology, and marketing into complete beef and dairy cattle management systems. Prereq: Protection of farm animals. 2 hours and 1 lab. Sp.

486 Lamb and Wool Production and Management (3) Integration of principles of selection, nutrition, breeding, physiology, and marketing into complete beef and dairy cattle management systems. Prereq: Protection of farm animals. 2 hours and 1 lab. Sp.

488 Companion, Zoo and Lab Animal Management (3) Principles of nutrition, physiology, breeding, handling, and husbandry of common household pets. Prereq: 261 or consent of instructor. 2 hours and 1 lab. Sp.

493 Special Problems in Animal Science (1-3) Special research and/or special reports based on supervised independent study; approved supervised work experience in industry. Prereq: Senior standing and consent of instructor and department head. E.

495 Seminar (1) Review of literature and oral and written presentation on special topics and current research. Prereq: Senior standing. One 2 hour lab. F, Sp.

ANTHROPOLOGY (122)

110 Human Origins (3) Survey of humanity's background, the living major races, fossil human remains, and living races of humankind.

120 Prehistoric Archaeology (3) Introduction to methods and techniques used to identify and date archaeological cultures using material and the ways and describe cultural evolution. Overview of the prehistory of Africa, western Europe, southwest Asia, and the Americas from earliest dated human cultures to the rise of complex civilizations.

130 Cultural Anthropology (3) Major concepts and methods in the study of culture; survey of cross-cultural similarities and differences in subsistence, social organization, economic, political, and religious institutions; language, ideology and arts. Contributions of anthropology to resolving contemporary human problems.


220 Prehistory of Tennessee (3) History of archaeological research in Tennessee and survey of prehistoric Indian cultures from initial occupation of the state to European contact.

230 American Cultures (3) Anthropology in the study of our own society including such topics as ethnic communities, social classes, power structures, etc.

302 Religion of Primitive Peoples (3) Same as Religious Studies 302.

306 Genetics and Society (3) Same as Botany 306.

310 North American Indians (3) Comparative overview of Indian cultures of North America. Topical covers culture, diversity, human ecology, and contemporary problems resulting from contact and acculturation. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

311 Southeastern Indians (3) Survey of Southeastern Indian cultures at the time of European contact. Emphasis on Cherokee culture and on the social, economic, and religious changes of aboriginal groups. Prereq: 130 or consent of instructor.

312 Appalachian Culture (3) Traditional Southern Appalachian subsistence patterns and economy, social organization, beliefs and values, folklore and custom; socio-cultural impacts of industrialization and modernization. Prereq: 130 or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

313 Peoples and Cultures of Mesoamerica (3) Pre-Columbian and Hispanic cultures of Mexico, Guatemala, Belice, El Salvador and Honduras. Patterns of cultural continuity and cultural change throughout Mesoamerica's history. Prereq: 130 or consent of instructor. (Same as Latin American Studies 313.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

314 Peoples and Cultures of Africa (3) Ethnographic survey of peoples of sub-Saharan Africa, focusing on cultural diversity, human ecology, and contemporary issues. Prereq: 130 or consent of instructor. (Same as Afro-American Studies 314.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

315 Afro-American Anthropology (3) Anthropological perspectives on lifestyles and social status of persons of African descent in the United States and the Caribbean. Prereq: 130 or consent of instructor. (Same as Afro-American Studies 315.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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

360 North American Prehistory (3) Prehistoric cultures of North America from initial occupation of the continent to European contact. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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

362 Principles of Archaeology (3) Research strategies used in developing method and theory, constructing cultural histories, identifying site function and settlement-subistence patterns, and evaluating explanations of cultural change. Prereq: 120 or consent of instructor.

373 African Religions (3) Same as Religious Studies 373 and Afro-American Studies 373.

400 Readings in Anthropology (1-6) Problem-oriented directed readings in anthropology. Prereq: Anthropology majors with senior standing and consent of instructor. May be repeated. Maximum 6 hours.
410 Principles of Cultural Anthropology (3) Exploration of major concepts, theories, and methods in cultural anthropology, with application to analysis of specific ethnographic settings. Prereq: 130.

411 Linguistic Anthropology (3) Basic linguistic concepts and theories related to cultural anthropology, particularly investigation of relationships between language and culture. Prereq: 130 or Linguistics 200. (Same as Linguistics 411.)

412 Folklore in Anthropology (3) Introduction to anthropological study of folklore, using folklore and folklife materials from various tribal, peasant, and complex societies. Prereq: 130 or consent of instructor.

413 Dynamics of Culture (3) Definition and in-depth study of causes of culture change, ranging from evolution and diffusion to religious revitalization and political revolt. Continuity and change in diverse cultural settings examined through use of archaeological, ethnomarine, and contemporary cases. Prereq: 130.

430 Fieldwork in Archaeology (3-9) Practicum work in archaeological data recovery and analytical techniques. Prereq: Consent of instructor. May be repeated. Maximum 9 hours.

440 Cultural Ecology (3) Concepts and methods in studying dynamic interaction between prehistoric and present-day cultures and their environments. Topics include ecological theory, methods of analysis, and review of selected case studies. Prereq: 120, 130, 410, or consent of instructor.

450 Current Trends in Anthropology (3) Analytical, integrative review of current directions of research and theory in anthropology.

460 Selected Topics in Archaeology (3) Regional or theoretical issues in archaeology for undergraduate students. Topics may include prehistoric experience in laboratory study of archaeological materials. May be repeated. Maximum 6 hours. Prereq: 120 or consent of instructor.

461 African Prehistory (3) African cultural history from the earliest evidence of human activity to the time of European contact. Emphasis on the stone age of Africa south of the Sahara. Prereq: 120 or consent of instructor. (Same as Afro-American Studies 461.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

462 Early European Prehistory (3) Origins and evolution of human culture in Europe through the beginnings of settled life. Primary focus on Paleolithic/Mesolithic chronology and lifeways. Prereq: 120 or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

463 Rise of Complex Civilizations (3) Development of complex societies in Old World from origins of agricultural economics to rise of States. Focus on Mesolithic, Neolithic, and Metal Age lifeways in Asia, Europe, and Africa. Prereq: 120 or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

464 Principles of Zoarchaeology (3) Basic osteological and morphological correlates, with emphasis on the aboriginal's use of animals in subsistence and culture, identification and interpretation of archaeologically derived molluscan and vertebrate remains, with introduction to laboratory use of comparative collections. Prereq: 120 or consent of instructor.

480 Human Osteology (4) Intensive examination of the human skeleton. Prereq: 110 or consent of instructor. 3 hours and 1 hour lab.

481 Museology I: Museums, Purpose and Function (3) (Same as Art 481.)

482 Museology II: Exhibition Planning and Installation (3) (Same as Art 482.)

484 Museology III: Field Projects (1-12) (Same as Art 484.)

490 Primate Evolution (3) Living and fossil primate taxonomy, ecology, and comparative anatomy. Survey of primate fossil record with emphasis on the origin or major primate lineages. Prereq: 110.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

494 Primate Behavior (3) Social organization and behavior of selected groups of primates, including field research. Prereq: 110 or consent of instructor.

495 Human Paleontology (4) Introduction to human fossil record from the earliest human remains to the earliest representative of modern human form. Prereq: 110.

496 Biology of Human Variability (3) Introduction to human populations; human adaptation, biological features of major human races, relationships of major groups to one another. Prereq: 110. (Same as Afro-American Studies 496.)

499 Human Response to Environmental Stress (3) Explores the physiological perception of stress from the physical environment and the physiological, anatomical, and behavioral responses to this stress.

ARCHITECTURE (133)

101 Introduction to Architecture (3) Scope and definition of architecture in relation to contemporary society, building industry, and allied professions. Architectural design as a creative process. Orientation to courses and programs of the school. F

102 Visual Design (2) Principles of visual design and techniques of representation. Coreq: 172. Sp

111 Architecture and the Built Environment (3) An introduction to architecture as an environment for non-architecture majors. Significance of our surroundings, forces that create them. Creative aspects of design. Survey of building form and ideas of building and community form. Renaissance to mid-twentieth century. Examples of contemporary works and ideas of place and aspects of use. Prereq: 110. (Same as Afro-American Studies 496.)

121 History of Architecture I (3) Architectural thought and ideas of building and community form. Ancient times to the Renaissance. Prereq: History 151, 152. F

203 Second Degree Program: Seminar I (2) Theory and practice in architecture. Selected readings in history, theory, and design methodology with emphasis on contextual issues and architectural ordering principles. Coreq: 281. F

204 Second Degree Program: Seminar II (2) Selected readings in history, theory, and design methodology with emphasis on analysis of architectural exemplars. Prereq: 253. Coreq: 281. F

211 History of Architecture (3) Architectural thought and ideas of building and community form. Ancient times to the Renaissance. Prereq: History 151. 152. F

212 History of Architecture II (3) Architectural thought and ideas of building and community form. Renaissance to mid-twentieth century. Prereq: 211. Sp

213 History and Theory of Contemporary Architecture (3) Architectural thought in design practice in late twentieth century. Examples of contemporary works and review of theoretical issues. Prereq: 212. F

231 Computer Applications in Architecture (3) Survey of the role of the computer in architecture, its applications, and potential uses. Prereq: 231 or equivalent.

232 Introduction to Architectural Technology (3) Place of building technology in design practice. Emphasis on building materials and construction; and environmental controls. Prereq: 231. Coreq: 281. Sp


312 Materials and Methods of Construction (3) Properties of interior and exterior building materials and their relation to construction methods and detailing. Theory of material selection and application and role materials and methods play in the design process. Prereq: 232. Sp

321 Advanced Computer Applications (3) Computer applications in architecture, with special emphasis on structural detailing. Prereq: 231.


332 Architectural Structures II (4) Continuation of analysis and design of simple structures of steel, wood and concrete based upon specific loading requirements. Use of codes and design of beam, column, and truss members. Prereq: 231. Sp

333 Advanced Structural Design (5) Analysis and design of building structures. Structural and constructional aspects of buildings, including structures in steel, concrete, masonry, and timber to satisfy loading and building code requirements. Prereq: 332 or equivalent.

336 Advanced Design of Steel Buildings (3) Conception and design of steel buildings. Conceptual design and detailing of steel structures, including use of computer programs. Prereq: 332 or equivalent.

337 Advanced Design of Concrete Buildings (3) Precast and on-site concrete construction and maintenance of concrete buildings. Prereq: 332 or equivalent.

341 Environmental Control Systems I (4) Heating, ventilating, and air-conditioning systems, including passive and active solar energy systems. Plumbing and fire protection systems. Prereq: 231 and 232. F


400 Service Practicum (0) Experience in architectural or equivalent office for a minimum of 3 months to be completed prior to fifth year entry. B

403 Introduction to Preservation (3) History, theory, and legal aspects of architectural preservation and restoration.

404 Preservation Technology (3) Techniques of preservation: methods of analysis, history of materials and technology used in old buildings.

405 Descriptive Analysis of Historic Buildings (3) Identification and analysis of characteristic elements of buildings from various architectural periods, with emphasis on American architecture. Survey techniques.

406 Ideas in Architecture (3) Historical and critical review of the major ideas of architecture through the ages. Open to all students.
409 Cultural Comparison of Housing Patterns (3) Patterns of settlement and housing development viewed through lectures, readings, essays, and sketch studies including historical change in urban form and design.

410 History and Theory of Urban Form (3) Patterns of community development. Selected historical and contemporary examples. Basic urban design issues and evidence. Analysis through lectures, readings, essays, and sketch studies including historical change in urban form and design.

411 Architecture Since 1945 (3) Recent architectural developments and design of the future.

412 Non-Western and Indigenous Architecture (3) Building responsive to climate, material availability, and economic level, as designed by anonymous builders. Examples from pre-historic times to the present including the fertile Crescent; the Indus Valley; Hindu, Buddhist, and Mughal architecture of India, China, and Japan.

413 Tennessee Architecture (3) History of settlement patterns and building in Tennessee. Selected examples examined through reading assignments, lectures, discussion, and field trips. Historical research using primary material.

414 History of Architectural Technology (3) Building materials, and construction techniques from antiquity to the present.

415 Medieval Architecture (3) History of architecture from the decline of Rome to the beginning of the Renaissance. (Same as Civil Engineering 415.)


417 The International Style (3) A survey of architecture of the early modern movement, primarily in Europe and America, covering the years 1900 to 1940.


420 American Architecture, 1860 - 1940 (3) Stylistic periods from the Gothic Revival through the Twentieth Century.

421 History of Landscape Architecture (3) Intellec- tual, societal, and geographical influences which provide the theoretical basis for design throughout history. Selected examples of landscape architecture analyzed in terms of design.

422 Modern East European Architecture (3) Twenti- eth century architecture in Russia, Czechoslovakia, Poland, Hungary, East Germany, Rumania, Bulgaria, Yugoslavia.

425 Special Topics in Architecture (1-4) Individual projects under faculty direction. Credit awarded at project culmination and documentation of hypotheses. Preparation of background and project presentation.

426 Special Topics in History, Theory and Criticism (1-4) Special topics in history-related subjects. May be repeated. Maximum credit 6 hours.

431 Structural and Mechanical Applications (4) Analysis and selection of structural and mechanical systems for a specific case study to integrate technical information into a unified design solution. Prereq: 332, 342. Coreq: 471. F

433 Earthquake-Resistance Structures (3) Analysis and design of structures to resist earthquake effects. Earthquake phenomena, vibration of single degree structural systems, resonance and damping. Introduction to dynamic analysis of structures, instrumentation and structural response, frame and shear wall behavior, ground structure interaction. Prereq: Consent of instructor. (Same as Civil Engineering 433.)


434 Building Energy Analysis (3) Balancing heat flow through external skin of residential and small and large commercial buildings; local climate evaluation; site planning, building size and orientation, window area, wall treatment, infiltration control. Energy use quantification by methods and economic analysis of energy efficient design features. Architectural program analysis of external design and building energy performance. Prereq: Consent of instructor. Prereq: Consent of instructor.

444 Advanced Environmental Control Systems (3) In-depth analysis and innovative concepts in design of heating, ventilating, and air conditioning. Prereq: 341.

445 Advanced Lighting (3) In-depth analysis and innovative concepts in design of lighting. Prereq: 342.

462 Professional Practice (4) Management and or- ganizational theories and practices for delivering professional design services. Included are assessment of the building industry and its influence on practice; analysis of the basic management functions within professional firms; and legal and ethical concerns facing practitioners today. Special obligations and privileges of the design professional. Pr

463 Architectural Development (3) Principles and practice of the architect as a developer. Impact of economics, finance and urban policy on the design and development of architecture in the United States.

464 Project and Construction Management (3) Principles, methods, and application of project and construction management in the building process. Project manager's and construction manager's function, responsibilities, and activities investigated through case studies. Methods and theories of estimating project cost and building cost in current practice. New techniques of cost control.


466 Marketing Services (3) Theories of marketing for architectural practice. Case studies. Public relations procedures.

469 Codes, Zoning, and Fire Protection (3) Theory, review, and research of city, county, state, regional, and national codes and zoning. History and development of fire safety and building codes; history and development of zoning emphasizing architect's responsibility for specific project application. Characteristics of fires in buildings. Fire codes, building evacuation, sprinklers and other fire retardant devices; emergency power and lighting. Fire resistant materials and construction.

471 Architecture Design V (6) Design project from conceptual through design development phase. Specifi- cations of component building systems including struc- ture, mechanical, lighting and construction details. Prereq: 372. F

472 Architectural Design VI (6) Order and form in com- plex buildings developed to address programmatic, struc- tural, energy and environmental issues. Prereq: 471. Sp

473 Architectural Photography (3) Photography as a design, research, and presentation medium. Application of photographic techniques, printing and processing. Color, black and white.

480 Comprehensive Design Project I (3) Project selec- tion and preparation for Architecture 482. Formation and documentation of hypotheses. Preparation of back- ground and program information. Goals and concepts set forth. To be taken semester immediately preceding 482.

481 Advanced Architectural Design Topics (6) Special areas which affect architectural design, such as al- ternative approaches to design, energy, urban design, urban development, structural studies, historic preser- vation. Approval of topics by the Department of Architecture. Credit hours from this topic may relate to the student's Comprehensive Design Project. Prereq: 472. Certain architectural electives may be stipulated as being essential or desirable for completion of the Comprehensive Design Project.

482 Comprehensive Design Project II (6) Student se- lected project under faculty direction. Exploration of design hypothesis which informs the character of a student's architectural design. Prereq: 480. The Completed project will address all issues of environ- ment, structure, enclosure, use, and ethical considera- tion of design approaches. Design is expected to stand up to rigorous scrutiny regarding strength of idea, economy of means, durability, validity for stipulated use, quality of cultural expression, and character of setting. Prereq: 480 and satisfactory completion of all design courses.

491 Foreign Study (1-15) Research and design proj- ects conducted in various locations abroad. F, Su

492 Off-Campus Study (1-15) Study abroad conducted under direction of architect or expert in an allied profession, in service to public service organizations or agencies of government, and public groups. Not A Design Course elective.

493 Independent Study (6) Faculty initiated studies and projects which are approved by the dean and conducted in a studio. May be repeated once. Prereq: Consent of dean. E

ART (140)


103 Studio Fundamentals: Three Dimensional Design (2) Projects dealing with real space and three dimen- sional materials. Primarily for art, architecture, art edu- cation, and interior design and housing majors.

104 Fabric: Experimental Media on Cloth (3) Explo- ration and experimentation with various fiber media and techniques in development of sculptural fiber forms.

116 Basic Printmaking (3) An introductory survey of printmaking processes including intaglio, relief, monoprint, lithography, monotype, lino- print, and relief collograph.


120 Western Art I (3) Major monuments in Western Art with emphasis on Europe from prehistory through the Middle Ages. Writing-emphasis course: at least one in- class essay examination and 3000 words of writing outside the classroom.

123 Western Art II (3) Major monuments in Western Art with emphasis on Europe and America from 1400 to the early 20th century. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

127 Experimenting Art (3) Form and meaning in the visual arts. Lecture-discussion. Especially for non-majors.

130 Asian Art (3) Art of Central and Southeast Asia, India, China, Korea, Japan. Survey of all periods and common Buddhist forms and into modern media. Writ- ing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

131 Introduction to Metalsmithing and Jewelry (3) Basic metalworking and jewelry fabrication techniques including resoupe, annealing, forging, chasing, embossing, etching, engraving, rolling, sinking, soldering, fusing, polishing, and patination with individual studio problems to develop a personal style of expression.

151 History of Graphic Design/Illustration (2) Major movements and pivotal artists/designers/illustrators/art directors, 1850 to the present, and their impact on current graphic design trends. (Does not apply to art history requirement.)

161 Basic Printmaking (3) An introductory survey of printmaking processes including intaglio, relief, monoprint, lithography, monotype, lino- print, and relief collograph.


172 Western Art I (3) Major monuments in Western Art with emphasis on Europe from prehistory through the Middle Ages. Writing-emphasis course: at least one in- class essay examination and 3000 words of writing outside the classroom.

173 Western Art II (3) Major monuments in Western Art with emphasis on Europe and America from 1400 to the early 20th century. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

176 Experiencing Art (3) Form and meaning in the visual arts. Lecture-discussion. Especially for non-majors.

180 Asian Art (3) Art of Central and Southeast Asia, India, China, Korea, Japan. Survey of all periods and common Buddhist forms and into modern media. Writ- ing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

191 Introduction to Studio Art: Various Media (3) In- dividual sections for various artistic disciplines. For non- majors only. Course may be repeated, medium may not
be repeated. Maximum 12 hours. Writing-emphasis course. Prereq: 221. 224 Special Topics in Ceramics (3) Packaging and firing processes in the development of surface design on fabric, direct drawing, and/or other related techniques. May be repeated. Maximum 12 hours. 241 Sculpture I (3) Problems which explore basic materials and techniques including clay modeling, plaster construction, moldmaking, limited work in plastics, wood, or metal. 242 Life Sculpture I (3) Modeling techniques in clay and wax, working in figure. Possibilities of expression with human figure as subject. Modeling process as both observational and material handling technique. Prereq: 101, 103, or consent of instructor. May be repeated. Maximum 6 hours. 243 Metal Cast Sculpture I (3) Metal casting methods in bronze or aluminum. May include lost wax, styrofoam sand, ceramic investment casting methods. May be repeated. Maximum 6 hours. 244 Wood Sculpture I (3) Wood as sculptural medium. May include use of hand and power tools, carving, and construction. 245 Steel Sculpture I (3) Problems to introduce steel as a material for the creation of sculpture. Development of welding techniques. 246 Mixed Media Sculpture I (3) Use of two or more materials, and a variety of sculptural techniques, joined to create dimensional art. May be repeated. Maximum 12 hours. 249 Special Topics in Sculpture (3) Prereq: Determined by department for individual topic. May be repeated. Maximum 6 hours. 251 Beginning Graphic Design (3) Prereq: Consent of instructor. May be repeated. Maximum 6 hours. 252 Production (3) Design and layout; practice of mechanical preparation of art for various printing processes; skills and craftsmanship emphasized. Prereq: 241. 253 Advertising Design (3) Fundamentals of lettering and layout, reproduction techniques in advertising. Non-art majors only. 255 Special Projects: Graphic Design/Illustration (3) Prereq: Consent of instructor. May be repeated. Maximum 6 hours. 258 Special Projects: Graphic Design/Photography (3) Prereq: 101, 103, or consent of instructor. May be repeated. Maximum 6 hours. 261 Drawing I: Introduction (3) Prereq: 101, 103 for art majors; none for non-art majors. 262 Drawing II: Life Drawing (3) Development of drawing and observation skills with special emphasis on structure and dynamics of the human figure and of the figure in environment. Prereq: 211. May be repeated. Maximum 6 hours. 263 Special Topics in Fabric and Fiber (3) Prereq: instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours. 265 Introduction to Zone System (3) Introduction to zone system. Prereq: 320. 269 Special Topics in Printmaking (3) Prereq: instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours. 270 Special Topics in Art History (3) Prereq: instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours. 279 Special Topics in Art History (3) Prereq: instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours. 306 Silver Smithing (4) Prereq: consent of instructor. May be repeated. Maximum 6 hours. 313 Painting III (4) Prereq: 241 and 312 or consent of instructor. May be repeated. Maximum 8 hours. 314 Painting Portfolio Review (4) Prereq: 241, 312, or consent of instructor. May be repeated. Maximum 8 hours. 331 Photography II (4) Prereq: 320. 334 Photographic Techniques Workshop (4) Prereq: 320. 338 Photographic Portfolio Review (4) Prereq: 320. 339 Professional Preparation (4) Prereq: 320. 341 Sculpture II (3) Further exploration and development of sculpture concepts and materials. Prereq: 241 and 340 or consent of instructor. May be repeated. Maximum 6 hours. 385 Intermediate Design and Color (3) Further exploration of basic techniques of design. Prereq: 231. 399 Special Topics (3) Prereq: 399. 400 Inter-area Portfolio Review (0) Prereq: Evaluation of portfolio. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only. 401 Fabric: Individual Class Projects (3-6) Prereq: Determined by department. Satisfactory/No credit only. 402 Fiber: Individual Class Projects (3-6) Prereq: Determined by department. Satisfactory/No credit only. 403 Ceramics Production (3) Prereq: Determined by department. Satisfactory/No credit only. 404 Watercolor Portfolio Review (0) Prereq: 314 or consent of instructor. May be repeated. Maximum 8 hours. 405 Painting Portfolio Review (0) Prereq: Submission completed for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only. 406 Ceramic Construction (4) Prereq: 320. 407 Ceramics Construction (4) Prereq: 320. 408 Ceramics Construction (4) Prereq: 320. 409 Ceramics Construction (4) Prereq: 320. 410 Ceramics Construction (4) Prereq: 320. 411 Photographic Portfolio Review (0) Prereq: Admission. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours. 412 Drawing Portfolio Review (0) Prereq: 320. 413 Painting Portfolio Review (0) Prereq: 320. 414 Painting Portfolio Review (0) Prereq: 320. 415 Photography Portfolio Review (0) Prereq: 320. 416 Photography Portfolio Review (0) Prereq: 320. 417 Photography Portfolio Review (0) Prereq: 320. 418 Photography Portfolio Review (0) Prereq: 320. 419 Photography Portfolio Review (0) Prereq: 320. 420 Photography Portfolio Review (0) Prereq: 320. 421 Photography Portfolio Review (0) Prereq: 320. 422 Photography Portfolio Review (0) Prereq: 320. 423 Photography Portfolio Review (0) Prereq: 320. 424 Photography Portfolio Review (0) Prereq: 320. 425 Photography Portfolio Review (0) Prereq: 320. 426 Photography Portfolio Review (0) Prereq: 320. 427 Photography Portfolio Review (0) Prereq: 320. 428 Photography Portfolio Review (0) Prereq: 320. 429 Photography Portfolio Review (0) Prereq: 320. 430 Photography Portfolio Review (0) Prereq: 320. 431 Sculpture II (3) Further exploration and development of sculpture concepts and materials. Prereq: 241 and 340 or consent of instructor. May be repeated. Maximum 6 hours.
472 History of 20th Century American Art (3) Development in architecture, painting, and design from 1900.

473 19th Century American Painting (3) From West and Copley to emergence of "The Eight".

474 History of Modern Architecture in Europe and America (3) Survey of 19th-century styles, Sullivan and skyscraper; 20th-century: Vitruvian, the Bauhaus, Gropius, Van der Rohe, Le Corbusier, and Wright. Aalto to Kahn, Tange and Metabolism; Archigram, Soleri, and Venturi.

475 History of the 19th Century Painting in Europe and America (3) Emphasis on French: Neo-classicism, Romanticism, Friedrich, Constable, Turner, Corot and Barbizon landscapeists; Hudson River Group; Pre-Raphaelite Brotherhood; Manet, Courbet, Impressionism; Eakins, Homer, Seurat through Cezanne.

476 History of 20th-Century Painting in Europe and America (3) Fauvism, Die Brucke, Cubism, Der Blaue Reiter, Futurism, Dada and Surrealism, geometric abstraction, social commentary painting, Abstract Expressionism in the USA and parallels in Europe; Pop, Op, Minimal and Concept Art.

479 Special Topics in Art History (3) Student or instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

481 Museology I: Museums, Purpose and Function (3) Purposes, functions and development of museums of art, history, natural and applied science. (Same as Anthropology 481.)

482 Museology II: Exhibition Planning and Installation (3) Exhibition concept development and implementation. Exhibition design and installation techniques. Publicity, production, matting and framing, shipping and storage. Prereq: 481 or consent of instructor. (Same as Anthropology 482.)

484 Museology III: Field Projects (1-12) Special field projects including restoration, preservation, registration, and other related research on any campus. Prereq: 481 and 482. May be repeated. Maximum 12 hours. (Same as Anthropology 484.)

485 History of Printmaking (3) Survey of prints from the 15th century to the present. Emphasis on 20th century to present. Prereq: 172 and 173.

486 Art of Indian Asia (3) History of Indian art with consideration of the art of Central Asia and Southeast Asia. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

489 Studies in Art History (3) Concentration in individually selected area. Prereq: 12 hours of art history and consent of instructor. May be repeated. Maximum 6 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

494 Individual Problems (3) Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

495 Visiting Artist Seminar (2) Study and discussion of contemporary art issues conducted by different visiting artists each semester. (Does not apply toward art history requirement.) May be repeated. Maximum 8 hours.

496 Advanced Airbrush (3) Advanced techniques of airbrush drawing, sketching and process. Prereq: Satisfactory or credit only. 496.

498 Special Topics (3) Student or instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

ART ARROWMONT PI BETA PHI SCHOOL OF ARTS AND CRAFTS

200 Special Topics (2-4) Student- or instructor-initiated course offered at convenience of department. May be repeated.

210 Drawing (2-4) Beginning to intermediate. May be repeated.

220 Ceramics (2-4) Beginning to intermediate. May be repeated.

230 Photography (2-4) Beginning to intermediate. May be repeated.

240 Painting (2-4) Beginning to intermediate. May be repeated.

250 Metal Design (2-4) Beginning to intermediate. May be repeated.

260 Fibers (2-4) Beginning to intermediate. May be repeated.

270 Fabric (2-4) Beginning to intermediate. May be repeated.

280 Enamelling (2-4) Beginning to intermediate. May be repeated.

290 Wood (2-4) Beginning to intermediate. May be repeated.

400 Special Topics (2-4) Student or instructor-initiated course offered at convenience of department. May be repeated.

410 Drawing (2-4) Intermediate to advanced. May be repeated.

420 Ceramics (2-4) Intermediate to advanced. May be repeated.

430 Photography (2-4) Intermediate to advanced. May be repeated.

440 Painting (2-4) Intermediate to advanced. May be repeated.

460 Fibers (2-4) Intermediate to advanced. May be repeated.

470 Fabric (2-4) Intermediate to advanced. May be repeated.

480 Enamelling (2-4) Intermediate to advanced. May be repeated.

490 Wood (2-4) Intermediate to advanced. May be repeated.

ART EDUCATION (141)

300 Art for the Elementary Classroom Teacher (2) Methods of teaching art in elementary classrooms including developmental theory, philosophical concerns and selected media experiences. E

301 Foundation of Art Education (3) Basic philosophy and structure including directed learning activities in two and three dimensional design and the nature of teaching and methodology. F, Sp

302 Concepts of Drawing and Painting (3) Processes in teaching of drawing and painting including consideration of pertinent literature and research. Prereq: 301 and admission to Teacher Education Program. F

303 Concepts of Sculpture and Crafts (3) Processes in teaching of sculpture and crafts including pertinent literature and research. Prereq: 301 and admission to Teacher Education Program. F

304 Concepts of Printmaking, Graphic Design and Lettering (3) Processes in teaching printmaking, graphic design and lettering including pertinent literature and research. Prereq: 301 and admission to Teacher Education Program. F

350 Field Experience (1) Tasks related to teaching and to teacher roles. May be repeated. Maximum 2 hours. Prereq: Admission to Teacher Education Program. Satisfactory/No credit only. Sp

400 Curriculum Planning and Teaching Strategies (3) Program development, instructional methods, professional literature, contemporary issues, simulation, and micro teaching situations. Prereq: 301 and admission to Teacher Education Program. F, Sp

410 Pre-Internship Seminar (1) Orientation describes the objectives and policies of the internship program. Must be completed the term immediately preceding the internship. Prereq: Admission to Teacher Education Program. Satisfactory/No credit only. F

481 Internship I: Grades K-12 (3-6) Test of materials and theories of teaching. Internship is completed in local public schools. Application for internship should be made upon admission to Teacher Education Program. Prereq: 410 and admission to Teacher Education Program. Satisfactory/No Credit only. F

482 Internship II: Grades K-12 (3-6) Demonstration of professional competence in planning, instruction and classroon management. Internships completed in local public schools. Prereq: 481 and admission to Teacher Education Program. Satisfactory/No Credit only. Sp

490 Special Topics (3) May be repeated. Maximum 6 hours.

493 Independent Study (3) May be repeated. Maximum 9 hours.

ASIAN STUDIES (145)

101-102 Asian Civilization (3,3) Comparative study of development of religion, social institutions, and high culture in India, China, Japan, and the Islamic world.

112-113 Elementary Modern Standard Arabic I, II (5,5) Literary Arabic, the language of the press, broadcasting, literature, and formal situations. Meets every day, three days with instructor and two with native informant in addition to language lab. Must be taken in sequence.

131-132 Elementary Chinese I, II (5,5) Must be taken in sequence.

141-142 Elementary Modern Hebrew I, II (4,4) Taped language program. Must be taken in sequence.

151-152 Elementary Japanese I, II (5,5) Must be taken in sequence.

161-162 Elementary Persian (4) Taped language program. Must be taken in sequence.

221-222 Intermediate Modern Standard Arabic I, II (5,5) Literary Arabic, the language of the press, broadcasting, literature, and formal situations. Meets every day, three days with instructor and two with native informant in addition to language lab. Must be taken in sequence. Prereq: 121-122 or equivalent or consent of instructor.

231-232 Intermediate Chinese I, II (5,5) Prereq: 131-132 or equivalent or consent of instructor. Must be taken in sequence.

241-242 Intermediate Modern Hebrew I, II (4,4) Taped language program. Prereq: 141-142 or equivalent or consent of instructor. Must be taken in sequence.

251-252 Intermediate Japanese I, II (5,5) Prereq: 151-152 or consent of instructor. Must be taken in sequence.

261-262 Intermediate Persian (4,4) Taped language program. Prereq: 161-162 or equivalent or consent of instructor. Must be taken in sequence.

311-312 Chinese Literature in English Translation (3,3) 311-Classical literature. 312-Vernacular and modern literature. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

313-314 Japanese Literature in English Translation (3,3) 313-Classical/traditional: masterpieces of poetry, fiction, and drama to 1800. 314-Modernclassic/traditional: masterpieces of fiction since 1800. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

315 The Literature of India in English Translation (3) Major genres and masterpieces of Indian literature: epic poetry, drama, court poetry, modern novel. Concentration on ancient and classical periods of Indian literary history.

319 Islamic Literature in English Translation (3) Selections from the Koran, Abul Qasim Ansari, Persian poetry, and classical Arabic, Persian, and Turkish prose, including history, philosophy, mysticism, and belles-lettres.
490 Special Topics in Astronomy (1-3) Topics of current interest in Astronomy and Astrophysics. May be repeated for credit with consent of department. Maximum 9 hours.

AUDIOLOGY AND SPEECH PATHOLOGY (160)

128 Speech for Foreign Students (3) Sounds and pronunciation of American English, relation of spelling to sound. Designed to improve students' ability to speak and understand English. Satisfactory/No credit.

304 Introduction to Communication Disorders (3) Nature, etiology, and incidence of speech, hearing and language disorders.

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

306 Speech Science II: Anatomy and Physiology (3) Anatomy, physiology and embryological development of the speech production mechanism. Prereq: 305.

320 Speech and Language Development (3) Speech and language development in the normal child.

331 Articulation Disorders (3) Etiology, diagnosis, and treatment of articulatory defects. Prereq: 304, 305, or consent of instructor. (Same as Special Education 331.)

371 Audiology I (3) Basic acoustics. Fundamental aspects of audiology. Introduction to disorders of hearing. Basic Psychacoustics. (Same as Special Education 371.)

404 Appraisal of Speech and Language Disorders (3) Diagnostic procedures for children and adults with speech and language problems including observation and practice with diagnostic tests. Prereq: 304, 305, 433, or consent of instructor. (Same as Special Education 404.)

431 Stuttering (3) Nature, appraisal and treatment. Prereq: 304 or consent of instructor.

432 Clinical Practice in Speech-Language Pathology II (1-4) Prereq: 320, 331 or consent of instructor. Enrollment for fewer than 2 semester hours must have prior departmental approval. (Same as Special Education 432.)

434 Clinical Practice in Speech-Language Pathology II (1-4) Prereq: 431 and consent of instructor. Enrollment for fewer than 2 semester hours must have prior departmental approval. May be repeated. Maximum 4 hours. (Same as Special Education 434.)

440 Voice Disorders (3) Etiology, diagnosis, and treatment of organic and functional voice disorders. Prereq: 304, 305, or consent of instructor. (Same as Special Education 440.)

455 Problems in Speech Pathology (1-3) Prereq: Consent of instructor.


469 Pracitcal Applications of Language Habilitation Techniques (3) Various methods and procedures used in treating delayed/disordered preschoolers. Alternative/augmentative systems included. Prereq: 461 or consent of instructor.

485 Speech and Language of the Culturally Different Child (3) Speech and language differences of children of various minority groups, of different ethnic and class membership and from different geographic regions.

473 Audiology II (3) Basic principles of clinical audiology; pure tone, speech, masking and overview of special clinical auditory tests. Prereq: 371 or consent of Special Education 371.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)
220 General Genetics (4) Classical and modern prin-
ciples of heredity. Prereq: 110-120 or 150, or Botany 110-120, or 118-128, or Honors Zoology 117-118 or the equivalent of 2 years of high school biology and satisfac-
tory ACT scores; Chemistry 120-130. 3 hours lecture, 1 ACT hour discussion each week. May be taken in any se-
quence or combination with 210 and 230.

230 General Ecology (4) Relations between organisms
and their environment, including human environmental
problems. Prereq: 110-120 or 150, or Botany 110-120 or 118-128, or Honors Zoology 117-118 or the equivalent
of 3 ACT scores; Chemistry 120-130. 3 hours lecture, 1 hour
discussion/field trip each week. May be taken in any se-
quence or combination with 210 and 220.

BOTANY (198)

110-120 General Botany (4.4) 110 - introduction to
taxonomy through tree identification; basic organization
and function of cells; respiration; photosynthesis; genet-
ic (including meiosis, mitosis, Mendelian inheritance);
survey of plant kingdom (bacteria, algae, fungi, mosses,
fenns, conifers, and flowering plants). 120 - Plant growth,
anatomy, growth regulation; uptake and transport; origin
of life and mechanisms of evolution; ecology, importance
to humans and environmental concerns. Students may
not receive credit for both Botany 110-120 and Biology
110-120. Botany 118-128, or Biology 110-120, or Biol-
ogy 150. 118- F ; 128- Sp

118-128 Honors: General Botany (4.4) Same as Gen-
eral Botany 110-120 with emphasis on special topics
and intensive laboratory or field presentations and field
experiences. Prereq: Open to freshmen with a score of 27 or better on the natural science section of the ACT
scores or an equivalent of 12 or 13 in the sciences.

240 Introductory Botany (3) Taxonomic organization
of plants, in origin and development of human
 cultures, evolution of cultivated plants, and role of plants
in present civilization. Occasional field trips. 3, 3 or 5.

295 Genetics and Society (3) Introduction to genetics,
anthropology and evolution with an emphasis on their
implications for human society. (Same as Anthropology 304)

299 Biology of Human Affairs (3) Basic biological prin-
ciples involved in determination and preservation of an
environment in which humans and their cultures may
survive.

310-320 Plants: An Evolutionary Survey I, II (3,3)
Morphology, development, natural history, and evolu-
tion. 310 - Surveys non-vascular plants (monera, algae,
fungi, bryophytes). 320 - Surveys vascular plants
(ferns, fern allies, gymnosperms, and flowering plants).

305 Socio-Economic Impact of Plants (3) Signifi-
cance of plants in origin and development of human
 cultures, evolution of cultivated plants, and role of plants
in present civilization. Occasional field trips. 3, 3 or 5.

306 Principles of Chemistry (4) Bonding and molecu-
lar structure, gas laws, liquid and solid state, solutions,
colloids, acids and bases, oxidation and reduction, ki-
cetics and equilibria. 3 hours lecture, 1 hour lab.

401 Field Studies in Botany: (Specific Topic to be
Announced) (3,3) Field experience and taxonomy of
special plant groups. Selected field topics will vary
and may include: Bryology, Lichenology, Phycology; Agros-
tics; Mycology; Malacology; Mosquitoes; Entomology;
Symbiontology, Woody Plants, and Botanical Photog-
raphy. May be repeated, but no specific topic may be
repeated for credit. Maximum 9 hours.

402 Plants: An Evolutionary Survey I, II (3,3)
Species, communities and their environments. Circula-
tion of energy and matter in ecosystems. Weekly field
trips or laboratory periods, and at least two weekend

412 Plant Anatomy (3) Cells, tissues and organs;
development in vegetative and reproductive structures
of vascular plants. Emphasis on used plants. Prereq:
110-120 or Biology 110-120.

426 Paleobotany and Palynology (3) (Same as Geo-
logy 426.)

431 Plant Ecology (3) Interactions between individuals,
species, communities and their environments. Circula-
tion of energy and matter in ecosystems. Weekly field
trips or laboratory periods, and at least two weekend
field trips. May be taken in any sequence or combina-
tion with 210 and 220.

BROADCASTING (202)

275 Introduction to Radio and Television (3) History,
economics, structure and regulation of broadcasting
including radio, television, cable, satellites and related
technologies. Includes role of broadcasting in society.

310 Radio News (3) Writing, reporting, and performing
news for radio. Lecture and lab course with experience
in total news operation of WUTK. Prereq: 275 and Com-
munications 100.

320 Radio and Television Advertising (3) Principles of
successful radio, television, and cable advertising with
an emphasis on ratings and related audience research.

330 Producing for Radio (3) Functions, theories, tools,
and techniques of producing and producing for radio.

410 Television News (3) Writing, reporting, and per-
mforming news for television news. Prereq: 275 and Com-
munications 100.

420 Radio and Television Sales and Promotion (3)
Problems and problems of television, radio, and cable
sales and promotion. Case studies in sales, sales
management, pricing, rate cards, use of rating and sales
presentation. Includes an overview and analysis of effec-

420 Producing for Television (3) Principles of televi-
sion studio and field production, both technical and
creative. Writing, producing, shooting and editing video
stories and programs. Class uses 3/4" cameras, record-
ers, and editing system. Prereq: 330.

480 Radio and Television Programming (3) Program-
ming practices in radio, television and cable. Nature and
typology of programs, Radio formats and techniques of
programming, cost and income analysis, leadership
styles and techniques with an emphasis on mid-level
management. Capstone course for students in the last
years of their study. Prereq: 275, 310, 320, 330.

482 Practicum (1) On- or off-campus work and learn-
ing experience at radio, television, cable or non-broadcast
facility. May be repeated once. Prerequisites: 275,
maximum 150 hours of work required for each hour of credit. Final written report required. May be repeated once. Prerequisites: 275, permission of instructor.

493 Independent Study (3) Area of study in broadcast-
ing to be determined by student in consultation with
faculty advisor. Ordinarily the area of study is not part of
the departmental curriculum. Students must complete
an application form available in the department. Prereq-
quisites. Senior standing and consent of department
head.

BUSINESS ADMINISTRATION (205)

311 International Business (3) Survey of strategic im-
plications of conducting business operations in an inter-
national context. Analysis of relevant cross-national en-
vironments including cultural, economic and social
characteristics. Prereq: Economics 201.

320 Business Career Planning and Placement (1)
Career opportunities in business. Making the career de-
cision, preparing for and conducting a job campaig.
Using the Placement Office. Satisfactory/No Credit only.
Prereq: Satisfactory progression to upper-division level
in the major.

457 Honors: Corporate Executive in Residence Semi-
nar (3) Interaction with top corporate executives from a
broad range of business disciplines. Domestic and inter-
national strategic planning as it is applied in major
U.S. Corporations. Executive presentations and small
group discussion on goods and services in consumer
and industrial settings. Prereq: Senior standing. Fi-
nance 301, Management 301, Marketing 301 and con-
sent of instructor.

491 Foreign Study (1-15) Prereq: Consent of in-
structor. See page 56.

492 Off-Campus Study (1-15) Satisfactory/ No Credit
grading only. Prereq: Consent of instructor. See page 57.

493 Independent Study (1-15) Prereq: Consent of in-
structor. See page 57.

495 Seminar in International Business Policy (3) Capo-
tion course for students in the Language and
World Business Program designed to integrate con-
tcepts covered in other business courses. For students
with major concentrations in International Business only.

BUSINESS LAW (216)

301 The Legal Environment of Business (3) Introduc-
tion to legal system including legal ethics (jurispru-
dence), sources of law, steps in law suits, constitutional
law related to business, administrative regulation, regu-
latory law, antitrust law, employer-employee relations,
product liability, consumer protection, business asso-
ciations, environmental law, antitrust law, and white

401 Law of Business Organizations and Commercial
Transactions (3) Introduction to legal implications of
basic business transactions including contracts, prop-
erty, negotiable instruments, secured transactions, bank-
ruptcy and corporate entities. Prereq: Economics 201,
Consent of instructor.

CHEMISTRY (235)

100 Principles of Chemistry (4) Bonding and molecu-
lar structure, gas laws, liquid and solid state, solutions,
colloids, acids and bases, oxidation and reduction, ki-
cetics and equilibria. 3 hours and 1 lab.

110 Introduction to Organic and Biochemistry (4) Or-
ganic and biochemistry.
406 Senior Seminar (1) Discussions by faculty and emphasis course: at least one in-class essay examination of scientific controversy. Written reports will be required. Coreq: Senior standing in chemistry. May be repeated. Maximum 2 hours.

409 Advanced Chemical Experimentation (3) Laboratory course in application of design of experiments to solution of chemical problems. Synthesis and characterization of organic and inorganic compounds. May be repeated with different topics. Prereq: 120-130. 1 hour and 1 lab. E

121-131 General Chemistry (4,4) For chemistry majors. Subject matter similar to Chemistry 120-130. Prereq or Coreq: 130 or 131 or 138, 1 lab. 1 hour and 1 lab. Sp

125-135 Honors: General Chemistry (4,4) 3 hours and 1 lab. 128-F, 138-Sp

140 Chemical Programming (2) Use of the computer in solving problems encountered in chemistry. Required. Of limited to chemistry majors. Prereq or Coreq: 130 or 131 or 138. 1 hour and 1 lab. Sp

200 Introduction to Chemical Research (1) Participation in an active research program in analytical, inorganic, organic, physical, or polymer chemistry. Students work with researchers to acquire expertise in planning experiments, interpreting results, and formulating hypotheses. Credits may not be applied toward a major or minor in chemistry. Not a substitute or prerequisite for 400. Prereq or Coreq: 200 or higher level course in chemistry and consent of instructor. May be repeated. Maximum 2 hours.

230 Inorganic Chemistry (3) Periodicity, valence, bonding, and the descriptive chemistry of the elements; coordination compounds; nuclear chemistry; transition elements and their compounds. 2 hours and 1 lab. Prereq: 130 or 131 or 138. F

310 Analytical Chemistry (3) Principles and practices of quantitative measurements in chemical systems. Atomic, gravimetric, and redox equilibria; applications of titrimetric analysis; potentiometry; elementary spectrophotometry; chemical separations including chromatography, ion exchange, and solvent extraction. Prereq: 130 or 131 or 138. E

319 Analytical Chemistry Laboratory (1) Experiments on topics covered in 310. Coreq: 310. E

320 Advanced Analytical Chemistry (3) Modern electronic analytical methods; mass spectrometry; optical spectroscopic techniques; magnetic resonance methods; advanced chromatographic theory. Prereq: 310. Sp

329 Advanced Analytical Chemistry Laboratory (2) Experiments on topics covered in 320. Coreq: 320. Sp

350-360 Organic Chemistry (3,3) Compounds of carbon and their reactions, mechanisms and mechanisms, synthesis, spectroscopic and other physical properties. Must be taken in sequence. Prereq: 130 or 131 or 138. Coreq: 360. 369. E

369 Organic Chemistry Laboratory (2) Experiments on topics discussed in 350-360. Coreq: 360. One 5-hour lab. E

400 Research in Chemistry (3) Open to senior majors with consent of department head. Written reports are required. Advanced students work with faculty on projects requiring knowledge and skills acquired in chemistry curriculum. May be repeated. Maximum 6 hours. E Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

405 Topics in the Development of Chemistry (3) Historical development of topics such as the atomic theory; chemical industry; interrelationships of population, energy, and food. Subject matter may vary from one offering to another. Assignments include readings from older original literature (Dalton, Faraday, Kekule) and from current journals and monographs. Includes the use and misuse of evidence. At least one interview with chemistry on society, how scientists reach conclusions, and the nature of scientific controversy. Written reports will be required. Coreq: Senior standing in chemistry. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

406 Senior Seminar (1) Discussions by faculty and emphasis course: at least one in-class essay examination of scientific controversy. Written reports will be required. Coreq: Senior standing in chemistry. May be repeated. Maximum 2 hours.

240 Human Sexuality (3) Sexuality through cultural, social, and biological perspectives. Prereq: Senior standing. F

312 Adulthood and Aging (3) Adult life in society from youth through elderly; adjustment to internal, environmental changes through adulthood; interrelationships among family, occupational, social, political, and personal factors. Prereq: 220 or consent of instructor. E

320 Parent Education (3) Factors in contemporary American families impacting on parent-child relations; review of programs and parent training. Prereq: 220 or consent of instructor. F

350 Early Childhood Education I: Environments for Children (4) Classroom management, behavior guidance, organization of day care environments, communication, interpersonal skills, interaction with children, child stress reduction and management in classroom. Laboratory participation included. Prereq: 110 and 211 or consent of instructor. F

361 Early Childhood Education II: Curriculum and Program Development for Young Children (4) Planning effective early learning programs for young children relating knowledge of children's growth and development to appropriate instructional program models. Includes observation and participation. Prereq: 120-130, 121-131, 128-138. Sp

375 Family, School, and Community Relations (3) Techniques for developing community relationships and advocating for children and families, including handicapped individuals. Includes observation and program participation. Prereq: Coreq: 351 or HEED 250 or consent of instructor. Sp

380 Family Stress (3) Family's response to stressful circumstances; skills for intervention into family systems; violence, abuse, divorce, illness, death. Prereq: 220 or consent of instructor. Sp

380 Family Finance (3) Alternatives for meeting family financial responsibilities across the life-cycle. Prereq: 220 or consent of instructor. Sp

400 Families: Ethnicity, Race, Class and Culture (3) Cultural, socioeconomic, ethnic variations; emerging needs and programs. Prereq: 220, 350, Junior standing or consent of instructor. (Same as Afro-American Studies 420.) A, F

430 Family Interaction (3) Dynamics within family systems, marriage, and parent-child relationships; communication and conflict management within families. Prereq: 220. Sp

440 Teaching in Community-Based Programs (3) Same as Home Economics Education 440. J, Sp

450 Assessment in Early Childhood Programs (3) Physical, cognitive, social, language development in handicapped and nonhandicapped children birth to 5 years; early development, assessment. Includes super vised practicum in assessment. Prereq: 351 or consent of instructor. F

451 Early Childhood Education III: Mainstreaming Exceptional Children (3) Individualized curriculum planning based on knowledge of normative, nonnormative development, assessment, effective teaching strategies for facilitating development. Includes participation. Prereq: 450. F

460 Directed Study in Child and Family Studies (1-3) Individuals: learning in special situations under supervision of faculty. May be repeated with different topics. Maximum 6 hours. Prereq: 9 hours in Child and Family Studies and consent of instructor. F, Sp, Su

470 Student Teaching (15) Responsibility for planning and guiding groups of infants, toddlers, or preschoolers under supervision of faculty. Prereq: 456 and 451. Satisfactory/No Credit only. F, Sp, Su and F and Sp student teaching begins on first day of registration and ends on last day of final examination period (student teaching follows the CDL calendar and does not include Spring break). Summer student teaching begins the day following Spring commence-
232 Archaeology and Art of Ancient Greece (3) Special emphasis on the times to the Roman period (ca. 3000-100 B.C.). For prehistoric times emphasis on architecture and artifacts used to recreate the culture of the Minoan and Mycenaean civilizations and that of the following Dark Age. For Archaios, Classical, and Hellenistic periods emphasis on development of architecture, sculpture, and vase painting. Includes minor arts and the relationship between archaeology and art. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

233 Archaeology and Art of Etruria and Rome (3) Survey of the archaeology of the Italian peninsula and the Roman World from the time of the Etruscans to the fall of the Roman Empire (1000 B.C.-500 A.D.) Reconstruction of the Etruscan culture from tombs, paintings, and artifacts, development of Roman architecture, and urban planning in Rome and the provinces. Prereq: 232 or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

253-254 Greek and Roman Literature in English Translation (3.3) Greek Literature. Major literature of ancient Greece from Homer to Menander, with emphasis on the sixth and fifth centuries B.C. 254-Roman Literature. Major literary works of the Romans from Plautus to Tacitus. How the Romans borrowed from the Greeks and then achieved their own artistic identity by the time of Vergil's Aeneid. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

273 Medical and Scientific Terminology (3) Greek and Latin roots from which medical and scientific terminology is derived. Use of Latin nomenclature. Practice in use of Latin nomenclature.

381 Greek Civilization (3) Major aspects of ancient Greek civilization: religion, fine arts, political life, Mediterranean relations, the prominence of Athens; the role of modern archaeology in interpretation; emphasis on the sixth and fifth centuries B.C. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

382 Roman Civilization (3) Major aspects of ancient Roman civilization: political institutions, art and architecture, history, culture, and daily life, emphasizing the late Republic and early Empire. Writing-emphasis courses: at least one in-class essay examination and 3000 words of writing outside the classroom.

383 Women in the Greek and Roman World (3) Course examines the role of women in the apparently male-dominated world of Classical Greece and Classical Rome. Evidence from literature, vase paintings, and other arts is examined for the role of women in the first and second centuries A.D. with emphasis on Athens in the fifth century B.C. and Roman Italy in the first and second centuries A.D. (Same as Women's Studies 383.)

422 Seminar in Classical Studies (3) Field of Classical studies today: recent achievements in the areas of both philology and archaeology: impact of the decipherment of Linear B; new understandings of the culture and politics of the "golden age" of Pericles and Augustus; the study of the "Greek way of life"; and the role of the ancient Greeks and Romans in the modern world; emphasis on the use of the evidence of classical civilization to understand the modern world.
360 Systems Programming (3) Linkers, loaders, multimedia, task interaction, debuggers, monitors, editors. Prereq: 111 and 112. (Required core course for the Computer Systems concentration.) 3 hour lab required.

371 Numerical Algorithms (3) Same as Mathematics 371.

380 Theory of Computation (3) Recursive functions, Turing machines, computability, halting problems, Gödel's theorem. Prereq: 111 and 112 and 311. (Required core course for the Theory of Computing concentration.)

381 Formal Languages (3) Grammars of the Chomsky hierarchy and their recognizers, Properties of languages and machines. Prereq: 111 and 112 and 311.

401 Applications of Computer Graphics (3) Commercial software, techniques, hardware. Prereq: 109 or 101 or 102. May not be taken for credit by Computer Science majors. 3 hour lab required.

402 Applications for Artificial Intelligence (3) Commercial software, techniques, hardware. Prereq: 109 or 101 or 102. May not be taken for credit by Computer Science majors. 3 hour lab required.

403 Applications of Microcomputers (3) Microcomputers, DOS, commercial software and hardware. Prereq: 100 or 101 or 102. May not be taken for credit by Computer Science majors. 3 hour lab required.

404 Applications of Database Systems (3) Commercial software, systems, techniques. Prereq: 109 or 101 or 102. May not be taken for credit by Computer Science majors. 3 hour lab required.

411 Senior Thesis (1) Frontiers of computer-science technology and research. Students begin writing a senior thesis. Prereq: Senior standing. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

412 Senior Thesis II (3) Continuation of 411. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

421 Introduction to Artificial Intelligence (3) Introduction to AI languages. Basic techniques of heuristic search, game playing, and theorem proving. Prereq: 300. 3 hour lab required.

422 Expert Systems (3) Production rule model and its extension into many-valued and fuzzy logics. Deriving explanations, examples of expert system tools and building expert systems. Other methodologies—frames, scripts, decision expressions. Prereq: 421. 3 hour lab required.

423 Natural Language Processing (3) Phrase-structured and slot grammars, error-correcting interfaces and semantic analysis. Applications to database and expert systems. Prereq: 381 and 421.

424 Robotics Software (3) Software for robotic control. Prereq: 331 and Mathematics 142. 3 hour lab required.

425 Functional Languages (3) Functional, applicative and non-strict languages such as LISP and SMALLTALK used in AI applications. Prereq: 111 and 112 and Mathematics 222. 3 hour lab required.

432 Computer Graphics (3) Interactive computer graphics. Transformations, perspectives, shading, vector generation. Graphics hardware such as tablets and chips; goal of understanding techniques for designing computer systems for graphics capabilities. Prereq: 311. 3 hour lab required.

433 Computer Systems Architecture (3) Parallel processing, memory, I/O, pipelines, specialized architectures. Prereq: 331 and 360.

434 Networks and Communications (3) ISO open system interconnection model, protocols, study of modern existing wide area networks, local area networks. Prereq: 331 and 360.

435 Microcomputer Systems (3) Disk operating systems, peripherals, local area networks and communication protocols. Introduction to multiprocessor microcomputer systems. Prereq: 331 and 360. 3 hour lab required.

436 Computer Systems Hardware Design (3) Investigation of computer systems hardware, including bus structures, I/O devices, interrupt support software, direct memory access logic, timing budgets, and system considerations. Lab includes the construction, testing and debugging of either of both of a prototype subsystem, a system based on commercially available microcontroller component devices. Prereq: 435. Includes 3 hour lab.

439 Microprogramming (3) Microprogramming concepts and techniques for control systems of large and small microprocessors.比特流的表示, sequence, etc. Prereq: 331. 3 hour lab required.

441 Science Information Systems (3) Design of scientific data banks, document repositories, information retrieval and electronic mail systems. Control and dissemination of scientific information at the national and international level. Prereq: 430.

442 Introduction to Database Management Systems (3) File searching and organization, hierarchical, net- work, and relational models, relational calculus and algebra, data definition and manipulation languages; implementation and security considerations; performance, integrity, and reliability issues; intelligent database systems. Prereq: 340 and 311.

443 Introduction to Information Storage and Retrieval (3) Information storage and retrieval, statistical, syntactic, and logical analysis of information content, evaluation of retrieval effectiveness. Prereq: 340.


451 Pattern Recognition and Analysis (3) Elements of syntactic pattern recognition, learning algorithms, decision trees, clustering, machine rules. Prereq: 111 and 112 and 311. 3 hour lab required.

452 Image Processing and Analysis (3) Methods for digitizing, storing, processing, and displaying images. Image enhancement, restoration. Prereq: 451. 3 hour lab required.


465 Parallel Computation I (3) Examination of non-numeric algorithms for parallel computation, operating systems, design and classification of parallel processors, compilers, concurrent computation. Prereq: 433.


471 Numerical Analysis (3) Same as Mathematics 471.

472 Numerical Algebra (3) Same as Mathematics 472.

473 Computer Modeling and Simulation of Physical Systems (3) Interactive simulations for the simulation of various kinds of physical systems. Prereq: 111, 112 and 511; and Mathematics 371.

476 Management of Uncertainty in Computer Systems (3) Origins of uncertainty and methods for dealing with the various classes of uncertainty. Topics may include hazards in switching circuits, vagueness in natural language processing, approximate reasoning models. Prereq: 111, 112 and Mathematics 222.

482 Graph Theory and Applications (3) Planarity, network flow, critical paths, etc. Prereq: Prereq. 112, and 311.

493 Independent Study (1-15) Special project in area of student’s primary interest. Directed by Computer Science faculty, perhaps jointly with student’s faculty advisor. Intended for students with a specific project to pursue in conjunction with a faculty member. Project may be from a department other than Computer Science in which case a faculty member from the appropriate department will help oversee the project. May be repeated. Maximum of 6 hours may be applied to the major. Prereq: Consent of instructor.

494 Special Topics in Computer Science (1-3) May be repeated. Maximum 9 hours.

CULTURAL STUDIES (270)

100 Selected Topics (1-3) May be repeated. Maximum credit 6 hours.

400 Selected Interdisciplinary Cultural Topics (1-12) Acceptable for credit in any cultural studies concentration or minor or with consent of director of cultural studies and the respective chairperson. American studies. Registration by consent of director of American studies. Registration by consent of director of American studies. May be repeated. Maximum of 6 hours may be applied to the major. Prereq: Consent of instructor.

492 Off-Campus Study (1-15) Acceptable for credit in any cultural studies concentration or minor or with consent of director of cultural studies and the respective chairperson.

493 Independent Study (1-15) Acceptable for credit in any cultural studies concentration or minor or with consent of director of cultural studies and the respective chairperson.

DANCE (274)

101 Practicum: Dance Production (1) Supervised technical and promotional production aspects of university dance company. May be repeated. Maximum 2 hours.

201 Practicum: Dance Performance (1-2) Preparation and presentation of university dance company performance. Participation through audition only. May be repeated. Maximum 16 hours.

210 Ballet: Level I (2) Instruction and practice in elementary classical ballet techniques. May be repeated. Maximum 4 hours.

220 Jazz: Level I (2) Instruction and practice in elementary modern dance techniques. May be repeated. Maximum 4 hours.

230 Modern: Level I (2) Instruction and practice in elementary modern dance techniques. May be repeated. Maximum 4 hours.

240 Tap: Level I (2) Instruction and practice in elementary tap dance techniques.

250 Composition I (2) Choreographic skills emphasizing form, content and music.

310 Ballet: Level II (2) Instruction and practice in intermediate classical ballet techniques. Available to majors and minors or with consent of instructor. May be repeated. Maximum 12 hours.

320 Jazz: Level II (2) Instruction and practice in intermediate jazz dance styles and techniques. Available to majors and minors or with consent of instructor. May be repeated. Maximum 12 hours.

330 Modern: Level II (2) Instruction and practice in intermediate modern dance techniques. Available to majors and minors or with consent of instructor. May be repeated. Maximum 12 hours.

340 Tap: Level II (2) Instruction and practice in intermediate tap dance techniques. Prereq: 240 or consent of instructor.

350 Composition II (2) Choreographic skills emphasizing design, use of costumes and props. Prereq: 250 and 311.

380 Special Topics (1-3) Selected disciplinary or professional areas of dance. May be repeated. Maximum 16 hours may be applied to the major. Prereq: Consent of instructor.

410 Ballet: Level III (2) Instruction and practice in advanced classical ballet techniques. Available to majors and minors or with consent of instructor. May be repeated. Maximum 16 hours.

415 Teaching Creative Dance for Children (2) Theory, methods, materials and practical experience in the presentation and integration or creative dance in grades K-12. Minor level of performance is expected in this class.

420 Jazz: Level III (2) Instruction and practice in advanced jazz and musical theater dance styles and techniques. Available to dance majors and minors with consent of instructor. May be repeated. Maximum 16 hours.

430 Modern: Level III (2) Instruction and practice in advanced modern dance techniques. Available to majors and minors or with consent of instructor. May be repeated. Maximum 16 hours.

450 Composition III (3) Application of choreographic and production skills culminating in the presentation of two works. Prereq: 350.

460 Rhythmic Analysis (3) Basic nature and principles of music, rhythm and rhythmic notation with emphasis on their correlation with dance movement and composition. Prereq: Consent of instructor. Senior standing or graduate status required. Different level of performance is expected of those registered for graduate credit.

465 Dance Notation (3) Fundamentals of movement notation with emphasis on notation and reading of elementary movement studies. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

480 Dance History through the 19th Century (3) Survey of the dance of various societies and cultures from pre-history through the nineteenth century. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

481 History of Dance II (3) Survey of the development of dance in theater, recreation and education during the 20th century. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

490 Dance in the 20th Century (3) Survey of history and philosophy of dance in the 20th century. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

493 Directed Independent Studies (1-3) Independent study in a specialized area with dance. May be repeated. Maximum 9 hours. Prereq: Consent of instructor.

495 Dance Pedagogy (3) Principles and methods of the teaching of dance with practical application in a mini-teaching experience. Prereq: Upperclass or graduate standing and approval of instructor. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

370 Environment and Conservation (2) Introduction to natural resource management and natural resource conservation. Limited to students in the College of Education.

100 Survey of Economic Ideas (3) Ideas of major economists in context of socio-economic conditions of their times. Emphasis on non-technical treatment. May not be substituted for Economics 201.

201 Introductory Economics: A Survey course (4) Theory of consumer behavior, production and costs, price and behavior of firms in perfect and imperfect competition, macroeconomic and microeconomic interpretations of unemployment, inflation, aggregate supply and demand, costs of production, market models, national income and employment theory, money and banking, monetary and fiscal policy, debt, and international economics.

207 Honors: Introductory Economics (4) Honors course for students of superior ability and interest. Students accepted on the basis of their records.

311 Intermediate Microeconomics (3) Theories of consumer behavior, production and costs, price and behavior of firms in imperfectly competitive markets, price and income determination, welfare and general equilibrium. Prereq: 201.


321 International Economics (3) Balance of payments, exchange rate determination, monetary and fiscal policies, monetary arrangements, comparative advantage, tariff and non-tariff trade distortions, protection arguments, regional integration. Prereq: 201.

322 Economic Development (Third World) (3) Theories of economic development, policies and strategies used to promote economic improvement in less developed countries. Prereq: 201. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

325 Economic History of the North Atlantic Community (3) Origins of capitalism, mercantilism, industrial revolution, development of factory system, role of organized business and labor, industrialization of the Atlantic economy. Prereq: 201. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

331 Government and Business (3) Antitrust and regulatory economics, problems in regulation and social control of business organization, oligopoly models. Prereq: 201. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.


343 Labor Relations and Collective Bargaining (3) See Management 311.


361 Regional and Urban Economics (3) Overview of regional differences. Theory of industrial and agricultural location and human migration, economic basis for land use patterns, central places, and urban form, regional and urban structure, growth, and methods of analysis of urban problems. Prereq: 201.

381 Econometrics (3) Methods of specification, estimation, testing and forecasting of economic relationships. Includes specification of models, estimation methods, statistical inference of empirical results, forecasting procedures and common econometric problems, such as multi-collinearity, heteroscedasticity, and autocorrelation. Prereq: Prepr. 201, Statistics 201, Mathematics 121-122 or 141-142.

400 Special Topics (3) Topics vary. Prerequisites determined by department each time course is offered. Numerical grade is given to law students. Prereq: 201.

413 Macroeconomic Fluctuations (3) Analysis of historical data, methods of analyzing macro-economic fluctuations, theoretical explanations of cycles, and the role of fiscal and monetary policies in the aggregate economy. Prereq: 312 or consent of instructor.

201 Career and Personal Development (3) Systematic assistance to faciliating career development and life planning. E
215 Learning Skills and Study Systems (3) Approaches to enhancing academic performance through study skills, efficient reading and understanding of personal factors. E
305 Laboratory in Educational and Counseling Psychology (1) Practice in acquiring and knowledge and skill in areas such as interpersonal relations, career decision-making, communication and self-awareness. Individual and small-group format. May be repeated twice. Satisfactory/No Credit only. E
315 Psychology of Learning and Classroom Management for Teachers (3) Understanding and application of the psychology of learning and classroom management to the teaching/learning process in educational settings. Prereq: 210 or equivalent and admission to Teacher Education Program. (Same as Education 315.) F
325 Principles of Educational Test Construction for Teachers (2) Constructing classroom tests for diagnosing student learning needs and for evaluating mastery of subject matter. Prereq: 315 and admission to Teacher Education Program. (Same as Education 325.) Sp
404 Special Topics (1-3) Instructor initiated course offered at convenience of the department on various topics of current interest. Departmental catalog for listing of topics to be covered. May be repeated. Maximum 15 hours. E
410 Sex Role Development: Implications for Education and Counseling (3) Theories and research concerning the development of sexual role and its relevance in educational and counseling settings. E
431 Personality and Mental Health (3) Perspectives of mental health with applications to education and other social institutions. E
432 The Disadvantaged Student: Psychoeducational Perspectives (3) Theory and research regarding etiology, psychosocial behavior and appropriate interventions. E
450 Self-Management in the Helping Professions (3) Applications of self-management strategies to career, social, emotional and health domains for both helping professionals and their clients. Prereq: Introductory course in psychology or permission of instructor. E
483 Independent Study (1-15) Independent investigation of problems in instructional and counseling psychology. May be repeated. Maximum 15 hours. E

EDUCATIONAL CURRICULUM AND INSTRUCTION (301)
141 Efficient Reading and Study Skills (2) Improvement of reading comprehension and rate, intensive vocabulary enrichment, study skills and techniques that relate to the content areas of the student. Satisfactory/No Credit only. F, Sp
203 Field Study in Education (1-3) Problems of persons in service in the field. Includes methods of teaching, curriculum materials, school-community relationships, and school organizations. May be repeated. Maximum 6 hours. E
302 School and American Society (3) Historical, philosophical and social perspectives on educational issues. (Same as Education 302.) F, Su
325 Principals of Educational Test Construction for Teachers (2) Same as Educational and Counseling Psychology 325. E
370 Survey of Exceptional People (2) Same as Special Education 370. E

EDUCATIONAL AND COUNSELING PSYCHOLOGY (311)
210 Psychology of Human Development for Teachers (3) Understanding and application of the psychology of human development to human learning processes, teaching, learning process in educational settings. For students intending to enter the Human Development Program. E, F, Su
434 Topics in Reading Education (1-6) May be repeated. Maximum 6 hours. Prereq: Admission to Teacher Education Program and a course in Reading Education.

443 Elementary and Middle School Mathematics Instruction (3) Procedures for helping children learn mathematics. Unit planning, daily planning, grouping, general factors related to classroom management. Not open to students with a recent course in teaching of elementary mathematics. Prereq: Admission to Teacher Education Program. E

445 Early Childhood Education: Program Development and Teaching in Kindergarten (3) Curriculum planning, classroom organization and management practices for teaching young children; relationship of kindergarten to total elementary school. Prereq: Admission to Teacher Education Program. E

451 Education in Cultural Perspective (3) Contribution of anthropological concepts to understanding of educational processes; major conceptual frameworks; self-evaluated ethnographic research on process of school- ing. F

453 Adolescent Literature (3) Literature written or appropriate for adolescents.

454 Teaching Strategies and Issues in Social Studies Education (3) Goals, objectives, techniques, materials, and evaluation in teaching in public schools, preparation of teaching plans and materials; simulated teaching experiences. Prereq: Admission to Teacher Education Program. F

455 Teaching of Foreign Language, Grades 7-12 (3) Instructional methods, lesson planning, peer-teaching; materials for teaching Foreign Language and culture evaluation techniques. Required for certification in modern foreign languages and Latin. Prereq: Completion or near completion of foreign language hours for certification and admission to Teacher Education Program. F

456 Teaching Speech and Drama Grades 7-12 (3) Purposes, techniques, material and evaluation for teaching Speech and Drama in secondary school. Required for certification in Speech. Prereq: Admission to Teacher Education Program. F

459 Teaching English in the Secondary School (3) Techniques of teaching composition, language, and literature. Prereq: Admission to Teacher Education Program. F

460 Teaching Reading and Literature in the Secondary School (3) Teaching basic reading skills and literature. Sp

461 Developing Reading Skills in Content Fields (3) Teaching reading and study skills in content areas of the school program. Extensive assessment of textbook. Emphasis on teaching students to read for understanding at high school. F, Sp, Su

471 Internship I: Elementary (3-6) Methods and theo- ries of teaching. Internship is completed in local public schools. Application for internship should be made upon admission to the Teacher Education Program. Prereq: 410 and admission to Teacher Education Program. Satisfactory/No Credit only. F

472 Internship II: Elementary (3-6) Demonstration of professional competence in planning, instruction, and classroom management. Internship is completed in local public schools. Prereq: 471 and admission to Teacher Education Program. Satisfactory/No Credit only. Sp

473 Student Teaching in the Elementary School (3- 10) Seminar, field experience in an Elementary Education Curriculum and Instruction 4810 or 4820. Intended for students in the four-year program or equivalent. Not to be substituted for Educational Curriculum and Instruction 471: Internship I or 472: Internship II. Prereq: Admission to Teacher Education Program, permission of Mentoring Team, and 203 (1). Satisfactory/No Credit only.

474 Student Teaching, Grades 7-12 (3-10) Semester experience equivalent to Educational Curriculum and Instruction 4710 or 4720. Intended for students in the four-year program or equivalent. Not to be substituted for Educational Curriculum and Instruction 481: Internship I or 482: Internship II. Prereq: Admission to Teacher Education Program, permission of Mentoring Team, and 203 (1). Satisfactory/No Credit only.

475 Utilization of Instructional Media (3) Basic communication process, need for instructional media, in- structural development, selection and utilization of basic media, and basic software production techniques. (Same as Library and Information Science 475). F, Sp, Su

476 Instructional Media in Elementary Education (1) Basic operation of audiovisual hardware, selection and utilization of materials, and basic production skills needed for utilization in the elementary classroom. Media Lab experience in production of AV software. F, Su

481 Internship I: Grades 7-12 (3-6) Methods and theo- ries of teaching. Internship is completed in the local public schools. Application for internship should be made upon admission to the Teacher Education Program. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. F

482 Internship II: Grades 7-12 (3-6) Demonstration of professional competence in planning, instruction, and classroom management. Internship is completed in local public schools. Prereq: 481 and admission to Teacher Education Program. Satisfactory/No Credit only. Sp

485 Teaching of Mathematics, Grades 7-12 (3) Preparation of teaching plans, evaluation, materials for teaching mathematics; teaching simulation and directed observation in schools. Prereq: Admission to Teacher Education Program. F

486 Introduction to Instructional Computing (3) Classroom uses of computers, applications for teaching, overview of computer operation and software for teachers of all grades. F, Sp

493 Independent Study (1-3) Topics to be assigned. May be repeated. Maximum 12 hours. E

494 Supervised Readings (1-3) Topics to be assigned. May be repeated. Maximum 12 hours. E

496 Teaching Science Grades 7-12 (3) Methods, materials, recent trends in science and environmental educa- tion programs for secondary schools. Prereq: Admission to Teacher Education Program. F, Sp

ENGINEERING AEROSPACE (018)

345 Aerospace Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems; standards; dynamic characteristics of instruments; stastical data treatment; transducers; signal conditioning; strain, pressure, temperature and flow measurements. Prereq: 362 or Mech. E. 363, Mech. E. 341, ECE 301 F, Sp


362 Dynamics/Vibrations (3) Central force motion, transfer orbits, free and forced vibrations of single and multiple degree vibrating systems. Prereq: ESM & 321 F


401 Thesis (3) Problem investigation and report. Prereq: Senior standing; F, Sp

422 Aerodynamics (3) Theory and design of aerody- namic bodies for desired characteristics. Potential flow theory, viscous effects, compressibility effects. Sub- sonic, transonic, supersonic flight. Prereq: 370 F

423 Viscous Flow (3) Boundary layer theory; laminar and turbulent flow; compressibility effects; numerical solution methods. Prereq: 351 and Mech. E. 391. Sp

424 Astronautics (3) Propulsion, trajectories, guid- ance, control and atmospheric reentry of space vehicle systems. Prereq: 362, Mech. E. 332

425 Propulsion (3) Principles of propulsion devices; turbojet, ram jet and rocket engines. Prereq: 351 F

426 Introduction to Aerospace Design (2) Design process, analysis, safety, reliability, economic analysis, optimization, design standards, design studies. Individual design reports required. Prereq: 351, 370, 363, Coreq: Mech. E. 344. F

429 Aerospace System Design (4) Synthesis and de- sign of complete aerospace system including economic and technical aspects. Participation in team design effort including formal presentations and design report. Prereq: 425, 426. Sp

431 Mechanical Engineering/Aerospace Engineer- ing Seminar (1) Topics related to engineering including ethics. Formal oral presentations on student engineering projects. Prereq: 429. F

449 Aerospace Engineering Laboratory (3) Design, conducting, and reporting results of experimental exercises. Test standards and specifications. Analysis of data and evaluation of conclusions. 3 hours lab per week. Prereq: 345, 351. F

494-495 Selected Topics in Aerospace Science (1-4) Current problems and topics in aerospace science; topics in science and engineering for the career areas of aerospace science. Prereq: Consent of instructor. F, Sp

ENGINEERING BASIC (179)

100 Seminar (1) Overview of the College, engineering as a profession, engineering ethics. Consideration of each major and the various engineering disciplines. Satisfactory/No credit.


111 Fundamentals of Engineering Graphics (3) Technical sketching, geometric construction with emphasis on plane surface analysis; presentation of engineering data; graphical solution of three dimensional space problems; primary and secondary auxiliary views. Ap- plication of Computer-Aided Design and Drafting (CADD) in solving engineering graphics problems. Two three-hour laboratory periods or three two-hour periods, including one hour of lecture per week.

121 Statics (3) Vectors, forces and moments; equiva- lent force systems; free body diagrams, equilibrium, frames, trusses and friction. Coreq: Math 141.

131 Particle Dynamics (3) Kinematics, simple har- monic motion; kinetics, Newton's laws, work-energy, impulse-momentum; impact. Prereq: 121; Coreq: Math 142.


ENGINEERING CHEMICAL (226)


240 Fluid Flow and Heat Transfer (3) Force, energy and mechanical energy balances; flow in tubes, piping systems, packed and fluidized beds; pumping and me- ttering; steady and unsteady state heat conduction; heat transfer in tubes and heat exchangers; radiation. Prereq: 200. Mathematics 231.

310 Chemical Engineering Laboratory (3) Thermody- namic, fluid flow and heat transfer in chemical engi- neering. Prereq: 240.

330 Chemical Engineering Thermodynamics (3) Basic concepts and chemical engineering applications of thermodynamics, emphasis on processes, real gas, estimation of properties, phase equilibria and chemical equilibria. Prereq: 240, Chemistry 371.

340 Mass Transfer and Separation Processes (3) Stagewise operation; application of analytical, graphical...


380 Seminar (1) Presentation and discussion of topics in the practice of chemical engineering. Satisfactory/No credit.

401 Chemical Engineering Data Analysis (3) Analysis of experimental data; identification of system outputs; statistical properties of samples, empirical modeling of processes; statistical process control; optimization techniques.

403 Introduction to Optimization (3) Principles and applications of optimization techniques to chemical process design; unconstrained and equality constrained optimizations, linear programming, dynamic programming, and geometric programming. Prereq: Math. 241.

410 Chemical Engineering Laboratory II (3) Laboratory investigations of mass transfer and chemical reaction phenomena in chemical engineering. Prereq: 440, 431. Consent of instructor.

415 Computer Applications in Chemical Engineering (3) Introduction to computer solution of chemical engineering problems. Primary focus on the application of personal computer programs. Includes flow sheet simulators, statistics, spreadsheets, graphics and process modeling.


440 Transport Phenomena (3) Overview of momentum, heat and mass transfer processes, the analogies, differential and macroscopic balances, applications involving molecular diffusion, including simultaneous mass transfer and chemical reaction. Prereq: 340.

445 Separation Process Technology (3) Multicomponent distillation, theory and computer simulations; humidification; specialized technologies, including membrane separation, crystallization, dialysis, adsorption, ion exchange, etc. Prereq: 340.


451 Advanced Process Dynamics and Control (3) Process and control system simulation and advanced industrial control techniques, including feedback, feedforward, multivariable, deadtime, adaptive, and nonlinear control system design. Includes computer and laboratory work. Lab. Prereq: 360.

469 Engineering Internship in Process Control (4) Selected students work in small groups on industrial problems in process dynamics and control. Directed by faculty and engineers from host company. Prereq: 360 and consent of instructor.

475 Fundamentals of Bioreactor Design (3) Reactor modeling, analysis and design for microbial fermentations and cell culture. Including batch, fed batch and continuous operation; suspension cultures and immobilized systems; factors affecting productivity and control.

476 Principles of Biochemical Separations (3) Selection of solid-liquid and liquid-liquid separations; analysis of separation processes including chromatography, electrophoresis, centrifugation, membrane processes, etc. Mathematical and laboratory separation, etc. 

480 Equipment Design and Economic Methods (4) Design, optimization and costing of chemical plant equipment, introduction to economic evaluation methods, capital investment, discounted cash flows, net present value, etc. Prereq: 440.

485 Hydrocarbon Processing (3) Chemical and physical properties of petroleum products and processes utilized in conversion of raw material into various fuels and liquid products; optimization of plant economics; quality of associated products; energy requirements; catalytic hydrogenation and reactor design considerations; economic assessments. Prereq: 485.


494 Special Problems in Chemical Engineering (3) Chemical engineering problems related to recent developments in industrial practice or engineering research. Prereq: Consent of instructor. May be repeated. Maximum credit 6 hours.

ENGINEERING CIVIL (254)

210 Engineering Surveys (3) Measurement through applications to civil and environmental engineering. Includes the principles of error analysis; concepts of horizontal, vertical and angular measurements and control; construction surveys, and survey of surveying techniques and horizontal and vertical curves. Prereq: Sophomore standing.

251 Transportation Engineering I (3) Transportation problems and perspectives, rural and urban; use of a systematic planning process; analysis of existing travel patterns, modeling and demand, development of alternative and evaluation of civil engineering projects. Prereq: 251 or (Civil Engr. 231, Architecture 231). Consent of instructor.

261 Structural Analysis I (3) Reactions; shear and moment diagrams; forces in beams; axial stress and strain; area moments of inertia; torsion. Prereq: Basic Eng. 121.

305 Seminar (2) Selected topics including historical and modern civil engineering achievements; professional and ethical responsibilities. Prereq: Senior standing and completion of all junior-level civil-engineering courses.

310 Route Surveying (3) Basic principles and practical applications of horizontal and vertical alignment of transportation routes, including compound, reverse and parabolic curves and spiral transitions. Includes earthwork computations by micro-computor. Prereq: 210.


330 Introduction to Soil Behavior (4) Physical and mechanical properties of soils, theory of compaction, shear strength, and effective stress. Consolidation theory, time rate and settlement, and shear strength of sands and clays. 3 hours, 1 lab. Prereq: 261.

352 Transportation Engineering II (3) Introduction to design, construction, maintenance, and operation of various transportation modes, their guideways and terminals. Two lectures and 1 lab. Prereq: 261.

361 Structural Analysis II (3) Stress and strain in beams and columns. Mohr's circle; influence lines; deflections and beams and trusses; analysis of indeterminate structures; moment distribution. Prereq: 261.

360 Water and Waste Treatment (3) Principles of unit operations employed in physical, chemical, and biological treatment of water, wastewater, and solid wastes. Prereq: Junior standing and 350.

365 Highway Engineering (3) Design, construction, operation, and maintenance of highway facilities; includes application of various engineering principles and techniques to process of planning, locating and design of highway facilities; covers both geometric and pavement design. Prereq: 210, 251, 352.

366 Traffic Engineering (3) Characteristics of driver, vehicle, and roadway and their interrelationship; traffic studies: basic considerations of traffic circulation and control, lighting, capacity analysis, roadway safety analysis and design. Prereq: 210, 251, 352.

370 Airport/Railroad Planning and Design (3) Airport and railroad planning and engineering. Runway configuration, airfield capacity, geometry and terminal layout design. Railroad capacity, geometrics and system layout and design. Prereq: 210, 251, 352.

371 Transportation Planning (3) Analysis of Framed Structures (3) Analysis of framed structures due to imposed loads; loaded lines of influence; lateral forces due to earthquake and wind; analysis of portal frame designs, and space frames; matrix methods; use of computer in structural analysis. Prereq: 261.

371 Introduction to Structural Design (3) Selection of rolled structural steel beams, design of structural steel members for axial tension and compression loads, reinforced concrete beams; use of standard specifications. Prereq: 361.

472 Steel Design (3) Design of plate girders and composite beams; consideration of members subjected to