Engineers solve problems. To do so, they apply science, mathematics, and creativity to invent, design, test, build and operate engineering systems that will meet the needs of society. In the latter half of the 20th century, engineers developed the personal computer, the space shuttle, artificial hearts and many other "high-tech" products. The opportunities to use technology for the benefit of 21st century society will be even greater.

Engineers use the same problem-solving strategies whether designing a bridge, trouble shooting a computer chip problem or developing a more efficient automobile engine. This commonality of approach makes it easy for an engineer to move from one specialization to another, and it happens frequently. The engineer's can-do, problem solving outlook is also good preparation for management, and many engineers follow this career path.

Increasingly, engineers must also have good interpersonal skills to work effectively in the interdisciplinary groups required to tackle modern engineering projects. They must understand the ethical, environmental, social, political, and business implications of their work. Engineers must work comfortably among the cultures, customs and languages of multi-national enterprises.

In light of modern society's ever-increasing dependence on technology, there is a continuing and urgent need for engineering graduates who possess the high levels of technical competence and social understanding that will enable them to fulfill their responsibilities as professional engineers. The College of Engineering prepares men and women to face these challenges and to seize their opportunities to become the technology leaders of the 21st century.

Graduates of the Bachelor of Science curricula offered by the college may enter directly into a position in industry, government, or private practice, or may pursue advanced study in graduate school. Their professional activities include research, development, design, operations analysis, construction, production supervision, and technical sales. Many practice their profession in Tennessee; but engineering knows no geographical bounds, and graduates of the college serve throughout the nation and in other countries as well.

The college offers eleven undergraduate majors – aerospace engineering, biomedical engineering, chemical engineering, civil engineering, computer engineering, electrical engineering, engineering physics, industrial engineering, materials science and engineering, mechanical engineering, and nuclear engineering.

Biosystems engineering is based in the College of Agricultural Sciences and Natural Resources with facilities located on the Agricultural Campus. The biosystems engineering curriculum is offered cooperatively by the College of Agricultural Sciences and Natural Resources and the College of Engineering. Details of the curriculum may be found in the College of Agricultural Sciences and Natural Resources section of this catalog.

The college, in cooperation with industrial sponsors, established the Minority Engineering Scholarship Program in 1973 and in 1999 renamed it the Diversity Engineering Scholarship Program. The program's goal is to increase significantly the number of qualified minority engineering graduates.

**College Admission Requirements**

To promote the maximum opportunity for success among entering freshmen, the College of Engineering has established college admission requirements in addition to the general university admission requirements. These additional admissions criteria are based upon both high school and standardized test performance, with an emphasis upon assessment of mathematics skills.

For admission to the College of Engineering, entering freshman students must meet the requirements for admission to the University of Tennessee, and they must also have a Success Prediction Indicator (SPI) of at least 57.0. The SPI is calculated by adding an individual's ACT mathematics score to 10 times their high school core GPA (based on a 4.0 scale). Thus, a student with a core GPA of 3.5 and a mathematics ACT score of 28 would have an SPI of 63 = (28 + 10x3.5). SAT scores are converted to an equivalent ACT score to perform this calculation.

Students who wish to pursue an engineering degree at the University of Tennessee, Knoxville, but do not meet the SPI criterion may enroll as University Undecided students and complete appropriate mathematics, science, and other courses before applying for admission to the College of Engineering. (See the statement regarding Transfer Students later in this section.) The college welcomes qualified transfer students from community and other colleges.
Facilities
Most of the college’s facilities are on the southeastern corner of The Hill. Administration and Civil and Environmental Engineering are in Perkins Hall; Electrical and Computer Engineering are in Ferris Hall; Industrial and Information Engineering and the Interdisciplinary Engineering Research Centers are in East Stadium Hall; Nuclear Engineering is in the Pasqua Engineering Building; Mechanical, Biomedical, Aerospace, Chemical, and Materials Science are in Dougherty Hall. The Engineering Fundamentals Division and Engineering Diversity Programs office are located in Estabrook Hall. The Co-op office is in Perkins Hall. The Engineering Physics program is administered through the Physics Department in the Nielsen Physics Building.

Office of Professional Practice
The Office of Professional Practice which administers cooperative engineering program (Co-op) provides an augmented engineering education that includes significant experience in industry as well as superior academic preparation. Our cooperative engineering program was established in 1926. The University of Tennessee was one of the early pioneers in this valuable type of education.

Co-op work assignments differ from part-time or summer employment in that they involve regularly scheduled cycles of full-time academic terms alternating with full-time work periods, resulting in planned, career-related work terms of progressive complexity and responsibility. In introducing the student to engineering employment, the college and industry join together to offer a broader and richer preparation for postgraduate employment than can be provided by a conventional academic program. This experience in an industrial and professional environment contributes to the student’s maturity, accelerates professionalism, offers an opportunity to apply engineering coursework in a real-world setting, and enables the student to define more clearly educational and career interests and objectives. All positions are paid positions, and most students are able to offset a substantial amount of their college expenses with Co-op savings.

Introduction to the cooperative engineering program (for new students, transfers, second-degree students, and re-entry students) begins in the first semester at the university. Assignments are determined by employer and student. All engineering students are encouraged to visit the program office.

Candidates are able to project a minimum of 52 weeks of Co-op experience prior to the senior year, within the regular alternating sequence, to qualify for an assignment.

Further details may be obtained from the Office of Professional Practice, 310 Perkins Hall, The University of Tennessee, Knoxville, TN 37996-2030. You may also contact the Co-op office via e-mail at coop @ engr.utk.edu or via the program home-page at http://www.coop.utk.edu

International Engineering Program
The United States, like most countries throughout the world, can no longer thrive economically with only a domestic market for its goods and services. To compete in the global marketplace, engineers must understand how to design and manufacture products for world-wide use. The College of Engineering works with several organizations, both on and off campus, to enable interested students to participate in significant engineering experiences abroad. Students interested in making an international experience part of their engineering education should begin exploring opportunities and develop plans during the freshman year. Language preparation to a level of substantial proficiency may be required. Thus, language preparation should be started immediately. For further information on international engineering educational programs, contact the Center for International Education, 1620 Melrose Avenue.

Graduate Program
Graduate programs leading to the Master of Science are offered in twelve majors – aerospace engineering, biomedical engineering, chemical engineering, civil engineering, electrical engineering, engineering science, environmental engineering, industrial engineering, materials science and engineering, mechanical engineering, nuclear engineering, and polymer engineering. The Doctor of Philosophy is offered in eleven majors – aerospace engineering, biomedical engineering, chemical engineering, civil engineering, electrical engineering, engineering science, industrial engineering, materials science and engineering, mechanical engineering, nuclear engineering, and polymer engineering. Information concerning graduate programs is given in the Graduate Catalog.

Tau Beta Pi National Headquarters
The college is honored to have the national headquarters of Tau Beta Pi, the Engineering Honor Society, housed on our campus since 1907. This honor was earned in part through the untiring efforts of R.C. "Red" Matthews, Secretary-Treasurer for the organization from 1905 to 1947. The suite of offices, located in Dougherty Hall, is occupied by Mr. J.D. Froula, Secretary-Treasurer, R.E. Hawks, Assistant Secretary-Treasurer, and eight additional staff members.

National Accreditation
Since 1936, engineering programs at institutions of higher learning have been accredited by an organization formed by many engineering societies and known as the Accreditation Board for Engineering and Technology (ABET). ABET accreditation ensures that graduates of the University of Tennessee, Knoxville, engineering programs are adequately prepared to enter and continue the practice of engineering. Accredited engineering programs at the University of Tennessee, Knoxville, include aerospace, biomedical, biosystems, chemical, civil, computer, electrical, industrial, mechanical, materials science, and nuclear.

Accreditation criteria require each engineering degree program to design a curriculum and educational process that will achieve defined educational objectives consistent with ABET criteria and the mission of the University of Tennessee, Knoxville. The educational objectives of each degree program are presented by the department responsible for the program later in this chapter. In each case the objectives are consistent with the mission of the College of Engineering. That mission is to

- Provide high quality education in the major engineering disciplines from the undergraduate through doctoral levels through a creative balance of academic, professional, and extracurricular programs.
- Foster and maintain mutually beneficial partnerships with our alumni, friends, industry, and local, state, and federal governments through public services, assistance, and collaborative research.
- Be a major contributor to our nation’s technology base through scholarship and research.

In addition, the educational objectives of each degree program are also guided by and consistent with the strategic objectives of the College of Engineering. Two particularly relevant strategic objectives are “to continuously provide quality delivery of courses, programs, extracurricular activities, assistance, and support that enhances each student’s desire to learn and that excites each student’s interest in engineering and the work environment” and “to continuously provide and improve the education and working abilities that employers want our engineering graduates to have.”
Designation of a Minor

An engineering undergraduate may declare a minor in a non-engineering subject area and have the minor listed on the permanent record under the following conditions.

- Minors must be officially approved and described in the Undergraduate Catalog. No unofficial minors will be recognized.
- Courses taken to satisfy the minor may also be used to satisfy engineering degree requirements provided that the courses would be a part of engineering degree requirements even if no minor was declared. Completion of a minor often involves the taking of some courses which cannot be used to satisfy the minimum requirement for an engineering degree.
- A student should notify his or her advisor and major department office when beginning work on a minor. The intention to complete a minor must be declared at the time of application for graduation if the minor is to appear on the final transcript. Graduation applications are available in the Office of the University Registrar.

Minor in Reliability and Maintainability Engineering

A coursework program leading to a minor in reliability and maintainability engineering is offered by the College of Engineering. Fifteen hours of coursework are required as listed below. The grade in each of the required classes must be at least a C. Students should consult with their advisor for the appropriate elective courses in their major.

<table>
<thead>
<tr>
<th>Hours Credit</th>
<th>Core courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Industrial Engineering 483 or Mechanical Engineering 483 or Nuclear Engineering 483</td>
</tr>
<tr>
<td></td>
<td>Industrial Engineering 484 or Mechanical Engineering 484 or Materials Science and Engineering 484 or Nuclear Engineering 484</td>
</tr>
<tr>
<td></td>
<td>Statistics or Math Requirement (choose 1)</td>
</tr>
<tr>
<td></td>
<td>Chemical Engineering 301</td>
</tr>
<tr>
<td></td>
<td>Electrical and Computer Engineering 313</td>
</tr>
<tr>
<td></td>
<td>Mathematics 323</td>
</tr>
<tr>
<td></td>
<td>Statistics 251</td>
</tr>
<tr>
<td></td>
<td>Electives (choose at least 2)</td>
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<tr>
<td></td>
<td>Chemical Engineering 360</td>
</tr>
<tr>
<td></td>
<td>Electrical and Computer Engineering 315, 471</td>
</tr>
<tr>
<td></td>
<td>Industrial Engineering 300, 440</td>
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<tr>
<td></td>
<td>Statistics 365 (for non-Industrial Engineering)</td>
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<tr>
<td></td>
<td>Mechanical Engineering 345, 363</td>
</tr>
<tr>
<td></td>
<td>Nuclear Engineering 304</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

Course Load

The maximum number of hours which can be taken by an undergraduate engineering student without special permission is 19. The Associate Dean for Student Affairs must give permission to take 20 hours or more. In general, this decision is based on the student's previous performance at the University of Tennessee, Knoxville.

General Requirements

Students are advised to consult the university's degree requirements as stated in the front section of this catalog, as well as departmental requirements.

Transfer Students

Transfer students, including internal University of Tennessee, Knoxville, transfers, must meet the minimum requirements stated below to be considered for admission to a major within the college.

- Must have earned a minimum 2.30 cumulative average and a C or better in each of these specific courses, or their equivalent: English 101, Chemistry 120, and Mathematics 141 (and subsequent courses in the three sequences, if taken).
- The overall record will be evaluated for quality and seriousness of purpose. An excessive number of withdrawals, incompletes, repeated courses, or failures may result in denial.

Any University of Tennessee, Knoxville, student desiring association with one of the departments of the College of Engineering should go to the departmental office for the desired major. An interview with the department head or his/her designee is held, with the major items of consideration being the same as for external transfer students. If association is granted, a College/Major/Advisor Change form is processed by the department to officially change the student's academic home.

Transfer Credit

Every attempt will be made to give maximum credit for courses taken elsewhere and transferred to the college. Discussions concerning the evaluation of transfer credits should be conducted with the head of the department (or designee) into which the student is to transfer, but only after receiving the evaluation of transfer credits by the Admissions Office.
Second Bachelor of Science Degree

Upon approval by the Dean of Engineering and the Committee on Degrees of a program of study recommended by the major engineering department, a student who already holds a bachelor’s degree may obtain a degree in engineering upon meeting all of the course requirements of the selected engineering program. In no case will the minimum requirement be less than 30 semester credits. The prevailing university regulations shall apply.

Satisfactory/No Credit Courses

Engineering majors may take half of the minimum hours required (nine) of general education electives on a Satisfactory/No Credit (S/NC) grading basis. No other courses specified as part of the minimum degree requirements may utilize Satisfactory/No Credit grading, unless a course is offered only on that grading basis. Students are encouraged to take courses of interest which are not part of the minimum degree requirements, and to fully utilize the Satisfactory/No Credit grading option for such coursework.

Correspondence Courses

A student should check with his or her major department to see what restrictions there are, if any, on the use of correspondence course credit to meet the minimum degree requirements.

University General Education Requirement

The University of Tennessee has established a University General Education Requirement that includes emphases upon building basic skills and developing broadened perspectives. These requirements apply to all undergraduate students and are listed at the front of this catalog. Engineering students should consult with their advisor and carefully select General Education Electives to insure that courses meet the general education needs of their program and courses meet the University General Education Requirement.

American History Requirement

Engineering students, regardless of national origin, must fulfill the American history requirement described elsewhere in this catalog. Those students who have not had the required year of American history in high school may choose the required 6 hours from History 221 and 222, or other courses deemed suitable by the Department of History. See additional information about the American History Requirement in the Academic Policies and Procedures section of this catalog.

Technical Electives

Technical electives are to be selected with the advice and approval of the student’s major department. In some of the curricula tabulations a choice of such electives is indicated, and regulations in regard to their selection are stated.

The Voluntary ROTC Program

Engineering students may participate in the ROTC Program. Advanced ROTC courses (300- and 400-series) may be counted as technical elective credit toward an engineering degree up to a total of 6 hours. Normally, military science and leadership courses cannot be used as humanities/social science electives. Individual departments determine the appropriate substitutions.

Approval of Electives and Substitutions

Each student shall discuss with an advisor the status of the program of study no later than the beginning of the second semester prior to anticipated graduation. Any necessary additions to or substitutions in the program or electives requiring special approval must be approved in writing at that time. It is each student’s responsibility to see that all necessary approvals are secured. Inattention to such matters will most likely delay graduation.

Curricula

Course requirements for the various engineering curricula are listed in each department’s section. Individual course prerequisites should be strictly adhered to, even if courses are not taken in the semester indicated. Although the requirements for each major can be completed in four academic years (five for the cooperative program), the quality of the learning experience is much more important than the speed with which the curricula are completed.

Questions about individual courses should be directed to the department responsible for the course. Questions about a particular curriculum should be directed to the major department.

Prerequisites

Before registering for any engineering course, a student should make certain that any necessary background work has been completed. In addition to specific prerequisites listed, it is assumed that a student taking sophomore engineering courses has completed all freshman courses, whether specifically listed as a prerequisite or not. When this is not the case, a student should seek advice from the advisor or department responsible for the course in question before registration in order to minimize the chances of academic difficulty. Students who do not have prescribed prerequisites may be dropped from a course at any time during a semester when the lack of prerequisites is discovered.

ENGINEERING FUNDAMENTALS DIVISION

J. R. Parsons, Director

Professors
Bennett, R.M., Civil and Environmental Engineering
Parsons, J.R., Mechanical, Aerospace and Biomedical Engineering

Associate Professors
Pionke, C.D., Mechanical, Aerospace and Biomedical Engineering
Scott, T.H., Nuclear Engineering

Instructor
Schleter, W.R., Engineering Fundamentals

The Engineering Fundamentals Division is the academic home for all first-year engineering students. Located in Estabrook Hall, the division serves as a focus for all freshman student activities. The faculty of the division act as academic advisors and teach the principal courses in Engineering Fundamentals. These courses are designed to prepare students for entry into the sophomore year of every major in the college. Academic standards in the first year are necessarily high. To assist students with deficient academic backgrounds in the necessary mathematics and computer skills, supplementary courses are offered as needed.

New freshman students are assigned to the Engineering Fundamentals Division for academic advising and career counseling until they have completed the freshman curriculum. Freshman students admitted to the College of Engineering are required to designate a field of study by the end of their freshman year. As sophomores, students are assigned faculty advisors in their selected departments.
Minor in Engineering Communication and Performance

The division co-administers, with the College of Education, Health, and Human Sciences, the engineering communication and performance minor for engineering students desiring additional training and certification in team facilitation and organizational communication. (See College of Education, Health, and Human Sciences – Department of Educational Psychology and Counseling catalog section for requirements.)

BIOSYSTEMS ENGINEERING

(See College of Agricultural Sciences and Natural Resources – Department of Biosystems Engineering and Soil Science)

Biosystems engineers use engineering science and mathematics to address opportunities and problems in biological, environmental, ecological, and agricultural systems. This ABET accredited program is offered by the Department of Biosystems Engineering and Science in the College of Agricultural Sciences and Natural Resources in cooperation with the College of Engineering.

DEPARTMENT OF CHEMICAL ENGINEERING

http://www.che.utk.edu/

John R. Collier, Head
Fred E. Weber, Undergraduate Liaison

Professors

Bienkowski, P.R., PhD .......................................................... Purdue
Collier, J.R., PhD .................................................. Case Institute of Technology
Counce, R.M., PhD .................................................. Tennessee
Moore, C.F. (Distinguished Service Professor), PhD, PE .................................................. Louisiana State
Sheth, Antul C. (UTSI), PhD .................................................. Northwestern

Associate Professors

Bruns, D.D., PhD .......................................................... Houston
Edwards, B.J., PhD .................................................. Delaware
Frynier, P.D., PhD .................................................. Virginia
Keffer, D.J., PhD .................................................. Minnesota
Petrovan, S. (Research), PhD .................................................. Iasi Tech
Wang, T.W., PhD .................................................. Massachusetts Institute of Technology
Weber, F.E., PhD .................................................. Minnesota

Adjunct Faculty

Steele, W.V., PhD .................................................. Queens (Belfast)

Emeriti Faculty

Holmes, J.M., PhD .......................................................... Tennessee
Prados, J.W., PhD, PE .................................................. Tennessee

Chemical engineering deals with the development, design, operation, and management of plants and processes for economical, safe conversion of chemical raw materials to useful products. It is a broadly based discipline with heavy emphasis on chemistry and mathematics, with supporting study in areas such as physics, materials, and humanities.

Chemical engineering graduates of the University of Tennessee, Knoxville, possess the knowledge base, intellectual skills, and professional commitment that prepare them for innovative technical leadership, graduate study, productive service to society, and continued professional growth through lifelong learning. Preparation is based in the learning objectives identified below, regular evaluation of the achievement of these objectives, and use of evaluation results to improve the educational process.

- Graduates of the UT Knoxville chemical engineering program who pursue full-time graduate or advanced professional study will complete their programs of study successfully.
- Graduates of the UT Knoxville chemical engineering program will continue their professional growth through lifelong learning.

The curriculum provides a central core of required courses with flexibility in the upper-division years to permit emphasis on preparation for graduate school or professional employment. To graduate in chemical engineering, students must complete the published curriculum with a grade of C or better in all required chemical engineering courses.

A minimum of 18 hours of general education courses are required. These courses must meet the University General Education Requirement. A writing course (WC) and oral communication course (OC) must be included in the general education electives.

Honors Program

The honors program encourages highly-motivated students to experience a more rigorous preparation in chemical engineering. Admission is selective. Application to the honors program is made when the student applies for upper-division status. Honors requirements are credit for three of the four honors seminars (Chemical Engineering 307, 308, 407 and 408), Chemical Engineering 447, one of Chemical Engineering 467, 477, 488 or 498 as a technical elective and Chemistry 483 as a chemistry option. Students interested in the honors program should consult the department’s Honors Coordinator.

Progression to Upper Division

Progression of chemical engineering students to departmental courses numbered 310 or above is competitive and is based on capacity. Factors considered include overall grade point average, performance in selected lower-division courses, and evidence of satisfactory and orderly progress through the prescribed curriculum.

Upper-Division Status

A lower-division student may apply for progression to upper-division status after completing Chemical Engineering 200, 230, 240 and 250 with a grade of C or better in each course and an overall GPA of 2.5 or better.

Provisional Status

Students who have completed Chemical Engineering 200, 230, 240, and 250 with an overall GPA of at least 2.1 may apply for provisional status. The granting of provisional upper-division status is based on the availability of space in the departmental programs after upper-division status students have been accommodated. Provisional students are required to demonstrate the ability to perform satisfactorily in upper-division courses by completing a total of seven departmental courses with a grade of C or better in each course (including the four required for upper-division status). Permission to continue with upper-division classes depends on this minimum level of performance.

Any student with an overall GPA below 2.1 will not be admitted to upper-division chemical engineering courses. Students who have not been admitted to upper-division or provisional status will be dropped from upper-division departmental class rolls.

Transfer Students

The upper-division level students are admitted on a provisional status basis only.
CHEMICAL ENGINEERING MAJOR
Requirements for Bachelor of Science in Chemical Engineering

First Year
- English 101*, 102* ........................................................................... 6
- Chemistry 120*, 130* ...................................................................... 8
- Mathematics 141*, 142* ................................................................. 8
- Engineering Fundamentals 105, 151 or 157, 152 or 158 ................. 9

Second Year
- Chemical Engineering 200, 215, 230, 240, 250 .............................. 16
- Mathematics 200, 231, 241 ......................................................... 8
- Chemistry Option I ........................................................................ 3
- Arts and Humanities Electives* .................................................... 6

Third Year
- Chemical Engineering 301, 310, 340, 360, 380 .............................. 13
- Chemistry 310-319 ...................................................................... 4
- Chemistry 350 ............................................................................. 3
- Chemistry Option II ................................................................. 3
- Technical Elective (OC)* .............................................................. 3
- Social Sciences Electives* ........................................................... 6

Fourth Year
- Chemical Engineering 401, 410 or 411, 445, 450, 480, 488 or 490 .. 17
- Physics 231* .............................................................................. 3
- Technical Electives (one course must be WC)* ................................ 6
- Cultures and Civilizations Electives* ............................................ 6

Total 128

* Meets University General Education Requirement.

All electives must be pre-approved by the advisor and the department head.

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
http://www.engr.utk.edu/civil/
Gregory D. Reed, Head

Professors
- Bennett, R.M., PhD, PE ................................................................. Illinois
- Burdette, E.G. (Fred N. Peebles Professor), PhD, PE ....................... Illinois
- Chatterjee, A., PhD, PE ............................................................... North Carolina State
- Davis, W.T. (Associate Dean), PhD ............................................. Tennessee
- Deatherage, J.H., PhD, PE ......................................................... Tennessee
- Drumm, E.C., PhD, PE ................................................................. Arizona
- Penumadu, D., PhD ................................................................. Georgia Tech
- Reed, G.D., PhD, PE ................................................................. Arkansas
- Robinson, R.B. (Fisher Professor), PhD, PE ................................. Iowa State
- Urbanik, T. (Condra Professor and Goodrich Chair), PhD, PE ......... Texas A&M

Associate Professors
- Cox, C.D., PhD, PE ................................................................... Penn State
- Han, L.D., PhD ........................................................................ California (Berkeley)
- Miller, T.L., PhD, PE ................................................................. Tennessee
- Richards, S.H., PhD, PE ........................................................... Tennessee
- Robinson, K.G., PhD ................................................................. Virginia Tech

Assistant Professors
- Agnihotri, S., PhD ................................................................... Illinois
- Gentry, R., PhD, PE ................................................................. Memphis
- Ma, Z., PhD, PE ................................................................... Nebraska
- Huang, B., PhD, PE ................................................................. Louisiana State
- Schwartz, J., PhD, PE ............................................................... Illinois
- Zhao, Q., PhD ........................................................................ California (Berkeley)

The department offers a Bachelor of Science Degree in Civil Engineering, accredited by the Accreditation Board for Engineering and Technology (ABET).

Undergraduate Education Mission

To prepare students to enter the general practice of civil engineering and/or pursue graduate education, the department’s undergraduate education mission is to provide a high-quality teaching and learning environment in recognized areas of civil engineering with proficiency in environmental, geotechnical, structural, transportation, and water resources engineering.

Educational Objectives

Consistent with the mission of the Department of Civil and Environmental Engineering at the University of Tennessee, Knoxville, graduates of the civil engineering program will have technical competency to pursue professional practice or graduate education; and professional competency to function in a team environment, effectively communicate, and engage in life-long learning.

The curriculum in civil engineering provides training in fundamental engineering sciences and in basic subjects in related fields. Technical electives are available in construction, environmental engineering, geotechnical, material, structures, transportation, or water resources.

Graduation Requirements

Students are required to be advised every semester. Students are required to maintain a cumulative grade point of at least 2.00 in all civil engineering and environmental engineering courses taken at the University of Tennessee, Knoxville, used to satisfy the graduation requirements. No more than two civil and environmental engineering courses in which a D is the highest grade earned may be counted toward graduation.

Electives

Electives are chosen to meet student career objectives and program accreditation requirements. Students must consult with their advisor and have their selections pre-approved. A student must have a GPA of 2.75 or higher or approval of the instructor to take 500-level courses for undergraduate credit.

CIVIL ENGINEERING MAJOR
Requirements for the Bachelor of Science in Civil Engineering

First Year
- Chemistry 120*, 130* ................................................................. 8
- English 101*, 102* ................................................................. 6
- Engineering Fundamentals 105, 151 or 157, 152 or 158 ............... 9
- Mathematics 141*, 142* ........................................................... 8

Second Year
- Arts and Humanities Elective* .................................................. 3
- Civil Engineering 205*, 210, 261 ................................................. 9
- Engineering Fundamentals 202 .................................................. 3
- Mathematics 231, 241, 251 ....................................................... 10
- Physics 231* ............................................................................ 3
- Statistics 251 ........................................................................... 3

Third Year
- Arts and Humanities Elective* .................................................. 3
- Civil Engineering 305, 321, 330, 351, 352, 381, 380, 390, 416 .... 27
- Cultures and Civilizations Elective* ........................................... 3

Fourth Year
- Civil Engineering 400, 401, 435, 440, 442, 471, 480 ............... 19
- Civil Engineering Elective ........................................................ 3
- Civil Engineering/Technical Elective ......................................... 3
- Social Sciences Electives* ....................................................... 6

Total 128

* Meets University General Education Requirement.

All electives must be pre-approved by the advisor and the department head.
Minor in Environmental Engineering

The College of Engineering offers a minor in environmental engineering to those undergraduate students whose academic history provides the prerequisites for the courses required by the minor. The minor requires the completion of a minimum of 21 credits in coursework which builds the foundation of an environmental engineering perspective. Some of the courses used in the minor may also satisfy a requirement for a major. Students are advised that the first professional degree in environmental engineering at the University of Tennessee, Knoxville, is the Master of Science with a major in environmental engineering which builds on the minor.

Students are asked to file their intent to complete the minor with the office of the Department of Civil and Environmental Engineering, 223 Perkins Hall. The student’s home department advisor will then be supplied with the information about the minor requirements to assist with prerequisite sequencing. A copy of the form will be filed with the Office of the University Registrar so that, upon completion, the minor will be shown on the student’s transcript.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineering 486</td>
<td>3</td>
</tr>
<tr>
<td>Microbiology 210</td>
<td>3</td>
</tr>
<tr>
<td>Select one from Chemistry 230, 310, or 350</td>
<td>3</td>
</tr>
<tr>
<td>Select two from Chemical Engineering 200; Biosystems</td>
<td>3</td>
</tr>
<tr>
<td>Engineering 221; Civil Engineering 380, 395, 416</td>
<td>6</td>
</tr>
<tr>
<td>Select one from Geology 202 or Philosophy 245</td>
<td>3</td>
</tr>
<tr>
<td>Select one from Geology 485; Civil Engineering 485; Environmental or Soil Sciences 444</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

Program Educational Objectives

The educational objectives of the electrical and computer engineering programs include an understanding of the engineering sciences necessary to analyze and design complex devices and systems containing hardware and software components; a progression of design projects and tasks throughout the program; an understanding of probability and statistics, including applications, and discrete mathematics; an understanding of mathematics through differential and integral calculus; an understanding of the basic sciences including chemistry and physics; an understanding of advanced mathematics in the areas of differential equations, numerical analysis, linear algebra, and advanced calculus; an orderly student progression through the program; and achievement of the objectives of the thirteen program outcomes.

Program Outcomes

In addition to the eleven program outcomes listed in the College of Engineering section on National Accreditation, electrical and computer engineering program outcomes also include experience in using organizational skills in team management and negotiation; and ability to use creative and technical skills in analytical problem solving in the discipline and other engineering related fields. Both electrical and computer engineering programs are under continuous assessment and improvement based on Engineering Criteria 2000. The advisory committee to the department, which is made up of persons from industry, government, higher education students and recent graduates, and faculty, provides constituent input for setting program educational objectives and outcomes and establishing the requisite assessment modes for the program.

General

The courses of study for the Bachelor of Science in Electrical Engineering and the Bachelor of Science in Computer Engineering are structured to provide a foundation in both the basic sciences and the specialized areas of the respective discipline. The programs also have sufficient general education electives to enhance the cultural growth of the student and develop professionals with a strong social awareness. The faculty seeks to keep classes small enough to allow effective interaction with students.

The selection of general education elective courses is left to each student but must be made in accordance with established College of Engineering policy.

Generally, all sophomore- and junior-level courses taught in the department are taught at least twice per year. Senior-level courses are normally offered in either the fall or spring semester. Courses for which a senior course is a prerequisite will be normally offered in the spring semester with the prerequisite senior course being offered in the fall semester. In all courses which have prerequisites indicated, the prerequisite must be completed prior to enrollment in the course. This scheduling arrangement allows for flexibility since the student may elect the normal four-year schedule, an accelerated schedule, or choose to participate in the cooperative engineering program.
The Electrical and Computer Engineering Department maintains a number of laboratory facilities to support the undergraduate teaching program. The laboratories are devoted specifically to circuits and systems, communications, computer networks, digital systems, electronics, image processing, machinery, machines, and power electronics and drives. Microcomputer and personal computer facilities are provided within the department.

The Electrical and Computer Engineering Department requires at least a C in every Electrical and Computer Engineering course used for either of our undergraduate degrees and in every required mathematics or computer science course.

Progression of electrical and computer engineering undergraduate majors to the upper-division programs of the department is competitive and is based on the space available in the department. Factors considered in the decision include overall grade point average, grades earned in courses required in the lower-division curricula of the department and College of Engineering, and seriousness of purpose and interest in departmental programs as exemplified by regular and orderly progress through the prescribed curriculum without abuse of withdrawal and course repeat privileges.

Students who take Electrical and Computer Engineering 300 in the ECE department will be evaluated during the semester they are registered for it. Transfer students for whom ECE 300 transfer credit is given may take 9 semester hours in departmental courses before progression evaluation. All students, whether or not they transfer in, who are not accepted into the upper-division program of the department will either be put in a temporary probationary status or a non-progressed status in which they will not be permitted to register for any upper-division courses within the department.

**COMPUTER ENGINEERING MAJOR**

Students in the junior and senior years may choose from a wide spectrum of courses covering various aspects of electrical and computer engineering, computer science, and related fields. Students must meet the design, depth, and breadth requirements in the department in their selection of these courses. Students are encouraged to discuss an appropriate senior program with their advisors.

To be eligible for the Bachelor of Science in Computer Engineering, a student must achieve a cumulative grade point average of at least 2.0 in all electrical and computer engineering courses taken at the University of Tennessee, Knoxville. At least 30 hours of upper-division courses in electrical and computer engineering and computer science must be earned at the University of Tennessee, Knoxville.

**Requirements for the Bachelor of Science in Computer Engineering**

<table>
<thead>
<tr>
<th>First Year</th>
<th>Hours Credit</th>
</tr>
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<tbody>
<tr>
<td>English 101*, 102*</td>
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<tr>
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<td>Math 141*, 142*</td>
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<td>Electrical and Computer Engineering 206</td>
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<td>Mathematics 231, 241, 251</td>
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<tr>
<td>3Engineering Fundamentals 402</td>
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</tr>
</tbody>
</table>

Total 126

* Meets University General Education Requirements.

**ELECTRICAL ENGINEERING MAJOR**

Students in the senior year may choose from a wide spectrum of courses covering all aspects of electrical and computer engineering. Students must meet the design, depth, and breadth requirements of the department in their selection of these courses. The design requirement is met through a major engineering design experience in Electrical and Computer Engineering 400, Senior Design, and through the design process being integrated into specified courses throughout the program. The depth requirement is met by taking two courses in one of the five core areas of communications, computers, electronics, power, and systems. The breadth requirement is met by taking courses in other core areas, or courses in computer vision, power electronics, and emerging technologies. Students are encouraged to discuss an appropriate senior program with their advisors.

To be eligible for the Bachelor of Science in Electrical Engineering, a student must achieve a cumulative grade point average of at least 2.0 in all electrical and computer engineering courses taken at the University of Tennessee, Knoxville. At least 30 hours of upper-division electrical and computer engineering courses, including Electrical and Computer Engineering 400, and courses to meet the depth, and breadth requirements of the department must be earned at the University of Tennessee, Knoxville.

**Requirements for Bachelor of Science in Electrical Engineering**

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<th>First Year</th>
<th>Hours Credit</th>
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<tbody>
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<tr>
<td>2Philosophy 241*, 243*, or 244*</td>
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<tr>
<td>4Engineering Fundamentals 402</td>
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</table>

Total 127
ENGINEERING PHYSICS

Program

Soren P. Sorenson, Director
Stuart B. Elston, Coordinator

Engineering physicists typically work in areas of applied science and emerging technology in which standard engineering practices are rapidly evolving to keep pace with advances in science; they are often involved in developing new engineering methods and principles. The goal of the engineering physics Bachelor of Science program is to prepare its students to apply the principles and problem-solving approaches of physics to the solution of engineering problems at the frontiers between science and technology by

• Providing students with a thorough knowledge of mathematics, science, and engineering science with an emphasis on the principles of physics and of the derived physical, chemical, and biological sciences as appropriate to individual career goals.

• Training students in the communication, team cooperation, and problem identification and solving skills needed to practice engineering art in the modern world.

• Preparing students through example and experience to apply those principles and skills to the design and conduct of experiments, to the analysis and interpretation of measured results, and to the design of components, processes, and systems that meet specific, identified needs.

• Instilling in students understanding and appreciation of the cultural, historical, societal, economic, and environmental contexts in which problems of engineering and science arise, and to promote commitment to seek solutions which achieve appropriate balance of cultural, social, and technical value.

The program in engineering physics is designed to fulfill the educational requirements for professional work in various fields of applied science which are based upon a thorough knowledge of physics. The first two years of the curriculum are concerned with fundamental courses in engineering, science, mathematics, and general education. In the upper division, the curriculum allows some choice of courses in engineering and in physics depending on the interest and career goals of the student. The undergraduate program is a complete, professional program, equipping the student for entry into a variety of work in industry and research. The program also leads to graduate work in either physics or engineering.

* Meets University General Education Requirement.

1 Engineering Fundamentals 157 and 158 are Honors versions of Engineering Fundamentals and students in the Chancellor's Honors Program are not required to take Engineering Fundamentals 402.

2 Can be taken at any time.


4 Chemistry 130; Industrial Engineering 405; Materials Science and Engineering 201, 410; Mechanical Engineering 231, 321, 331, 344; Nuclear Engineering 342.

ENGINEERING PHYSICS MAJOR

Requirements for the Bachelor of Science in Engineering Physics

<table>
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<th>Year</th>
<th>Hours</th>
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<td>Physics 240, 321</td>
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<tr>
<td>Physics 311, 312</td>
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<td>Physics 361</td>
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<td>Physics 421</td>
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<tr>
<td>Social Sciences Electives*</td>
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<td>Physics 431, 432</td>
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</tr>
<tr>
<td>Total 125</td>
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</tr>
</tbody>
</table>

* Meets University General Education Requirement. Students and their advisors are cautioned to ensure that Engineering, Technical, and/or General Education elective course selections meet the University General Education Communicating through Writing (WC) and Communicating Orally (OC) requirements.

1 Transfer students from other engineering departments may substitute Engineering Fundamentals 152 for Physics 137, Physics 231 for Physics 138, and Physics 232 for Physics 240.

2 A total of 12 hours of engineering electives plus 9 hours of technical electives are required. Engineering electives should form a coherent group of courses taken in the College of Engineering. Technical electives may be taken in physics, engineering, mathematics, other physical sciences, or astronomy.

DEPARTMENT OF INDUSTRIAL AND INFORMATION ENGINEERING

http://www.engr.utk.edu/ie/

Adejeji B. Badiru, Head

Professors
Badiru, A.B., PhD, PE ......................................... Central Florida
Ding, F., PhD ...................................................... Central Florida
Garrison, G.W. (UTSI), PhD .................................. North Carolina State
Hai, M.D. (UTSI), PhD, PE .................................. North Carolina State
Jackson, D.F., PhD, PE ...................................... North Carolina State
Kuo, W. (Dean and University Distinguished Professor), PhD ...................................... Kansas State

Associate Professors
Aikens III, C.H., PhD ........................................ Tennessee
Hailey, M.L. (UTSI), PhD, PE ................................ Texas Tech
Jackson, D.F., PhD, PE ...................................... Tennessee
Sawhney, R.S., PhD ........................................ Tennessee

Assistant Professors
Ford, R.E., PhD .................................................. Tennessee
Jeong, M., PhD .................................................. Georgia Tech
Kim, D., PhD .................................................... Florida
Kong, D., PhD .................................................... Penn State
Li, X., PhD ....................................................... Arizona State

Research Faculty and Staff
Halstead, P.D., BS .............................................. State University of New York

Originally, the industrial engineering profession focused on manufacturing. Today's industrial engineer will be involved in the design of systems and processes to produce and deliver goods and services not only in manufacturing, but also in the service industries and government sectors of the economy. Today's
industrial engineer is concerned with the design of integrated systems involving people, materials, finances, equipment, processes, energy, and information, so that the overall system functions efficiently and human needs are adequately met. Industrial engineering is distinctive in two respects – the industrial engineer typically works on problems or systems which include human beings as a major variable and the industrial engineer is by definition a systems engineer, whose unique combination of skills can be applied to many working environments.

It is this emphasis on people, science, and technology that distinguishes industrial engineering from the other engineering disciplines. The industrial engineer’s objective is to achieve the best possible results for the benefit of humankind in terms of safety, quality, and productivity. Industrial engineers create value through a total systems approach, scientific method, engineering design, and integration of new technologies. In common with all engineering disciplines, industrial engineering is based on mathematics and the physical sciences. However, industrial engineering also emphasizes the life sciences and social sciences. This concern for the human element leads to system designs that enhance the quality of life for all people, both as producers and consumers of products and services.

Career choices for industrial engineers range from retail distribution, banking, healthcare delivery, corporate management, municipal management, aerospace systems, research groups, government employment as well as manufacturing. In all areas of manufacturing, service, and government, there is increasing emphasis on the goal of improving quality and productivity. Industrial engineers work closely with the top management in these sectors to achieve this goal.

Industrial engineering graduates possess the knowledge, technical skills, and professionalism for their entry into industry or graduate study. They are prepared for life-long learning and for service to society. Many will achieve prominent roles in management.

Students majoring in industrial engineering are eligible to participate in the Engineering Cooperative Program and other student activities in the College of Engineering. Industrial engineering majors interested in the Engineering Cooperative Program should visit Office of Cooperative Engineering or consult with their faculty advisor.

**NOTE** – Any 400-level course required in the Bachelor of Science in Industrial Engineering program at the University of Tennessee, Knoxville, may not be used for graduate credit in the Master of Science degree program.

**Goals**

The goals of the industrial engineering undergraduate program are to prepare students to contribute to the profession of industrial engineering and to prepare them for further study, including professional and graduate education.

**Objectives**

The objectives of the industrial engineering program include enabling the students to obtain

- An understanding of fundamental engineering principles, mathematics, science, and statistics.
- An understanding of and an ability to apply the following concepts to the multi-faceted problems associated with the production of, maintenance, and delivery of goods and services; fundamental human factors which influence engineering design, the economic analysis of alternative design choices, introductory economics and accounting, quality control techniques, manufacturing processes and materials, production and inventory system design and control, the mathematical modeling and simulation of complex systems, and the design and installation of information acquisition and control systems.

- An ability to communicate effectively, both orally and in writing, to function on multi-disciplinary teams, to have a knowledge of pertinent contemporary issues, and to recognize the need for a commitment to life-long learning.

This curriculum emphasizes the knowledge and skills necessary to design integrated systems of people, materials, equipment and energy, such that the overall systems functions at an optimal level and such that the needs of human components of the system are met. The solid, broad base in engineering, combined with education in applying engineering methodology to traditionally non-engineering problem areas as provided through the industrial engineering curriculum, leads to participation by industrial engineers in an unlimited range of fields including retail distribution, banking, health care delivery, corporate management, municipal management, food industry, as well as traditional areas of manufacturing.

**Outcomes**

The eleven program outcomes listed in the College of Engineering section on National Accreditation are the accepted outcomes of the Industrial and Information Engineering Department.

**INDUSTRIAL ENGINEERING MAJOR**

**Requirements for the Bachelor of Science in Industrial Engineering**

<table>
<thead>
<tr>
<th>First Year</th>
<th>Hours Credit</th>
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<tbody>
<tr>
<td>Chemistry 120*</td>
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<td>English 101*, 102*</td>
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<td><strong>Second Year</strong></td>
<td><strong>Third Year</strong></td>
</tr>
<tr>
<td>Accounting 200</td>
<td>Economics 201*</td>
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<td>Statistics 251</td>
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<td>Mechanical Engineering 231</td>
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<td>Nuclear Engineering 203</td>
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<td><strong>Fourth Year</strong></td>
<td><strong>Total 128</strong></td>
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<td>Legal Studies 244</td>
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<td>Technical Elective</td>
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<tr>
<td>General Education Electives*</td>
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</tbody>
</table>

* Meets General Education Requirement
* All General Education electives must be pre-approved by the advisor and the department head.
* Technical electives must be taken from the Department of Industrial and Information Engineering list of approved courses or be approved by the advisor and the department head.
DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING

http://www.engr.utk.edu/mse/

George M. Pharr, Interim Head

**Professors**

- Benson, R.S., PhD ........................................... Florida State
- Bhat, G.S., PhD ........................................... Georgia Tech
- Bresee, R.R., PhD ........................................... Florida State
- Collier, B.J., PhD ........................................... Tennessee
- Dahotre, N.B., PhD ........................................... Michigan State
- Egami, T., PhD ........................................... Pennsylvania
- George, E.P., PhD ........................................... Pennsylvania
- Hansen, A.G., PhD ........................................... Stanford
- Joy, D.C., DPhil .............................................. Oxford (UK)
- Liaw, P.K., PhD ........................................... Northwestern
- Lundin, C.D., PhD ........................................... Rensselaer Polytechnic Institute
- McHargue, C.J., PhD ........................................... Kentucky
- Nieh, T.G., PhD ........................................... Stanford
- Pedraza, A.J., PhD ........................................... Stanford
- Pharr, G.M., PhD, PE ........................................... Stanford
- Simpson, M.L., PhD ........................................... Tennessee
- Spruiell, J.E., PhD ........................................... Tennessee
- Wadsworth, L.C., PhD ........................................... North Carolina State

**Associate Professors**

- Kit, K., PhD .............................................. Delaware
- Meek, T.T., PhD ........................................... Ohio State
- Morris, J.R., PhD ........................................... Cornell
- Rakd, P.D., PhD ........................................... Florida

**Associate Professors**

- Choo, H., PhD ............................................ Illinois Institute of Technology
- Gao, Y., PhD .............................................. Princeton
- Hu, B., PhD .............................................. Chinese Academy of Sciences
- Keppens, V., PhD ........................................... Katholieke Universiteit Leuven (Belgium)
- Rawn, C.J., PhD ............................................. Arizona

**Emeriti Faculty**

- Brooks, C.R., PhD ........................................... Tennessee
- Fellers, J.F., PhD ........................................... Akron
- Stansbury, E.E., PhD ....................................... Cincinnati

Materials science and engineering is concerned with the science and technology needed to develop and apply materials for the benefit of society. The undergraduate program is designed to prepare students to undertake materials science and engineering careers or to enter graduate programs in this or related disciplines. The following specific educational objectives were established in consultation with our students, faculty, potential employers, and alumni to assure that students are well prepared to undertake careers or graduate programs and that our graduates graduate with an undergraduate education that will sustain them for their lifetime.

During the initial stages of their careers, graduates will be prepared to:

- Apply knowledge of the fundamentals of physical and chemical sciences, mathematics, and engineering sciences in the practice of materials science and engineering or in advanced professional studies.
- Design components, systems, or processes and/or select materials for specific applications with consideration of economic, safety, environmental, and social issues.
- Apply professional skills in such areas as communication, problem solving, and experience in working in diverse teams, to the practice of materials engineering in contemporary and global environments.
- Use the general education component of their education for the appreciation of cultural and social values, for understanding the impact of engineering solutions on society, and for personal development.

These educational objectives are consistent with the mission statement of the university. They particularly relate to “commitment to the development of individuals and society as a whole through the cultivation and enrichment of the human mind and spirit.” They are consistent with EAC/ABET General Criteria to assure quality and stimulate improvement.

The field of materials science and engineering is quite broad, encompassing metallic, ceramic and polymeric materials, as well as composites made from combinations of materials and specialty application areas such as electronic and optical materials.

Consequently the curriculum contains a central core of courses that are applicable to all materials types with flexibility in the upper division years to permit concentration and in-depth coverage of specific materials categories. By judicious choice of electives the student may get a broad perspective or may develop a specialty area.

A minimum of 18 semester-hours of general education courses are required by all engineering degree programs in order to meet the University of Tennessee, Knoxville, General Education goals. (See The University General Education Requirement section in the front of this catalog). The major in materials science and engineering specifically requires Economics 201 (taken as one of the two courses required in the Social Sciences cluster); any two approved courses under the Arts or Humanities cluster; and any two approved courses under the Cultures and Civilizations cluster. The requirement for three courses in writing communication may be filled by English 101 and 102 plus Materials Science and Engineering 405 (or other approved writing intensive course).

Graduation in materials science and engineering requires a minimum grade point average of 2.00 for all departmental courses.

**Progression to Upper-Division Programs**

Progression of students to departmental upper-division courses is competitive. Factors considered include overall grade point average, performance in selected lower-division courses and evidence of satisfactory and orderly progress through the prescribed curriculum.

**Upper-Division Status**

A lower-division student formally applies for upper-division status after completing 50 hours of lower-division engineering curriculum course work with an overall GPA of at least 2.4. This must include Materials Science and Engineering 201.

**Provisional Status**

Students who have completed 50 hours of lower-division engineering curriculum coursework with an overall GPA between 2.0 and 2.4 may apply for provisional status. The granting of provisional upper-division status is based on the availability of space in the departmental programs after upper-division status students have been accommodated. Provisional status students are required to demonstrate their ability to perform satisfactorily in upper-division courses by attaining a minimum GPA of 2.0 in at least 8 hours of 300-level required courses specified by the department. Further progression to upper-division courses is dependent upon this minimum level of performance.

**Transfer Students**

At the upper-division level students are admitted on a provisional status basis only. Any student presenting more than 28 hours of lower-division engineering curriculum coursework by transfer credit is considered to be a transfer student.
MATERIALS SCIENCE AND ENGINEERING MAJOR

Requirements for the Degree of Bachelor of Science in Materials Science and Engineering

First Year

<table>
<thead>
<tr>
<th>Course</th>
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Second Year

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<th>Course</th>
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<td>Materials Science and Engineering 201, 250, 260, 290, 291</td>
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<td>Physics 231*, 232*</td>
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<td>Mathematics 200, 231, 241</td>
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Third Year

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Fourth Year

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<td>Electrical and Computer Engineering 301</td>
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<td>Engineering Fundamentals 402</td>
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<tr>
<td>1 General Education Elective*</td>
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Total 128

* Meets University General Education Requirement.
1 General Education courses must include Economics 201, any two approved courses under the Arts or Humanities cluster, any two approved courses under the Cultures and Civilizations cluster, and one approved course in the Social Sciences cluster.

NOTE: Students must meet the University General Education Requirement for Communicating Orally by selecting a course with an OC designation.

Minor in Materials Science and Engineering

A minor in materials science and engineering is offered through the College of Engineering to those undergraduate students who have met the prerequisites for the courses required by the minor. The minor requires completion of a minimum of 18 hours in coursework which develops a foundation in materials science and engineering and allows concentration in materials science and engineering areas to be selected by the students (e.g., metallurgy, polymers, ceramics, composites, or electronic materials). Some of the courses used for the materials science and engineering minor may also satisfy requirements for the student’s major.

Students may enroll in the minor program by completing a form at the Department of Materials Science and Engineering, 434 Dougherty Engineering Building. A copy of the completed enrollment form and information on the minor requirements will be forwarded to the student’s home department advisor. A copy of the form also will be filed with the Office of the University Registrar so that, upon completion, the minor will be shown on the student’s transcript.

Required Courses

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<tr>
<th>Course</th>
<th>Hours</th>
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<tr>
<td>Materials Science and Engineering 201 and 480</td>
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<tr>
<td>Choose at least one: Materials Science and Engineering 320, 340, 360, 402, 410, and 472</td>
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Select at least three, at least one of which must be at the 400-level – any of the Materials Science and Engineering 300-400 courses; Biomedical Engineering 310, 408, 455, 469, 473 and 475; Chemistry 350, 360, 369, 430, 439, 450, 473, 483, 479, 489 and 490; Chemical Engineering 230, 301, 447 and 484; Civil and Environmental Engineering 321 and 421; Electrical and Computer Engineering 335; Industrial Engineering 330, 301, 401, and 484; Mechanical Engineering 320, 366, 466 and 484; Nuclear Engineering 484; Physics 342, 411, 412, 421, 431 and 432. Other courses in this category may be acceptable, but must be approved in advance by the Department of Materials Science and Engineering.

Total 18

DEPARTMENT OF MECHANICAL, AEROSPACE, AND BIOMEDICAL ENGINEERING

http://www.engr.utk.edu/mabe/

William R. Hamel, Head

Professors

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
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</tr>
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<tbody>
<tr>
<td>Armitill, R.V., PhD</td>
<td></td>
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<tr>
<td>Baker, A.J., PhD, PE</td>
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<td>New York</td>
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<tr>
<td>Dareing, D.W., PhD, PE</td>
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<tr>
<td>Frankel, J.I., PhD</td>
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<tr>
<td>Hamel, W.R., PhD</td>
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<tr>
<td>Jendrucko, R.J., PhD</td>
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<tr>
<td>Johnson, W.S., PhD, PE</td>
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<tr>
<td>Keyhani, M., PhD</td>
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<tr>
<td>Kihn, K.D., PhD</td>
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<td>Stanford</td>
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<tr>
<td>Komistek, R.D., PhD</td>
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<td>Memphis</td>
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<tr>
<td>Landes, J.D., PhD, PE</td>
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<tr>
<td>Milligan, M.W., PhD, PE</td>
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<tr>
<td>Parang, M. (Associate Dean), PhD, PE</td>
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<tr>
<td>Parsons, J.R., PhD, PE</td>
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<td>Smith, G.V., PhD, PE</td>
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<td>Soliman, O., PhD, PE</td>
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<tr>
<td>Wasserman, J.F., PhD, PE</td>
<td></td>
<td>Cincinnati</td>
</tr>
<tr>
<td>Weitsman, Y.J. (Distinguished Professor), PhD</td>
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<td>Rensselaer Polytechnic Institute</td>
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Associate Professors

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<tr>
<td>Boulet, J.A.M., PhD</td>
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<tr>
<td>Chellaboina, V.S., PhD</td>
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<tr>
<td>Lumsdaine, A., PhD</td>
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<tr>
<td>Lyne, J.E., M., PhD</td>
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<tr>
<td>Madhukar, M.S., PhD</td>
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<td>Drexel</td>
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<tr>
<td>Nguyen, K., PhD</td>
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<td>Pionke, C.D., PhD, PE</td>
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Assistant Professors

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<tr>
<td>DeSmidt, H.A., PhD, PE</td>
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<tr>
<td>English, A., PhD</td>
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<td>Harvard-MIT</td>
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<tr>
<td>Karpov, E., PhD</td>
<td></td>
<td>Southampton (UK)</td>
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<tr>
<td>Lee, D., PhD</td>
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<td>Minnesota</td>
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<tr>
<td>Mahfouz, M.R., PhD</td>
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<td>Colorado School of Mines</td>
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Emeriti Faculty

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<tbody>
<tr>
<td>Carley, T.G., PhD, PE</td>
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<td>Illinois</td>
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<tr>
<td>Forrester, J.H., PhD, PE</td>
<td></td>
<td>Iowa State</td>
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<tr>
<td>Hodgson, J., PhD, PE</td>
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<tr>
<td>Mathews, A., PhD, PE</td>
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<tr>
<td>Shannon, T.E., PhD, PE</td>
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<td>Tennessee</td>
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<tr>
<td>Snyder, W.T., PhD</td>
<td></td>
<td>Northwestern</td>
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<tr>
<td>Speckhart, F.H., PhD, PE</td>
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<td>Georgia Tech</td>
</tr>
</tbody>
</table>
The department offers a Bachelor of Science in Mechanical Engineering, Aerospace Engineering, and Biomedical Engineering. The mission of the department is to provide a broad base integration of courses and experiences that prepare graduates to practice their profession successfully, to apply their skills to solve current engineering problems collaboratively, and to help advance the knowledge and engineering practice in their fields.

Progression
The freshman year curriculum is common to all engineering majors. The sophomore curriculum is nearly identical for all students in the department. The first two years are considered to be lower-division and the two remaining years upper-division. Upon completion of the lower-division courses, the student must apply for progression to the upper-division in order to continue in the department. Students allowed to progress may be awarded full status or provisional status. Factors considered include overall grade point average, performance in lower division engineering and mathematics courses, and evidence of orderly progression through the lower-division curriculum.

Full Status
A lower-division student may apply for progression to upper-division after completing 47 hours of lower-division engineering curriculum course work with an overall GPA of at least 2.4.

Provisional Status
Students who have completed 47 hours of lower-division engineering curriculum course work with an overall GPA between 2.0 and 2.4 may apply for provisional status. The granting of provisional status is based on the availability of space in departmental programs after full status students have been accommodated. Provisional status students are required to demonstrate their ability to perform satisfactorily in upper-division by attaining a minimum GPA of 2.0 in the first 12 hours of 300-level required engineering courses. Award of upper-division full status is dependent upon this performance.

Students with an overall GPA less than 2.0 in 47 hours of lower-division engineering curriculum course work will not be admitted to upper-division. Students who have not progressed to upper-division will be dropped from departmental class rolls.

Transfer Students
Students transferring more than 26 hours from another institution are considered transfer students. Students transferring 47 hours or more will be admitted to upper-division, if eligible, with provisional status.

Loss of Full Status
Full status students are expected to maintain an overall GPA of 2.0 and a GPA of 2.0 in departmental courses. Failure to maintain these levels of performance will result in a review of the student’s progress and possible loss of full status.

Graduation Requirements
A minimum cumulative GPA of 2.0 in all departmental courses taken at the University of Tennessee, Knoxville, is required for graduation. This is in addition to the university’s graduation requirements.

AEROSPACE ENGINEERING MAJOR
Aerospace engineering uses the basic sciences and mathematics to develop the foundation for the design, development, production, testing, and applied research associated with aerospace vehicles. These vehicles include aircraft, spacecraft, and missiles. Auxiliary and propulsion systems are also an integral part of this education. These include guidance, control, environmental, ramjet, rocket, turbojet, and piston engine systems. Emphasis in the senior year is directed toward these topics, and the program culminates in a major aerospace design project.

The educational objectives of the aerospace engineering program are

- To provide students with a comprehensive education that includes in-depth instruction in aerodynamics, structures, flight mechanics, orbital mechanics, flight propulsion, and the design of aerospace systems.
- To prepare students for professional careers in aerospace engineering by developing the skills pertinent to problem solving, analysis, design, and those personal skills required for teamwork and effective communication.
- To provide opportunities to develop and cultivate life-long learning skills, individual professionalism and ethics.
- To prepare some students for graduate study at major universities limited by student desire and their mental ability and agility.

Requirements for the Bachelor of Science in Aerospace Engineering

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<thead>
<tr>
<th>First Year</th>
<th>Hours</th>
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<td>English 101*, 102*</td>
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<tr>
<td>Chemistry 120*</td>
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<td>Mathematics 200, 231, 241</td>
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<tr>
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<td>†Courses and Civilizations Electives*</td>
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</table>

* Meets University General Education Requirement.
† Choose from the University General Education list.

Minor in Aerospace Engineering
A coursework program leading to a minor in aerospace engineering for students in other engineering degree programs is also offered.

Aerospace Engineering 341, Mechanical Engineering 231, 321, and 332 or equivalent background are prerequisites to a minor in aerospace engineering. The minor consists of five of the following six aerospace engineering courses: 351 (3), 363 (3), 370 (4), 422 (3), 424 (4), and 425 (4). The grade in each of the aerospace engineering courses must be at least C. Prerequisites will be checked the first day of class every term for each of the aerospace engineering courses.

BIOMEDICAL ENGINEERING MAJOR
The biomedical engineering curriculum integrates selected engineering sciences and design methods with life science coursework. The program prepares students for careers in a variety of health care related professions including work for medical device manufacturers and regulatory governmental agencies. The course content of the biomedical engineering curriculum complements the departmental strengths in mechanical engineering and includes a comprehensive coverage of engineering materials and biomechanics applications. Elective courses are
available to allow students to specialize their curriculum to areas of particular current interest in the marketplace such as cellular and tissue engineering applications. The biomedical engineering program also allows students to meet medical school admission requirements with an appropriate selection of technical electives.

The educational objectives of the biomedical engineering program are

1. To provide students with a solid foundation in mathematics, the basic and engineering sciences and engineering design methods.
2. To provide students with a comprehensive integration of engineering methods of problem-solving and design with the biological sciences.
3. To develop the skills needed for work in the medical device industry including a thorough coverage of engineering materials, biomaterials, biomechanics, medical device design, and work in interdisciplinary teams.
4. To provide essential laboratory experience with commonly used biomedical devices and systems and to provide coverage of methods for the design of experiments in medical and life science applications.
5. To provide a biomedical technology-based engineering background for students desiring admission to medical school with admission requirements being met through the appropriate selection of elective coursework.

Requirements for the Bachelor of Science in Biomedical Engineering

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<tr>
<th>First Year</th>
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<td>Biomedical Engineering 300, 310, 320</td>
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Total 128

* Meets University General Education Requirement.
1 Choose any course from the University General Education list.
2 Departmental and technical electives must be pre-approved by the advisor and department head.

MECHANICAL ENGINEERING MAJOR

Mechanical engineering involves the design, analysis, testing, and manufacture of mechanical and thermal systems. Mechanical engineers are employed in nearly every industry, from basic research through mass production of energy systems, computer software/hardware, robotics, and automobiles.

Mechanical engineering is a versatile and broadly based engineering discipline that also provides pathways into many exciting fields of specialization. Its foundation is in the basic sciences, but mechanical engineers must further understand such subject areas as mechanical design, solid and fluid mechanics, thermodynamics, heat transfer, vibrations, manufacturing processes, instrumentation and automatic control. Design projects throughout the curriculum develop student skills in handling practical real-world problems. Because of the broad engineering foundation and design training in this program, graduates are found in nearly every industry and at different levels of research, design, and management.

The educational objectives of the mechanical engineering program are

1. To educate students thoroughly in methods of analysis, including mathematical and computational skills appropriate for application to engineering problems.
2. To develop the skills pertinent to the design process, including skills needed for formulation of problems, analysis, synthesis, and skills pertinent to effective communication and collaborative work.
3. To teach students to use modern experimental and data analysis techniques for engineering application.
4. To prepare students for lifelong learning, nourish creative talents, and provide understanding of professional and ethical responsibilities.

Requirements for the Bachelor of Science in Mechanical Engineering

<table>
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<th>Hours Credit</th>
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<td>Engineering Fundamentals 105, 151 or 157, 152 or 158, 202</td>
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<tr>
<td>1Cultures and Civilizations Elective*</td>
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<td>1Cultures and Civilizations Elective*</td>
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<td>Philosophy 241*</td>
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<td>1Social Sciences Elective*</td>
<td>3</td>
</tr>
</tbody>
</table>

Total 128

* Meets University General Education Requirement.
1 Choose any course from the University General Education list.
2 Must be chosen from Aerospace Engineering 351, 363, 422, 425; Mechanical Engineering 365, 406, 451, 452, 457, 463, 467, 480 or other departmentally approved course.
3 All departmental and technical electives must be pre-approved by the advisor and department head.
DEPARTMENT OF NUCLEAR ENGINEERING

www.engr.utk.edu/nuclear

H.L. Dodds, Head

Professors
Dodds, H.L. (IBM Professor), PhD, PE ........................................ Tennessee
Fontana, M.H. (Research), PhD, PE ....................................... Illinois
Grossbeck, M.L. (Research), PhD ........................................... Ohio State
Mitalczo, J.T. (Research), PhD ............................................... Tennessee
Miller, L.F. (Research), PhD .................................................. Texas A&M
Mynatt, F.R. (Research), PhD ............................................... Tennessee
Pettingill, H.L. (Research), PhD .............................................. Michigan
Ruggles, A.E., PhD ........................................ Rensselaer Polytechnic Institute
Townsend, L.W., PhD ......................................................... Idaho
Upadhyaya, B.R., PhD, PE .................................................. California (San Diego)

Associate Professors
Pevey, R.E., MBA (Emory), PhD, PE ..................................... Tennessee
Scott, T.H., PhD, PE ............................................................ Florida

Assistant Professors
Gribok, A.V. (Research), PhD .............................................. IPPE (Russia)
Moussa, H.M. (Research), PhD .............................................. Tennessee
Stephan, A.C. (Research), PhD .............................................. Tennessee

Adjunct Faculty
DeHart, M.D., PhD ............................................................. Texas A&M
Gehin, J.C., PhD ................................................................. Massachusetts Institute of Technology
Icenhour, A.S., PhD ......................................................... Tennessee
Nichols, T.L., MD ............................................................. Tennessee
Ramsey, C.R., PhD ............................................................ Tennessee

Emeriti Faculty
Groer, P.G., PhD .................................................................. Vienna (Austria)
Uhlig, R.E. (Distinguished Professor), PhD, PE ....................... Iowa State

Nuclear engineering is the engineering discipline that focuses on the application of nuclear and atomic processes for the benefit of mankind and the environment. Radiological engineering is a specialty of nuclear engineering that addresses biological applications such as radiation safety (health physics). Some examples of nuclear and radiological engineering are the production of electric power with essentially no air pollution, production of radioisotopes for medical and industrial uses, and development of radiological methods for the diagnosis and treatment of cancer.

The mission of the Nuclear Engineering Department is to

- Provide high quality nuclear and radiological engineering graduates from undergraduate through the doctoral level in order to meet the manpower needs of our state, region, nation, and the international community.
- Conduct nuclear and radiological engineering related research to help meet the needs of society.
- Perform service for industry, government, professional organizations, and the public in areas related to nuclear and radiological engineering.

The program for the Bachelor of Science in Nuclear Engineering is nationally accredited by the Accreditation Board for Engineering and Technology (ABET) which is described earlier in this catalog. The educational objectives of the Bachelor of Science program are to

- Provide students with a diverse general education in the humanities, ethics, and social sciences to complement their technological education in order to understand and appreciate the importance of each in society and in personal development.
- Foster a genuine desire for life-long learning in students.

Students majoring in nuclear engineering take courses in the basic sciences, engineering fundamentals, mathematics, computer science, humanities, and special areas of nuclear engineering including nuclear system design and safety; radiation transport and shielding; heat transfer and fluid flow; instrumentation and controls; fuel cycle and waste management; and health physics. Nuclear engineering students may concentrate in radiological engineering by substitution of three courses. The radiological engineering concentration also satisfies most of the requirements of pre-med, pre-vet, and pre-dentistry programs.

NUCLEAR ENGINEERING MAJOR

Requirements for the Bachelor of Science in Nuclear Engineering

<table>
<thead>
<tr>
<th>Year</th>
<th>Courses</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year</td>
<td>Engineering Fundamentals 105, 151 or 157, 152 or 158</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Mathematics 141*, 142*</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Engineering Fundamentals 402</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Physics 231*, 232*</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Nuclear Engineering Elective</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>126</td>
</tr>
</tbody>
</table>

NUCLEAR ENGINEERING • Radiological Engineering Concentration

Requirements for the Bachelor of Science in Nuclear Engineering • Radiological Engineering Concentration

<table>
<thead>
<tr>
<th>Year</th>
<th>Courses</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year</td>
<td>Engineering Fundamentals 105, 151 or 157, 152 or 158</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Mathematics 141*, 142*</td>
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<td></td>
<td>126</td>
</tr>
</tbody>
</table>

* Meets University General Education Requirement.
Technical electives are selected from upper-division mathematics and engineering courses and must be pre-approved by the department.

RADIOLOGICAL ENGINEERING CONCENTRATION

Requirements for the Bachelor of Science in Nuclear Engineering • Radiological Engineering Concentration

<table>
<thead>
<tr>
<th>Year</th>
<th>Courses</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year</td>
<td>Engineering Fundamentals 105, 151 or 157, 152 or 158</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Mathematics 141*, 142*</td>
<td>8</td>
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<tr>
<td>Total</td>
<td></td>
<td>126</td>
</tr>
<tr>
<td>Third Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Biology 140</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Cultures and Civilizations Elective*</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mathematics 403</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Nuclear Engineering 301, 304*, 342, 351, 431, 470</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Physics 341</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Social Sciences Elective*</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fourth Year</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry and Cellular and Molecular Biology 230</td>
<td>5</td>
</tr>
<tr>
<td>Cultures and Civilizations Elective*</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Fundamentals 402</td>
<td>1</td>
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<tr>
<td>Mechanical Engineering 321</td>
<td>3</td>
</tr>
<tr>
<td>Nuclear Engineering 400*, 403*, 406, 472</td>
<td>11</td>
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<tr>
<td>Philosophy 241*, 243*, or 244*</td>
<td>3</td>
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<tr>
<td>Statistics 251; Biochemistry and Cellular and Molecular Biology 310;</td>
<td></td>
</tr>
<tr>
<td>or Chemistry 350</td>
<td>3</td>
</tr>
<tr>
<td>Technical Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

Total 129

* Meets University General Education Requirement.

Technical electives are selected from upper-division mathematics, chemistry, and engineering courses and must be pre-approved by the department. Pre-med, pre-vet, and pre-dentistry students must also take Chemistry 360 and Chemistry 369.
The College of Nursing at the University of Tennessee, Knoxville, was established in July 1971 in response to a long-recognized and well-established need for nurses prepared at the collegiate level. The undergraduate program combines the unique resources of the University of Tennessee, Knoxville, campus with those of the university's comprehensive teaching hospital and other health care agencies in a manner that enables both faculty and students to participate fully in all facets of the health care delivery system. The program is accredited by the Commission on Collegiate Nursing Education at One Dupont Circle, NW, Suite 530, Washington, DC 20036, phone (202) 887-6791. The program is also unconditionally approved by the Tennessee Board of Nursing.

The baccalaureate nursing program has as its central foci the person, health, environment, and nursing. 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, an 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, for a total of 123-124 semester hours. 123 hours are required for graduation. The program also accommodates registered nurses who hold associate degrees in nursing or who are graduates of diploma nursing programs. All upper-division courses, with the exception of 314, 351, 400, 402, 406, and 480, are restricted to students who have been approved for progression. (See Progression Policies and Procedures.)

Nursing Substitutions

Child and Family Studies 210 or Psychology 300; Chemistry 100-110 or 120-130; Microbiology 210 or 310 with 319 lab; Nutrition 100.
Progression Policies and Procedures

Current standards are available from the Director of Student Services, College of Nursing, Room 203. Students, including registered nurses, who are admitted as nursing students in their freshman or sophomore years must apply for progression to the upper division prior to their junior year.

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 Services Office. Applicants for upper division nursing should submit their Petition for Progression with transcripts for all colleges attended no later than January 20. Students will be selected on the basis of (a) cumulative GPA for courses completed; (b) cumulative GPA for required science, social science, math, and English courses; (c) number of course withdrawals and repetitions; (d) grade improvement over time; (e) probability of completing all lower division requirements prior to the following fall; and (f) the availability of space.

2. If a student is selected for progression but then fails to successfully complete all lower division requirements (except for arts and humanities and cultural civilizations electives) prior to the fall semester, the student will not progress and must submit another petition for progression the following year.

3. Registered Nurses must be licensed to practice in the state of Tennessee or in one of the compact states.

Grading and Continuation Policies

1. The minimum acceptable grade for all courses in the curriculum is a C.

2. Satisfactory/No Credit grading option is not permitted to meet degree requirements in Nursing unless that is the only way the course is offered.

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

4. Any student who receives a grade of D, F, or NC for more than one nursing course will be required to withdraw from the program even if the previous course for which D or F was awarded has been repeated with a grade of C or higher.

5. 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.

6. For undergraduate nursing students, 75% is the passing average grade in all nursing courses. To pass any clinical course, a student must achieve a minimum of 75% across all examinations in the course, regardless of any other grades earned in other components of the course. If a student fails to achieve the minimum 75% average on course examinations, the final course grade will be either D (67-74) or F (under 67). The following grading scale applies to all undergraduate nursing courses.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>92-100</td>
</tr>
<tr>
<td>B+</td>
<td>88-91</td>
</tr>
<tr>
<td>B</td>
<td>83-87</td>
</tr>
<tr>
<td>C+</td>
<td>79-82</td>
</tr>
<tr>
<td>C</td>
<td>75-78</td>
</tr>
<tr>
<td>D</td>
<td>67-74</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 66</td>
</tr>
</tbody>
</table>

7. 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.

8. Requirements for competence in cardio-pulmonary resuscitation are included in the Undergraduate Student Handbook.

9. At periodic intervals specified by the faculty, students must take comprehensive examinations designed to predict success on the NCLEX (licensure) examination. Any student scoring less than 850 at the end of the junior year must take a one-hour independent study course during the summer before starting the senior clinical courses. Seniors will have two opportunities to achieve 850 on an exit exam given prior to graduation. A student who does not score 850 on the second exit exam at the end of spring term will be given an “I” in 490 (Specialty Preceptorship). The student will be given the opportunity to remediate and take a third exit exam no sooner than six weeks after the second exit exam. If the student does not score 850 on the third exit exam, the student will receive a failing grade for 490 and may be eligible to retake 490 in the fall term. If a failure of 490 is a second failure in the nursing program for this student, then the student is dismissed from the BSN program.

The Bachelor of Science in Nursing program is designed to fulfill all General Education requirements of the university. Please see the current catalog for courses acceptable in the Arts and Humanities and Cultures and Civilizations categories.

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 professional liability insurance program. All registered nurses must provide proof that they have appropriate professional liability insurance coverage. Specific information concerning these requirements will be provided to the students at appropriate times by the nursing faculty and/or the Director of Student Services.

Course Load

The maximum credit hours per semester for which a nursing student may register without special permission is 19.

Requirements for the Bachelor of Science in Nursing

First Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 101*, 102*</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics 125*</td>
<td>3</td>
</tr>
<tr>
<td>Statistics 201*</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 100*-110* or 120*-130*</td>
<td>8</td>
</tr>
<tr>
<td>Arts and Humanities*</td>
<td>6</td>
</tr>
<tr>
<td>Psychology 110*</td>
<td>3</td>
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<tr>
<td>Sociology or Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>Biology 101*</td>
<td>4</td>
</tr>
</tbody>
</table>

Second Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology and Evolutionary Biology 240 (Anatomy)</td>
<td>4</td>
</tr>
<tr>
<td>Biochemistry and Cellular and Molecular Biology 230 (Physiology)</td>
<td>5</td>
</tr>
<tr>
<td>Microbiology 210*</td>
<td>3</td>
</tr>
<tr>
<td>Nutrition 100*</td>
<td>3</td>
</tr>
<tr>
<td>Child and Family Studies 210*</td>
<td>3</td>
</tr>
<tr>
<td>Nursing 201 (Introduction to Nursing)</td>
<td>2</td>
</tr>
<tr>
<td>Cultures and Civilizations*</td>
<td>6</td>
</tr>
<tr>
<td>Philosophy 246*</td>
<td>3</td>
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</tbody>
</table>

Third Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing 311, 319, 333, 341, 351, 361, 381, 382</td>
<td>28</td>
</tr>
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</table>

Fourth Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing 403*, 404, 406, 421, 451, 452, 461, 471, 490</td>
<td>31</td>
</tr>
</tbody>
</table>

Total 124
* Meets University General Education Requirement. See catalog listing for approved courses in Arts and Humanities (AH) and Cultures and Civilizations (CC).

• Transfer students need a total of at least 8 credit hours in anatomy and physiology and may graduate with 123 hours.

NOTE: Students must meet the University General Education Requirement for Communicating Orally by selecting a course with an OC designation.

The following courses are open to all university students: Nursing 202, 314, 351, 400, 402, 406, and 480.

** Requirements for the RN Track for Bachelor of Science in Nursing **

1. RNs must complete the same non-nursing requirements as other students. They are exempt from the sophomore level 201 Introduction to Nursing course and will be given proficiency credit based on RN status. (Satisfactory/No Credit.)

2. Students will take the NLN ACE examinations prior to starting upper division coursework. If a decision score of 100 is achieved (per section) the student will receive proficiency credit for five of the major clinical nursing courses exclusive of Community Health. Courses for which credit can be obtained in this manner include 361, 403, 404, 461, and 421, and are indicated with a double asterisk. (Satisfactory/No Credit.)

3. All students take the community course 382.

4. RN-BSN students can elect to challenge 333 Health Assessment by taking the NLN Physical Assessment Examination and passing a hands-on lab demonstration of assessment skills. Indicated with an asterisk. (Satisfactory/No Credit.)

5. Proficiency credit can be obtained in several other courses by passing instructor-made exams or preparing a portfolio as specified by the faculty. These courses include 319 Pathophysiology of Health Deviations, 351 Pharmacology I, and 406 Pharmacology II, (indicated by an asterisk). RN-BSN students also have the option to demonstrate proficiency in 490 Specialty Perceptorship via portfolio or through individual learning experiences developed in collaboration with their advisor. All proficiency credit not designated as Satisfactory/No Credit carries a letter grade.

6. The entire upper-division nursing curriculum can be completed in one calendar year. Students not enrolled in nursing courses for two consecutive semesters, excluding summer, will be administratively withdrawn from the program. Those seeking reentry must reapply to the College of Nursing. Students accepted for the master’s program can begin part-time graduate level study while in the final semester of the undergraduate program.

** Hours Credit **

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>201</td>
<td>Introduction to Nursing (proficiency credit for all RNs)</td>
<td>2</td>
</tr>
<tr>
<td>305</td>
<td>Transition to Professional Nursing</td>
<td>4</td>
</tr>
<tr>
<td>319**</td>
<td>Pathophysiology</td>
<td>4</td>
</tr>
<tr>
<td>333**</td>
<td>Health Assessment</td>
<td>3</td>
</tr>
<tr>
<td>341</td>
<td>Transcultural Nursing</td>
<td>2</td>
</tr>
<tr>
<td>351**</td>
<td>Pharmacology I</td>
<td>2</td>
</tr>
<tr>
<td>361**</td>
<td>Health Maintenance and Restoration: Adult</td>
<td>5</td>
</tr>
<tr>
<td>382</td>
<td>Health Promotion and Maintenance in Community</td>
<td>5</td>
</tr>
<tr>
<td>403**</td>
<td>Health Promotion and Maintenance in Childbearing Families</td>
<td>5</td>
</tr>
<tr>
<td>404**</td>
<td>Health Promotion, Maintenance, and Restoration in Children, Adolescents, and Their Families</td>
<td>5</td>
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<tr>
<td>406**</td>
<td>Pharmacology II</td>
<td>2</td>
</tr>
<tr>
<td>421**</td>
<td>Health Maintenance and Restoration in Mental Health</td>
<td>5</td>
</tr>
<tr>
<td>454*</td>
<td>Professional Leadership Issues</td>
<td>2</td>
</tr>
<tr>
<td>461**</td>
<td>Health Restoration: Adult</td>
<td>4</td>
</tr>
<tr>
<td>471</td>
<td>Nursing Research</td>
<td>3</td>
</tr>
<tr>
<td>490</td>
<td>Specialty Preceptorship</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td>123</td>
</tr>
</tbody>
</table>

* Meets University General Education requirement.

** Courses with double asterisks may receive proficiency credit or be challenged.

1 RN-BSN students receiving proficiency credit for Nursing 403 (writing-intensive course) must meet the requirements for a third writing-intensive course by taking one of the courses so designated in the current Undergraduate Catalog. Philosophy 246 meets that requirement.

** Intercollegiate/Interdisciplinary Minor in Gerontology **

An intercollegiate/interdisciplinary undergraduate minor in gerontology is available. See Department of Instructional Technology, Health, and Educational Studies in the College of Education, Health, and Human Sciences for required courses.
Social Work

Karen M. Sowers, Dean
Frank Spicuzza, Director

http://www.csw.utk.edu/

SOCIAL WORK MAJOR

Social work is a helping profession which focuses on providing skilled intervention in the prevention and amelioration of individual and societal problems. It is a challenging and rewarding career involving the application of knowledge, skills, and professional values to assist individuals, families, groups, and communities in reaching their potential. The primary mission of the undergraduate social work program is to develop generalist social workers who are strategic thinkers, life-long learners, and opinion shapers. It is the purpose of the college to provide an education which enhances individual and career development and fosters involvement on behalf of social and economic justice.

The program prepares students for social work careers in such diverse areas as schools, youth programs, family service agencies, nursing homes, courts, mental health, and welfare agencies. The degree provides graduates a competitive advantage in many jobs, the possibility of up to one year’s standing in some master’s degree programs in social work, and the potential to be licensed in a number of states throughout the nation.

The social work curriculum builds on a strong liberal arts base. The humanities and the social and behavioral sciences are emphasized to help students understand human diversity and the transactions between people and their environment. The curriculum combines classroom experience and agency-based field placements. Courses provide a knowledge base in social work practice theory, human behavior, social welfare policy, and research. Educationally directed field placements, which consist of over 600 clock hours of supervised field instruction in agency settings throughout greater Knoxville, provide extensive and challenging opportunities for students to apply the lessons of the classroom to the needs of society. The program is accredited by the Council on Social Work Education.

The undergraduate social work program (Bachelor of Science in Social Work) started in 1982 in the College of Liberal Arts. It was granted initial accreditation by the Council on Social Work Education in January 1983, and reaffirmation was given in 1992 and 2001. The program was transferred to the College of Social Work in September 1985. The three programs, Bachelor of Science in Social Work, Master of Science in Social Work, and Doctor of Philosophy, in the college represent the full continuum of social work education.
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. This building houses the administrative and faculty offices, along with classrooms for the BSSW, MSSW and PhD programs. Video and computer resources are available to facilitate instruction.

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 (PhD). Information concerning graduate programs is given in the College of Social Work Bulletin and also in the Graduate Catalog. Master’s degree programs are offered on the campus in Knoxville and in Nashville and Memphis. The PhD 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 19. Special permission is needed for any overload.

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.

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.
5. Completion of 50 clock hours in community service at one public/private social service agency. The community service is to take place after enrollment in a higher education institution and in the twenty-four month period prior to application for initial progression.

** Initial progression is also determined by the number of available field practice slots in social service agencies and classroom space. If the number of students who fulfill the above criteria exceeds the number of students that can be accommodated, students will be selected on the basis of cumulative GPA for courses completed, the grades received in Social Work 200, 250, evaluation of community service, and writing skills demonstrated in the application essay.

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 Bachelor of Science Social Work 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.

Requirements for the Bachelor of Science in Social Work

<table>
<thead>
<tr>
<th>First Year</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Electives</td>
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Total 120

* Meets University General Education requirement.
1 Educational Interpreting 223 American Sign Language I and 226 American Sign Language II will fulfill the Foreign Language requirement but will not meet the General Education requirement.
2 One course selected from Women’s Studies 220, 310, 320, 330, 332, 340, 375, 382, 425, 434, 453, 483.
3 One course selected from Classics 253; English 201, 202, 221, 222, 231, 232, 233, 251, 252, 253, 254.
4 One course selected from Philosophy 110, 111, 242, 244, 245, 246, 290.
5 One of the following sequences may be selected: Africana Studies 235-236; Asian Studies 101-102; History 241-242; History 261-262; Latin American Studies 251-252; Medieval Studies 201-202; Religious Studies 101-102.
6 One course selected from Anthropology 313, 316, 319; Classics 381, 382; English 302; Geography 372, 373, 379; German 363; History 320, 360, 361, 374, 375; Philosophy 326; Political Science 350, 361; Religious Studies 332, 386; French 432; Sociology 442, 446; Women’s Studies 360.
7 One course selected from Anthropology 312; English 441; Geography 363, 365; History 439, 444, 449; Political Science 315; Religious Studies 351.

Intercollegiate/Interdisciplinary Minor in Gerontology
An intercollegiate/interdisciplinary undergraduate minor in gerontology is available. See Department of Instructional Technology, Health, and Educational Studies in the College of Education, health, and Human Sciences for required courses.
The Chancellor’s Honors Program provides an outstanding curriculum for a community of engaged, academically superior scholars in any major. Specially designed interdisciplinary seminars fulfill part of the UT General Education requirements for Basic Skills and Broadened Perspectives. These courses, exclusively for Chancellor’s Honors students, explore significant themes as they are perceived by and represented in various disciplines. They are small, discussion-based, and directed by outstanding UT faculty. University Honors seminars add intellectual breadth to the depth obtained in a student’s major, by emphasizing the interrelatedness of human knowledge. All three-credit University Honors seminars also fulfill part of the general education requirements; therefore, graduating with the Honors distinction usually can be accomplished in the same amount of time as a non-honors degree.

The goals of the Chancellor’s Honors Program are
(1) to promote habits of serious, worthwhile, intellectual pursuit.
(2) to engender a lifelong appreciation of, and dedication to, learning.
(3) to help channel the energies of future leaders into service to the community.
(4) to help provide students with a global perspective.

Eligibility
The Chancellor’s Honors Program is available to entering freshmen and to qualified transfer and sophomore students. High school seniors with superior academic credentials (3.75 core high school grade point average and 29 ACT or 1280 SAT score) will be automatically sent an application for admission to the Chancellor’s Honors Program and are encouraged to apply.¹

Transfer students who have earned at least a 3.7 GPA in another honors program are eligible to apply as are continuing UT students who have earned a minimum of 3.25 on courses taken at UT Knoxville.

Requirements
In addition to required work in their respective colleges, Chancellor’s Honors students complete
• English 118 (required), except for incoming students with a 4 or 5 on the Literature-Composition AP test, or with dual-enrollment credit for English 101 and 102.
• One 1-credit University Honors seminar (University Honors 100).
• Five 100- or 200-level honors courses selected from University Honors courses or departmental honors offerings.
• Two upper-division honors courses in their major (Honors-by-Contract or Honors Independent Study may be substituted).²
• One 3-credit Senior Project (University Honors 499).
TOTAL: 25-28 credit hours of honors coursework.

¹ 1280 SAT = combined Critical Reading and Mathematics subscores.
² Honors-by-Contract: Customized approach in an upper-division course in the student’s academic major, through completion of a written contract delineating additional effort. The contract must be submitted to UHP by the third week of the semester. Limited to Chancellor’s Honors students.
The University of Tennessee Libraries own approximately 2.4 million volumes and subscribe to more than 32,000 periodicals and serial titles. The UT Libraries are committed to providing access to information in all formats. A strong collection of electronic resources are available through the Libraries’ Web page at www.lib.utk.edu. UT’s Digital Library Center hosts a growing number of digital collections. The Libraries’ membership in the Association of Research Libraries reflects the university’s support of large collections of library materials to meet the needs of a comprehensive university curriculum.

Experts at the reference desk in each library offer help and assistance in using the library for research. AskUsNow (www.lib.utk.edu/refs/askusnow/) provides chat, e-mail, and telephone connections to librarians. Students will find a wide variety of materials and services in the main library (John C. Hodges Library), four branches on the Knoxville campus (Agriculture and Veterinary Medicine Library, Map Library, Music Library, and Special Collections), and the Social Work Library in Nashville. Students can search the library catalog and hundreds of databases at any library location – and through the UT Libraries’ Web site. Interlibrary Services is available to help students find and retrieve materials that are not available in the UT Libraries. Workshops and classes are offered throughout the semester to help students learn how to get the most out of the Libraries’ services. The services and facilities of the UT Libraries are accessible to persons with disabilities.

The John C. Hodges Main Library (1015 Volunteer Blvd.) is a 350,000 square-foot building housing collections in all subject areas. Reference assistance and research consultation are available in Reference Services (Room 135) and The Commons (Room 235). The Commons, which is jointly staffed by the University Libraries and the Office of Information Technology, offers a computer help desk, a wide range of software applications and computer equipment, spaces for individual and group study, and loaner laptops configured to access the wireless network. The Commons is open continuously from noon on Sunday to midnight on Friday, during Fall and Spring
Semesters. The second floor CyberCafe, with reading tables and a coffee shop, also is open for late night study. The Studio (Room 245) offers students a state-of-the-art lab for graphics, video and web production. Still and video cameras are available for checkout from The Studio. The Center for Children’s and Young Adult Literature on the third floor provides a study collection of children’s books.

The Agriculture and Veterinary Medicine Library (Room A-113, Veterinary Teaching Hospital) has a strong collection in agriculture; veterinary, comparative and human medicine; environmental studies and biodiversity; and related biological sciences.

The Map Library (Room 15, basement of the Hoskins Library, 1401 Cumberland Ave.) houses a large collection of sheet maps, atlases, journals, and digital resources related to cartography and GIS. Materials in print, film, and digital formats are gathered from commercial sources as well as the Government Depository program.

The Music Library (301 Music Bldg.) has a comprehensive collection of music and music literature, including books, scores, audio and video recordings, current periodicals, and microfilm. Most materials in the Library of Congress "M" classification are located here.

Special Collections (2nd floor, west wing, of the Hoskins Library) is dedicated to building collections of manuscripts, rare books, and other unique research materials. Collection strengths include Tennessee authors, Tennessee history and politics, Oak Ridge, and TVA. The Great Smoky Mountains Regional Collection is an ongoing effort to collect and preserve materials on the region. Students are welcome to use Special Collections. Materials from Special Collections cannot be checked out, but they can be used in the Special Collections Reading Room. The University Archives are also housed in the Hoskins Library. The Archives contain official records of the university; items published by its units, departments, and agencies; and materials that document University of Tennessee life.

The Social Work Library (Room 292, 193-E Polk Ave., Nashville) serves College of Social Work students in field practice across the state. The library has a working collection of materials in social work and related disciplines.

The Law Library on the Knoxville campus and the libraries located on the campuses in Chattanooga, Martin, Memphis, and Tullahoma are separately administered. The students and faculty of the university can use all of the libraries affiliated with The University of Tennessee.
University Studies has three general objectives – to foster interdisciplinary teaching and scholarship, especially across departmental and collegiate boundaries; to promote active and integrative learning; and to nurture the scholarly and creative development of faculty, staff, and students.

In pursuit of these objectives, University Studies sponsors several activities. Faculty colloquies are on-going, structured, interdisciplinary conversations on a topic or nexus of topics. Colloquies explore important contemporary issues which involve faculty and students from several disciplines and colleges. Advanced undergraduate and graduate students may attend by permission of colloquy coordinator.

Current colloquies include Applied Phenomenological Studies; Technology, Society, and the Common Good; the Gerontology Colloquy; the Interdisciplinary Colloquy on Rhetoric; Psychoanalysis and the Humanities; Evolution and Culture; the Creativity Group; Critical Theory; Appalachian Forum; Cultural Diversity; the Great Conversation; Spirituality and Health; and Educational Technology. Colloquies continue as long as they have faculty involvement and new colloquies form each year.

Interdisciplinary undergraduate courses are innovative offerings that are typically collaborative or team-taught. Most courses stem from the interdisciplinary colloquy discussions. There are several honors offerings for undergraduates. In addition, Chancellor’s Honors students are encouraged to take a University Studies (200-level or higher) course during their first two years to help fulfill their four honors courses requirement.

Centripetsals are monthly faculty and staff luncheons held over the academic year designed to encourage conversation among faculty and staff about their creative and scholarly work. University Studies also works with other units across campus to facilitate visits by distinguished scholars of multidisciplinary interest. Such visiting scholars work with faculty groups on specific projects, participate in interdisciplinary forums, or present special lectures.

For further information, contact
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F239 Walters Life Science Building
Phone (865) 974-8177
FAX (865) 974-2665
E-mail unistudy@utk.edu
DEPARTMENT OF MILITARY SCIENCE AND LEADERSHIP
http://web.utk.edu/~utrotc/homepage.html

Army ROTC
Professor of Military Science and Leadership
Lieutenant Colonel Marshall N. Ramsey, Quarter Master
MPA  Central Michigan
BS  Tennessee

Assistant Professors
Lieutenant Colonel Ron Borden, BS  Northern Michigan
Major Mark Chitwood, MS  Jacksonville State
Major Russ Turner, MS  Tennessee
Major John Wells, MA  MTSU

Senior Army Instructors
Master Sergeant Jeff Barnt
Sergeant First Class Sam Shubert
Sergeant Telly O’Neil

Mission
To commission the future officer leadership of the United States Army.

Purpose
Army ROTC is an educational program designed to provide the college student an opportunity to earn an army commission as a second lieutenant while completing the university requirements for a Bachelor’s degree. The program provides leadership training that will develop the skills and attitudes vital to the professional army officer. Upon successful completion of the program and graduation from the university, ROTC cadets are commissioned as second lieutenants and enter either the active Army, Army Reserve, or Army National Guard component.

Army ROTC at the University of Tennessee, Knoxville
The military program at the University of Tennessee, Knoxville, pre-dates that of any other state university in the country, having been introduced in 1844. In that year, Professor Albert Miller Lea, a United States Military Academy 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, Knoxville, reopened after the War Between the States, 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 United States Military Academy 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. UT Knoxville remained as a military garrison for a period of six years, until 1877. Military Science and Leadership continued to be taught since the university was a Land Grant Institution and the 1862 Act of Congress required instruction in military science and leadership.

The National Defense Act of 1916 changed the old military organization into an ROTC unit. For the first time, the federal government began to pay a part of the uniform cost for basic course students. The government provided uniforms and other equipment 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 Leadership and football coach at the University of Tennessee, Knoxville. 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; 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 ensures that men and women educated in a liberal and broad spectrum of American institutions of higher learning are commissioned annually into the officer corps.
The Program

Basic Course
Students entering the basic course register for classes at the same time and in the same manner as they enroll in their other college courses. All four courses (Military Science and Leadership 101, 102, 201, and 202) are available to any UT Knoxville student as an elective course without any military obligation. Completion of the basic course, graduation from leader’s training course (Military Science and Leadership 200), or prior military service qualifies students for entry into the advanced course, which is normally taken during the last two years of college.

Advanced Course
The advanced course is designed to develop and mentor leaders of character, who, upon degree completion, will accept a commission in the United States Army. The advanced course requirement is that applicants have two academic years remaining at either the undergraduate or graduate levels, or a combination of both. Students normally enter the advanced course during the last two years of their degree program (junior year for undergraduates, first year of master’s program for graduate-level students). The advanced course is made up of five military science and leadership classes (Military Science and Leadership 301, 302, 400, 401, 402) and takes two years to complete. All classes except Military Science and Leadership 400 are offered during spring/fall semesters. Military Science and Leadership 400 is a paid five-week summer camp held in Seattle, Washington.

Army ROTC develops students under the whole person concept. Cadets maintain academic standards while taking on the additional responsibilities of ROTC. Army ROTC cadets are required to participate in organized physical fitness training. Students enrolled in the advanced course are required to be full-time students, taking at least 12 hours each semester.

Placement Credit and Course Substitution
Placement credit and/or course substitution may be granted by the Professor of Military Science and Leadership on the basis of previous honorable active military service, participation in a junior ROTC program, completion of Military Science and Leadership 200, or completion of army basic training and advanced individual training. A student may request placement credit for a portion of the entire basic course. Military science and leadership courses taken at other colleges or universities are transferable as approved by the Professor of Military Science and Leadership.

Military Science and Leadership 200 is a paid five-week summer leader’s training course offered to any University of Tennessee student without any military obligation. Students completing this course receive four academic credits, qualify for the advanced course by receiving basic course credit, and can compete for two years of academic tuition scholarships.

Requirements for Enrollment and Continuance
The general requirements for enrollment and continuance in the Army ROTC program are as follows.
1. Basic course students must
   a. be a citizen of the United States.
   b. be physically qualified.
   c. have freshman or sophomore standing. Students with higher standing require consent of instructor.
2. Basic course cadets applying for enrollment in the advanced course who seek a commission must
   a. have successfully completed Military Science and Leadership 101, 102, 201, and 202 or have accomplished one of the following: prior military service, ROTC basic military studies; practicum (Military Science and Leadership 200); three-year high school ROTC basic course.
   b. have two years remaining at the university (either undergraduate, graduate or in pursuit of additional course work).
   c. have completed a minimum of 55 hours.
   d. be under 30 years old at time of graduation and commissioning (waiverable).
   e. be enrolled as a full-time student, either at the University of Tennessee, Knoxville, or at a nearby institution in a partnership program.
   f. meet military screening and physical requirements.
   g. maintain a 2.0 G.P.A.
   h. maintain B average in military science and leadership courses.

Regularly enrolled students who meet the academic prerequisites may take individual courses as electives with the permission of the department head and academic advisor.

Progression Requirements
1. Minimum hours/GPA for entrance into basic military studies practicum (Military Science and Leadership 200) – 30.59.9 hours/2.00 GPA.
2. Minimum overall GPA for entrance into the advance course (Military Science and Leadership 301, 302, 400, 401, 402) – 2.00 GPA.
3. Minimum GPA in military science and leadership courses – 3.00.
4. Minimum overall GPA for commissioning: 2.00.
5. Semester counseling sessions with military advisor required for advance course and scholarship students only.

Requirements for All Military Science and Leadership Commissionees
The following military science and leadership advanced course curriculum must be successfully completed.
301 Leadership and Problem Solving (4); 302 Leadership and Ethics (4); 400 National Advanced Leadership Camp (4); 401 Leadership and Management (4); 402 Officership (4); 430 U.S. Military History, 1754 to Present or 303 Military History (3).

In addition to a bachelor’s degree, there are required and recommended courses in designated fields of study that students must complete prior to commissioning. Students meet these prerequisites by successful completion of required and elective courses taken from the university curriculum in the required areas of concentration.

Courses in the following designated fields of study are strongly recommended of students seeking a commission in the United States Army – one course in written communications, one course in human behavior, one course in math reasoning, one course in computer literacy.

Special Programs
Pay and Entitlements
All scholarship cadets and cadets enrolled in the ROTC advanced course receive uniforms and equipment plus a monthly allowance during the academic year. While attending the ROTC summer studies each cadet receives approximately $740 for advanced summer studies, $740 for basic summer studies, plus meals and clothing are provided.

Army ROTC Scholarship Program
The Army ROTC scholarship program offers financial assistance to outstanding young men and women in Army ROTC who are interested in the Army as a career. Each scholarship provides for free tuition, textbooks subsidy, and laboratory fees in addition to a monthly subsistence allowance for the period that the scholarship is in effect. The monthly stipend runs from $300 to $500 for contracted cadets. Scholarships 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 sen-
ior year to apply for the four-year scholarship. Two- and three-
year scholarship applicants should contact the Professor of
Military Science and Leadership for further information. Other
privately financed scholarships and grants are also available to
ROTC cadets.

Leadership Grant Program
The University of Tennessee, Knoxville, ROTC Leadership
Grants are designed to attract and retain high quality/caliber stu-
dents to the Army ROTC program for future positions of leader-
ship within their service and our country. These grants are intend-
ted to complement other ROTC and university scholarships by
providing funds to offset costs for such areas as room and board,
out-of-state tuition, and first year expenses for Army ROTC scholar-
ship winners.

Up to ten $1,000 leadership grants are available each year
and are available to scholarship winners and any full-time student
enrolled in the AROTC program. Awarding of these leadership
grants will be determined by the Professor of Military Science
and Leadership who will evaluate each candidate in the following
areas – ACT/SAT scores; leadership activities; and recommenda-
tions from high school personnel and community leaders.

Simultaneous Membership Program
The simultaneous membership program option combines the
Army ROTC living allowance 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. Simultaneous membership program participation with national
guard or reserve forces is one weekend per month and two
weeks each year. Cadets participating in the simultaneous mem-
bership program are eligible for tuition reimbursement up to
$4,500 per year.

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 offi-
cer 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, Scabbard and Blade Honor Society, and
UT Color Guard. These organizations provide both student-to-
student contact and a valuable opportunity to acquire mil-
itary skills. Additionally, each semester, a number of field
training exercises are conducted to develop such military
 skills as small unit tactics, land navigation and rifle marks-
manship.

Physical Fitness Training
The Cadet Battalion conducts physical fitness training
Monday, Wednesday, and Friday. The exercise program focuses
on flexibility, muscular strength, and cardio respiratory endurance.
Any University of Tennessee, Knoxville, student may take the
course by registering for Army ROTC Fitness Program 103.

Military Science and Leadership Curriculum
Normal Course
First Year Hours Credit
Military Science and Leadership 101, 102 ............................. 4
Military Science and Leadership 103 .................................. 1

Second Year Hours Credit
Military Science and Leadership 201, 201 ............................. 6
Military Science and Leadership 103 ................................. 1

Third Year Hours Credit
Military Science and Leadership 301, 302 ............................. 8
Military Science and Leadership 103 ................................. 1

Fourth Year Hours Credit
Military Science and Leadership 401, 402, 430, 303 .............. 11
Military Science and Leadership 103 ................................. 1

Total 33

Military Studies – Practicum
Summer
Second Year Hours Credit
Military Science and Leadership 200 ................................. 4
Third Year Hours Credit
Military Science and Leadership 400 ................................. 4

Total 8

The Professor of Military Science and Leadership may
approve variations to these sequences of study on a case-by-
case basis. Lower-division credit hours granted by the university
for military service are dependent upon time spent in service and
service schools attended.

DEPARTMENT OF AIR FORCE
http://web.utk.edu/~rotc800/

Air Force ROTC Program
Professor of Air Force Aerospace Studies
Colonel Owen Ragland, MS ........................................... Embry-Riddle

Purpose
The Air Force Reserve Officers Training Corps (AFROTC) is
an educational program designed to provide the college student
an opportunity to earn an air force commission as a second lieu-
tenant while completing the university requirements for a bache-
lor’s degree. The program provides education that will develop
the skills and attitudes vital to the professional air force officer.
Upon successful completion of the program and graduation from
the university, students are commissioned as second lieutenants
and enter active duty.

Four-Year Program
Students entering 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 obligation.
During their freshman and sophomore years, students enroll in
the general military course. They then may compete for entry into
the professional officer course, which is normally taken during
the last two years of college. Selection into the professional offi-
cer course is highly competitive and is based on being medically
qualified, physically fit, term and cumulative grade point aver-
ages, scores achieved on the air force officer qualifying test, suc-
cessful completion of a four-week field training course at an Air
Force base, and the recommendation of the Professor of
Aerospace Studies.

Two-Year Program
The two-year program consists of the professional officer
course, the last two years of the four-year program. It is designed
to provide greater flexibility to meet the needs of both students
and the air force. 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 enroll-
ment in the two-year program are evaluated using the same cri-
teria used for the four-year program except the length of the field
training course is six weeks. Additionally, every professional offi-
cer course applicant must agree to take and successfully com-
plete a course in mathematical reasoning or its equivalent before graduation and commissioning. Courses previously completed may be used to satisfy this requirement.

Since the processing procedure must be completed several months in advance of intended enrollment, interested students must apply early in the fall semester of 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.

AFROTC develops students under the whole person concept. Cadets must maintain academic standards while taking on the additional responsibilities of AFROTC. These extra responsibilities include being physically fit and demonstrating integrity and good moral character. Cadets normally participate in approximately 2 hours per week of physical activity outside of class requirements.

Women in AFROTC
AFROTC at the University of Tennessee, Knoxville, 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.

Scholarships
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 stipend ranging from $250 to $400 each month during the school year while on scholarship status.

High School Students
Competitive four-year scholarships are available to high school students who enroll in certain scientific and engineering career fields. Some scholarships are also available to students who enroll in certain non-technical majors. Four-year scholarship application information is available on the AFROTC website at http://www.afrotc.com/.

College Students
Other scholarship opportunities exist for students already in college. 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.

Leadership Grants
The University of Tennessee, Knoxville, AFROTC Leadership Grants are designed to attract and retain high quality students to the Air Force ROTC program for future positions of leadership within their service and our country. These grants are intended to complement other AFROTC and University scholarships by providing funds to offset costs for such areas as room and board, out-of-state tuition, and first year expenses for three-year AFROTC scholarship winners.

Up to twenty $500 leadership grants are available each year and are open to scholarship winners and any full-time student enrolled in the AFROTC program. Awarding of these leadership grants will be determined by the Professor of Aerospace Studies who will evaluate each candidate in the following areas — ACT/SAT scores, AFQOT test scores, GPA, physical fitness scores, leadership activities, and recommendations from people who can attest to the applicant’s leadership experience and skills.

Pay and Entitlements
All cadets enrolled in AFROTC are furnished texts and uniforms. Qualified junior and senior cadets with a cumulative grade point average (GPA) of 2.5 or better may receive a $3,000 scholarship that is applied toward their tuition and books. Additionally, these cadets receive a monthly stipend ranging from $250 to $400. 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 ten years active duty after completion of pilot training. Those graduates going into navigator assignments will be required to serve six years active duty after completion of navigator training.

This information is subject to change. For the most up-to-date information regarding AFROTC, contact AFROTC Detachment 800, 974-3041.

Air Force Aerospace Studies Curriculum
To receive a commission as a second lieutenant in the United States Air Force through the Air Force ROTC program, a student must successfully complete a four- or six-week field training encampment and take or receive credit for the following courses. Attendance at a six-week field training encampment satisfies all freshman and sophomore level course requirements.

First Year
- Aerospace Studies 101, 102 ............................ 1,1
- Aerospace Studies 103, 104 (Leadership Laboratory) (S/NC) 1,1

Second Year
- Aerospace Studies 201, 202 ............................ 1,1
- Aerospace Studies 203, 204 (Leadership Laboratory) (S/NC) 1,1

Third Year
- Aerospace Studies 301, 302 ............................ 3,3
- Aerospace Studies 303, 304 (Leadership Laboratory) 0,0

Fourth Year
- Aerospace Studies 401, 402 ............................ 3,3
- Aerospace Studies 403, 404 (Leadership Laboratory) 0,0

Professional Development Training Programs
To help cadets gain knowledge of the challenges in leadership and human relations encountered by a junior air force officer and to motivate them toward an air force career, cadets have the opportunity to participate in a variety of summer professional development training programs. Many of these programs are highly competitive. Some of these programs are described below.

Academy Freefall Parachute Training
A 12-day program conducted at the United States Air Force Academy. Successful completion of program results in a cadet receiving parachutist rating.

Air Force Academy Soaring
A 15-day program designed to give cadets the chance to experience the basic fundamentals of flight in non-powered glider operations. Cadets receive instruction in basic flight through ground school and actual flight, leading up to and possibly including cadet solo.

Army Airborne Training
Training lasts for 24 days and is physically and mentally demanding. Upon successful completion, cadets are awarded the parachutist rating. All training is conducted at Fort Benning, Georgia.

ASSIST
Rising sophomore cadets spend two weeks touring an active duty air force base and shadowing junior officers in various career fields.
British Exchange
Cadets are attached to a British university air squadron for 17 days of training and orientation at various Royal Air Force bases in the United Kingdom.

Combat Survival Training
A 20-day program incorporating combat, basic aircrew, and water survival training. Training is conducted at the United States Air Force Academy, Colorado Springs, Colorado.

Field Engineering and Readiness Lab
Provides opportunities for cadets with entry-level civil engineering courses to get hands-on work experience in the civil engineering career field. Training consists of two weeks working with civil engineering at an air force base and three weeks hands-on construction activities at the Air Force Academy, Colorado Springs, Colorado.

Foreign Language Immersion
Provides cadets majoring in a foreign language the opportunity to receive intensive language and cultural training. Training lasts for four weeks in various overseas countries.

Nurse Orientation Program
During a four-week internship program at Wilford Hall United States Air Force Medical Center, Lackland Air Force Base, Texas, nursing cadets receive hands-on experience and practical knowledge of air force nursing.

Operation Air Force
A three-week program of general orientation and shadowing of junior officers in various career fields. Program is conducted at air force installations throughout the United States.

Pentagon Internship Program
A three-week program to provide cadets an opportunity to work in the Pentagon. Students selected for the program gain problem-solving experience working with both military and civilian personnel on real world issues and participate as a team member with professionals in their chosen field of study.
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 JD-MBA program with the College of Business Administration and JD-MPA program with the Department of Political Science.

Information regarding admission, financial aid, academic policies, extracurricular activities, and student services is available from the Admissions Office, The University of Tennessee, College of Law, 1505 West Cumberland Avenue, Knoxville, Tennessee 37996-1810. The completed application should be received before February 1 of the year of requested admission.

The College of Veterinary Medicine, established in 1974, offers a professional curriculum leading to the degree of Doctor of Veterinary Medicine (DVM). The college offers graduate studies leading to the degrees of Master of Science (MS) and Doctor of Philosophy (PhD) with a major in comparative and experimental medicine. Residency training programs in the various clinical specialties are also offered.

The Graduate Catalog contains complete information concerning the programs in the college. Forms and instructions for making application for admission may be obtained beginning June 1 from the Office of the Associate Dean, The University of Tennessee, Knoxville, College of Veterinary Medicine, 2407 River Drive, Room A102, Knoxville, Tennessee 37996-4550. Applications must be received by the Veterinary Medical College Application Service (VMCAS) by October 1 of the year prior to requested admission. All pre-veterinary requirements must be completed by the end of the spring term of the year in which the student plans to enroll in the college.

A wide range of graduate programs leading to master's and doctoral degrees is available. The university offers master’s programs in 76 fields, the Specialist in Education degree, doctoral work in 44 fields, two professional programs, and several graduate certificate programs. More than 6,000 graduate and professional students are enrolled on and off campus under the tutelage of 1,500 faculty members.

Complete information concerning graduate study at The University of Tennessee, Knoxville, is available in the Graduate Catalog, published annually and on the Graduate Studies Web site http://web.utk.edu/~gsinfo.
The University of Tennessee, Knoxville, is committed to its land-grant mission of public service. The institution meets that mission by extending its continuing education services and programming resources through outreach initiatives. University Outreach and Continuing Education works with academic departments to offer courses, educational services and programs. The division offers programs using a variety of modes, helping people of all ages achieve degrees and certificates, accomplish professional development goals, and pursue intellectual and self-improvement interests.

Programs and courses are based upon student needs and desires, whether for self-motivated learning; for leisure and recreational programs; or for professional promotion, certification, licensure, re-licensure, or mid-career changes. The division provides these opportunities through program coordination and development of the four departments: Department of Conferences, Department of Distance Education and Independent Study, English Language Institute, and Professional and Personal Development.

For more information, contact
University Outreach and Continuing Education
The University of Tennessee
313 Conference Center Building
600 Henley Street
Knoxville, Tennessee 37996-4137
Phone (865) 974-3181, fax (865) 974-6629
E-mail outreach@tennessee.edu
Web site www.outreach.tennessee.edu

DEPARTMENT OF CONFERENCES
Robert Gibbs, Director

The Department of Conferences, housed in the Conference Center Building in downtown Knoxville, provides management services to university departments and faculty or outside groups that desire to hold an educational meeting anywhere in Tennessee or across the United States.

The department assists organizations in designing and managing programs to meet the needs of attendees. The staff provides professional guidance and management for small group meetings as well as for major conventions of several thousand delegates. Consulting and support services can include planning and budgeting, registration, lodging, food services, promotional materials, meeting-site management and all details to ensure a successful event. Some programs qualify for Continuing Education Units (CEUs), which become a permanent record maintained by the University Outreach and Continuing Education.

Additional information may be obtained from
UT Conference Center
University Outreach and Continuing Education
The University of Tennessee
Suite 212
Knoxville, Tennessee 37996
Phone (865) 974-0250, fax (865) 974-0264
E-mail conferences@tennessee.edu
Web site www.outreach.tennessee.edu/conferences

University Conference Center
Robert Gibbs, Director

The University Conference Center, managed by the Department of Conferences, offers quality meeting facilities and service to university units, business and industry groups, professional organizations, and government agencies. Professional groups and interested individuals can request interactive video-conferencing to locations worldwide. Arrangements can also be made to receive (downlink) programming or transmit (uplink) programming via satellite. The University Conference Center is located at 600 Henley Street in downtown Knoxville.

Additional information may be obtained from
UT Conference Center
University Outreach and Continuing Education
The University of Tennessee
Suite 212
Knoxville, Tennessee 37996
Phone (865) 974-0250, fax (865) 974-0264
E-mail conferences@tennessee.edu
Web site www.outreach.tennessee.edu/conferences
ENGLISH LANGUAGE INSTITUTE
Jim Hamrick, Director

The English Language Institute (ELI) offers a non-credit language-study program. It is designed to assist students in their pursuit of career goals or educational objectives in the United States. The courses emphasize development of communicative ability in listening, speaking, reading, and writing. Faculty members are trained in teaching English to speakers of other languages and different national backgrounds.

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

Classes meet each day with emphasis on English Structure (Grammar); Listening Comprehension, Writing/Composition (Rhetoric), Conversation Practice for Communicative Purposes, Reading and Vocabulary.

Classes also assist students in pronunciation, test-taking strategies, U.S. culture orientation, and university study skills.

ELI also offers on- and off-campus classes for professional and academic audiences.

Additional information may be obtained from
English Language Institute
University Outreach and Continuing Education
The University of Tennessee
907 Mountcastle Street
Knoxville, Tennessee 37996-3505
Phone (865) 974-3404
Fax (865) 974-6383
E-mail eli@tennessee.edu
Web site www.outreach.tennessee.edu/eli

DEPARTMENT OF PROFESSIONAL AND PERSONAL DEVELOPMENT
Mary F. Jerger, Director

The Department of Professional and Personal Development provides a comprehensive array of non-credit courses, certificates, and seminars designed to serve the needs of individuals and businesses in Knoxville and surrounding communities. Courses are offered on the university campus, at off-campus locations (including two Oak Ridge classrooms), and on-line. Classes are taught by university faculty, staff, and community experts. Courses also are delivered on-site for business clients, with instructional services tailored to the needs of each group.

Business topics include professional development, career planning, computer training, and several specialized certificate programs. Personal interest topics range from creative writing to art, dance, gardening, music, and sports. There are also courses that meet requirements of the state or other agencies for certification in real estate and financial planning.

Special programming also includes Kids U which provides summer hands-on workshops for elementary and secondary education students; Seniors for Creative Learning, a membership-based program focusing on issues and courses for senior adults; and the Smoky Mountain Field School, a program co-sponsored with Great Smoky Mountains National Park.

For further information or to register, contact
Department of Professional and Personal Development
University Outreach and Continuing Education
The University of Tennessee
313 Conference Center Building
600 Henley Street
Knoxville, Tennessee 37996-4137
Phone (865) 974-0150
Fax (865) 974-0154
E-mail ProfessionalPgms@utk.edu
Web site www.outreach.utk.edu/ppd

DEPARTMENT OF DISTANCE EDUCATION AND INDEPENDENT STUDY
George H. Hoemann, Assistant Dean

The Department of Distance Education and Independent Study, in concert with academic departments, offers Internet-based, Web-delivered classes, and programs leading to certificates and degrees. The College of Communication and Information and the College of Engineering offer master’s degree programs through Web-based courses, while the Departments of Nuclear Engineering and Statistics, Operations and Management Science offer courses leading to degree and certificate programs. Other undergraduate and graduate classes and programs are available, as well as a variety of individual courses in many disciplines. Current course availability can be found on the Web at: anywhere.tennessee.edu.

The department provides services and support for faculty, students, and industry interested in flexibly-delivered education. The Internet eLearning Institute provides certificate programs, professional development courses and training.

For information and registration forms, contact the Distance Education Program at
Distance Education and Independent Study
University Outreach and Continuing Education
The University of Tennessee
Suite 208
600 Henley Street
Knoxville, Tennessee 37996-4126
Phone (865) 974-1534 or (800) 670-8657
TDD (865) 974-5078
Fax (865) 974-4684
E-mail DistEducation@tennessee.edu
Web Site anywhere.tennessee.edu
Courses of Instruction

Courses fulfilling the University General Education Requirement are designated as
(AH) Arts and Humanities
(CC) Cultures and Civilizations
(CC) Communicating Orally
(NS) Natural Sciences
(QR) Quantitative Reasoning
(SS) Social Sciences
(WC) Communicating through Writing

REGISTRATION NOTES
(RE) Prerequisite(s) and Corequisite(s) will be enforced by the Registration System in the future. They are currently enforced by the department.
(DE) Prerequisite(s) and Corequisite(s) are enforced by the department.
Registration Restrictions are enforced by the Registration System.

Accounting (009)

200 Foundations of Accounting (3) Introduction to financial and managerial accounting theory and practice with emphasis on the role of accounting information in business decisions.

207 Honors: Foundations of Accounting (3) Introduction to financial accounting theory and practice with emphasis on the role of financial information in business decisions. The course will make extensive use of computer technology for retrieving and analyzing financial information.

Recommended Background: 28 ACT composite or 1250 composite SAT required.


(RE) Corequisite(s): Finance 301 and Business Administration 342.
Registration Restriction(s): Majors in the College of Business Administration.

311 Financial Reporting and Analysis (3) Theory and practice that underlies the preparation, analysis, and use of financial statements.

(RE) Prerequisite(s): 301.
Comment(s): Grade of C or better in 301 is required.
Registration Restriction(s): Majors in the College of Business Administration.

321 Cost Management (3) Cost information for products, services, and how cost information is recorded, analyzed, reported, and used in decision making. Topics include cost concepts and behavior, cost systems, budgeting, activity-based costing and management, and strategic cost management.

(RE) Prerequisite(s): 301.
Registration Restriction(s): Majors in the College of Business Administration.

411 Financial Compliance and Operational Auditing (3) Auditing’s role in society from an internal and external perspective, audit methodology, role of internal control and statistical sampling in auditing, fraud auditing, operational auditing, compliance auditing, and application of auditing procedures to specific transaction cycles.

(RE) Prerequisite(s): 301.
Comment(s): Grade of C or better in 301 is required.
Registration Restriction(s): Majors in the College of Business Administration.

414 Advanced Financial Reporting (3) Accounting standards for advanced financial reporting topics such as statement of cash flows, income taxes, leases, accounting changes, consolidated financial statements, and foreign operations.

(RE) Prerequisite(s): 311.
Comment(s): Grade of C or better in 311 is required.
Registration Restriction(s): Majors in the College of Business Administration.

431 Federal Income Taxation (3) Fundamentals and concepts of federal income taxation. Emphasis on tax strategy, business taxation, and individual taxation. Topics include tax strategy modeling, gross income, deductions, credits, tax determination, property transactions, business entities, and basics of international taxation.

(RE) Prerequisite(s): 311.
Comment(s): Grade of C or better in 301 is required.
Registration Restriction(s): Majors in the College of Business Administration.

451 Operational Auditing and Consulting (3) Approaches auditors might use to evaluate an entity’s efficiency and effectiveness in a variety of settings and techniques auditors might use in consulting to provide the entity a competitive advantage.

492 Accounting Internship (1-6)

Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 6 hours.
Registration Restriction(s): Accounting major.
Registration Permission: Consent of instructor.

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.

310 Advertising and Public Relations Design (3) Study, use, and application of design, color, type, and layout styles as they affect concept development in the creation of promotional materials. Analysis of organizational goals and how they mold strategic and conceptual development. Application of relevant computer software for creation of promotional material.

(RE) Prerequisite(s): 250.
Registration Restriction(s): Majors in the College of Business Administration.

340 Advertising Research Methods (3) Secondary data and primary research techniques for advertising decisions.

(RE) Prerequisite(s): 250 and Statistics 201.
Registration Restriction(s): Advertising major or public relations major.

350 Advertising Creative Strategy (3) Basic concepts of creative strategy with intensive practice in developing creative strategy statement, writing and designing advertisements, and judging creative work.

(RE) Prerequisite(s): 250 and 310.
Registration Restriction(s): Advertising major or public relations major.

360 Advertising Media Strategy (3) Assessment of markets, vehicle audiences and mathematical techniques for advertising planning. Instruction in media planning, buying, and evaluation.

(RE) Prerequisite(s): 250 and 340.
Registration Restriction(s): Advertising major or public relations major.
380 Advertising Professional Seminar (1) Exploration of career choices in mass communications. Resume and letter writing, interviewing, and portfolio preparation. (RE) Prerequisite(s): 340. Registration Restriction(s): Advertising major or public relations major.

450 Advertising Management (3) Case-study approach to advertising decisions. Data analysis and interpretation, generating alternative strategies, oral and written presentation of recommendations. (RE) Prerequisite(s): 350 and 360. Registration Restriction(s): Advertising major or public relations major.

470 Advertising Campaigns (3) Group-based development, execution and evaluation of an advertising campaign for a regional or national client. (RE) Prerequisite(s): 450 and Public Relations 270. Registration Restriction(s): Advertising major or public relations major.

480 Advertising Issues (3) Examination of the role of advertising in society and controversies surrounding economic, social, cultural and ethical aspects of advertising. Emphasis on written and oral exposition of different viewpoints. (RE) Prerequisite(s): 360. Registration Restriction(s): Advertising major or public relations major.

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 multicultural advertising. (RE) Prerequisite(s): 360. Registration Restriction(s): Advertising major or public relations major.

492 Advertising Practicum (1) Experience in a functional area of advertising. Contact Hour Distribution: 10 hours laboratory each week. Grading Restriction: Satisfactory/No Credit grading only. Registration Restriction(s): Advertising major or public relations major.

493 Independent Study (1-3) Individual study in a specialized area under the supervision of a faculty member. Registration Restriction(s): Advertising major or public relations major.

Aerospace Engineering (018)

201 Aerospace Seminar (1) An overview of aerospace engineering with lectures, laboratory demonstrations, and field trips. Aerospace history, aircraft and space flight fundamentals, propulsion techniques, wind tunnel testing, biomedical issues in aviation and space flight. Grading Restriction: Satisfactory/No Credit grading only. Registration Restriction: Consent of instructor.

341 Fluid Mechanics I (3) Introduction to fluid flow concepts; hydrostatics; development of mass, momentum, and energy conservation laws in integral and differential form; dimensional analysis and similitude; viscous laminar and turbulent flows in pipes; introduction to boundary layers. (RE) Prerequisite(s): Mechanical Engineering 231 and Mathematics 241.

345 Aerospace Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems; standards; dynamic characteristics of instruments; statistical data treatment; transducers; signal conditioning; strain, pressure, temperature and flow measurements. (RE) Prerequisite(s): 341 and Electrical and Computer Engineering 301. (DE) Prerequisite(s): Mechanical Engineering 363.

351 Compressible Flow (3) One-dimensional internal flow with shocks, friction and nonadiabatic conditions. Two-dimensional external flows. (RE) Prerequisite(s): 341 and Mechanical Engineering 331.

363 Structural Analysis of Aerospace Vehicles (3) Fundamentals of structural analysis applied to configurations common to aerospace vehicles. (RE) Prerequisite(s): Mechanical Engineering 321.

370 Airplane Performance (4) Airplane aerodynamics, characteristics of propulsion systems, prediction of airplane performance, static and dynamic stability and control of aircraft. (RE) Corequisite(s): 341.

410 Professional Development (2) Topics relating to professional responsibility, communications, and organization. Formal oral presentation by each student on an engineering topic chosen by the student and approved by the instructor. (OC) (RE) Prerequisite(s): English 102. Registration Restriction(s): Minimum student level – senior.

422 Aerodynamics (3) Theory and design of aerodynamic bodies for desired characteristics. Potential flow theory, viscous effects, and compressibility effects. Subsonic, transonic, and supersonic airfoils. (RE) Prerequisite(s): 351 and 370.

424 Astronautics (4) Solar system, orbital mechanics, propulsion, atmospheric entry, thermal protection materials, human factors in space flight, the space environment, and current topics. (RE) Prerequisite(s): 351. (RE) Corequisite(s): Mechanical Engineering 344.


426 Introduction to Aerospace Design (2) Design process, synthesis, design studies. Individual design reports required. (RE) Prerequisite(s): 360 and 370. (DE) Prerequisite(s): 363. (RE) Corequisite(s): Mechanical Engineering 344.

429 Aerospace System Design (3) Synthesis and design of a complete aerospace system. Participation in team design effort including formal presentations and design report. (RE) Prerequisite(s): 426 and 422. (DE) Prerequisite(s): 425.

449 Aerospace Engineering Laboratory (3) Designing, conducting, and reporting results of experimental exercises. Test standards and specifications. Analysis of data and formation of conclusions. Contact Hour Distribution: 3 hours lab per week. (RE) Prerequisite(s): 345 and 351. (DE) Prerequisite(s): 425.

494 Selected Topics in Aerospace Engineering (1-4) Problems and topics related to developments and practice in aerospace engineering. Registration Permission: Consent of instructor.

495 Selected Topics in Aerospace Engineering (1-4) Problems and topics related to developments and practice in aerospace engineering. Registration Permission: Consent of instructor.

Africanas Studies (023)

162 Art of Africa, Oceania, and Pre-Columbian America (3) (See Art History 162.) (AH)

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

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

233 Major Black Writers (3) (See English 233.) (AH)

235 Introduction to African Studies (3) Multidisciplinary approach to the study of African traditions, cultures, religions, political economies, pre-colonial democracies, and states from the first through the 16th century. Writing-emphasis course. (CC)

236 Introduction to African Studies (3) Multidisciplinary study of Africa and its incorporation into the world economy between the sixteenth and the twentieth century. Includes the rise of nationalism, post-colonial dependency, contemporary problems, and current liberation struggles in various areas of the continent. Writing-emphasis course. (CC)

310 Introduction to African-American Music (3) (See Musicology 310.)

315 The African Diaspora (3) (See Anthropology 315.)

319 Caribbean Cultures and Societies (3) (See Anthropology 319.)

331 Race and Ethnicity in American Literature (3) (See English 331.)

333 Black American Literature and Aesthetics (3) (See English 333.)

343 Race and Ethnicity (3) (See Sociology 343.)

352 African-American Religion in the United States (3) (See Religious Studies 352.)

353 Topics in African-American Religion (3) (See Religious Studies 353.)

371 African History (3) (See History 371.)

372 African History (3) (See History 372.)

373 African Religions (3) (See Religious Studies 373.)

379 Geography of Africa (3) (See Geography 379.)

381 History of South Africa (3) (See History 381.)

421 Comparative Studies in African and African-American Societies (3) Comparative studies of African and African-American societies in such areas as education, religion, and social stratification. Includes the respective views African-Americans and Africans have of each other and the concept of Pan-Africanism. Writing-emphasis course.
429 History and Philosophy of African-American Education (3) Focuses on attempts by African-Americans to secure an education for themselves and their children from the era of slavery to the Brown decision in 1954. Examines black perceptions of the importance of education and special obstacles confronting African-Americans who seek education on the primary, secondary, college, or graduate level. Writing-emphasis course.

431 Research Seminar in African-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 African-American studies. Writing-emphasis course.

432 Comparative Poverty and Development (3) (See Sociology 442.)

433 Topics in Black Literature (3) (See English 443.)

445 The African-American Experience from the Colonial Period to the Civil War (3) (See History 445.)

446 The African-American Experience from the Civil War to the Present (3) (See History 446.)

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

452 Black African Politics (3) (See Political Science 452.)

461 Art of Southern and Eastern Africa (3) (See Art History 461.)

462 Art and Archaeology of Ancient Africa (3) (See Art History 462.)

463 Arts of the African Diaspora (3) (See Art History 463.)

473 Black Male in American Society (3) Examines historical images, myths and stereotypes which have developed concerning African-American 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 African-American males in America.

480 African-American Communities in Urban America (3) Evaluates the beneficial and historical influence 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 black people in developing coping strategies and mechanisms. Writing-emphasis course.

484 African-American Women in American Society (3) Focuses on historical and contemporary social, economic and political factors in American society as they relate to the black woman. Writing-emphasis course. (Same as Women’s Studies 484.)

491 Foreign Study (1-6) Repeatability: May be repeated. Maximum 6 hours. (RE) Prerequisite(s): 201 and 202. Registration Restriction(s): Minimum student level – senior.

492 Off-Campus Study (1-6) Repeatability: May be repeated. Maximum 6 hours. (RE) Prerequisite(s): 201 and 202. Registration Restriction(s): Minimum student level – senior.

493 Independent Study (1-6) Repeatability: May be repeated. Maximum 6 hours. (RE) Prerequisite(s): 201 and 202. Registration Restriction(s): Minimum student level – senior.

496 Biology of Human Variability (3) (See Anthropology 496.)

Agricultural and Extension Education (042)

201 Field Experience in Agricultural and Extension Education (1) Field observation/experience in potential agricultural and extension education career fields. Requirements include daily journal, formal written report, completion of required hours, and seminar.

211 Foundations of Agricultural and Extension Education (3) History and philosophy of agricultural education and extension education. Major areas of emphasis include the historical development of agricultural education in the public schools and the federal extension education system. Formal and non-formal methods of education used, audiences served, organizational structure, and programming emphases will be studied by students. Foundation course for departmental majors and service course for those interested in related careers.

301 Non-Formal Youth Development Programs (1-2) Structured experience in administrating, organizing, conducting, and evaluating youth education programs in agricultural and extension education.

345 Program Planning in Agriscience Education (3) Overview of the historical and philosophical aspect of agriculture education, the role of teacher and learner, emphasis on SAE, FFA, community service, and summer programs. Includes a lab component. (RE) Prerequisite(s): 211.

420 Methods of Teaching Agricultural Mechanics (2) Methods for teaching high school agricultural education students. Special competencies for planning, conducting and evaluating an agricultural mechanics program.

434 Methods of Teaching Agriscience (3) Methods and techniques for teaching agriculture, preparing lesson plans and units of instruction, developing activities for agriculture programs, and utilization of resources, multimedia, and computer technology into instruction. To be taken in the fall prior to student teaching. Includes a lab component. (RE) Prerequisite(s): 345.

435 Student Teaching in Agricultural and Extension Education (6) Full-time teaching practicum in an approved high school program. Applied practices needed by agricultural education teachers.

436 Student Teaching in Agricultural and Extension Education (6) Full-time teaching practicum in an approved high school program. Applied practices needed by agricultural education teachers.

440 Communication Techniques in Agriculture (3) Elements of effective use of mass media in agricultural and extension education. Effective technical writing and presentation strategies for agricultural audiences. (WC) (RE) Prerequisite(s): English 101 and English 102. Registration Restriction(s): Minimum student level – junior.

450 Agricultural Leadership Development (3) Identification of styles and roles of leadership; development of leadership techniques and skills required in working with organizations and youth groups; methods of resolving conflict, of communicating, of guiding and evaluating; and ethical considerations for leaders.

492 Internship In Agricultural and Extension Education (1-6) Pre- approved off-campus supervised experience in county Extension offices, agricultural businesses, or agricultural related agencies. Requires living off-campus for a specified time. Repeatability: May be repeated. Maximum 6 hours.

493 Independent Study (1-3) Individualized study of a special project or problem in agricultural and extension education. Must be selected in consultation with the instructor. Repeatability: May be repeated. Maximum 6 hours.

Agricultural Economics (047)

110 Opportunities in Agricultural Economics and Business (1) Overview of current issues and career opportunities for majors and non-majors.

212 The Agribusiness Firm (3) Introduction to agribusiness firm characteristics and decision-making. Overview of economic principles and the basic functions of management: planning, organizing, controlling, and directing. Specific topics include firm structure, forecasting, marketing and selling, budgeting, break-even analysis, use of financial statements, capital investment, supervision, staffing, and evaluation.

310 The Agricultural Employment Process (1) Career planning, job markets in the agricultural industry, and techniques to obtain employment including recruitment/placement services, resume construction, personal interviewing, and job offer evaluation/analysis.

315 Agricultural Law (3) Survey of legal topics related to agribusiness operations and production agriculture in Tennessee. Topics include introduction to legal system, torts, property, contracts, farm and business organization, environmental and natural resource regulation, estate planning, and effective utilization of legal counsel.

320 Agricultural Microeconomics (3) Application of microeconomics to agriculture. Production, consumption, firm behavior, and efficiency in the food and fiber industries. (RE) Prerequisite(s): 212 and Economics 201. Registration Restriction(s): Minimum student level – junior.

330 Economics of Agricultural Biotechnology (3) Analysis of economic issues and impacts associated with the development and adoption of agricultural biotechnology, especially the introduction of genetically modified organisms. Specific topics include farm level adoption decisions, changes in agribusiness industry structure, changes in the marketing system, consumer attitudes and the role of labeling, international trade issues, and agricultural development in the Third World.

(RE) Prerequisite(s): Economics 201. Registration Restriction(s): Minimum student level – junior.
and the use of spatial data for management of crop production systems.

444 Economics of Precision Farming Technologies (3) Economic rationale for precision farming technologies. Topics include technology adoption, production economics, development of decision-making tools and the use of spatial data for management of crop production systems.

(RE) Prerequisite(s): Economics 201 and Agriculture and Natural Resources 290.

450 Agricultural Industry Analysis and Forecasting (3) Analytical tools for decision-making in the agricultural sector; analysis of commoditv supply and demand conditions; economic modeling; market forecasting; analysis of temporal and spatial patterns.

(RE) Prerequisite(s): 320 and Statistics 201.

470 Natural Resource Economics (3) Nature of natural resources; economic valuation of 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.

(RE) Prerequisite(s): Economics 201.

492 Off-Campus Internship (1-3) Pre-approved supervised experience with firm or organization in the field.

Grading Restriction: Satisfactory/No Credit grading. Repeatability: May be repeated. Maximum 6 hours.

(RE) Registration Restriction(s): Minimum student level – junior. Registration Permission: Consent of instructor.

493 Independent Study (1-3) Directed individual or team research and report writing. Special courses in specific topics.

Repeatability: May be repeated. Maximum 6 hours.

Registration Restriction(s): Minimum student level – junior. Registration Permission: Consent of instructor.

Agriculture and Natural Resources (088)

100 Orientation to Studies in Agriculture and Natural Resources (1) Orientation to academic advising and procedures in, and information about the college will be emphasized. Various invited guests will review university resources available to help students succeed at their studies. Student-to-student and advisor-to-student sessions are included to discuss the College of Agricultural Sciences and Natural Resources experience.

Grading Restriction: A, B, C, No Credit grading. Registration Restriction(s): Freshmen and sophomores only.

290 Computer Applications to Problem Solving (3) Use of computer technology to analyze and report problems related to agricultural sciences and natural resources. The use and integration of computer applications such as spreadsheets, databases, presentation graphics, word processing, and other applicable software as needed for problem analysis and reporting.

Contact Hour Distribution: 2 hours and 1 lab.

317 Agriculture and Natural Resources Honors Seminar (1) Primarily for College Scholars students. Discussion of selected topics, issues and problems influencing national and international food, agriculture and natural resources systems.

Grading Restriction: A, B, C, No Credit grading. Repeatability: May be repeated. Maximum 4 hours.

330 Leadership Development in Agriculture and Natural Resources (1) Enrollment limited to College Ambassadors. Readings on leadership and personal development, communication techniques, and/or personality types.

Grading Restriction: A, B, C, No Credit grading. Repeatability: May be repeated. Maximum 4 hours.

Registration Permission: Consent of instructor.

333 Food, Forests and the Environment (3) Overview of the environmental tradeoffs that have been, are, and will be required to produce the food, fiber and other products needed to feed, clothe, and house a growing world population. Topics include basic natural resources, current practices in agriculture, forestry, and food handling, and practices related to quality of life issues, such as wildlife and landscape design.

Credit Restriction: May not be applied toward directed elective requirements.

491 International Experience in Agriculture and Natural Resources (1-12) Credit for formalized international experiences related to agricultural sciences and natural resources. Determination of credit based on nature of the proposed experience. Students should discuss the opportunity with their faculty advisors prior to the trip to determine if it is appropriate for credit. Credit hours will be determined by the department and college depending on the extent of activity and types of projects and/or presentations to be completed by the student upon return.

Repeatability: May be repeated. Maximum 12 hours.

Registration Permission: Consent of instructor.

497 Honors: Independent Project (1-6) For students participating in the College of Agricultural Sciences and Natural Resources Honors Research and Creative Achievements Program. Consists of independent work with a faculty member.

Repeatability: May be repeated. Maximum 6 hours.

Registration Permission: Consent of instructor.

498 Honors Presentation (1) For students participating in the College of Agricultural Sciences and Natural Resources Honors Research and Creative Achievements Program. Final written report and oral presentation of the honors project.

Registration Permission: Consent of instructor.

337 Honors: Economics of Agricultural Biotechnology (3) Meets at the same time as 330 but requires additional work in the form of article reviews and a research paper.

(RE) Prerequisite(s): Economics 201. Registration Restriction(s): Minimum student level – junior.

342 Farm Business Management I (3) Principles and procedures for determining the business organization and management of agricultural enterprises and businesses; nature of managerial processes; business records and their uses; budgeting; acquisition and management of capital, land, labor and machinery; farm business planning.

(RE) Prerequisite(s): 212 and Accounting 200. Recommended Background: Introductory economics and microcomputer competence.

350 The Agricultural Marketing System (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.

(RE) Prerequisite(s): 212 and Economics 201.

355 Agribusiness Marketing and Professional Selling (3) Role of marketing in the agribusiness organization, planning marketing efforts, and the strategic selling process. Topics include identification of market opportunities, targeting, marketing mix, and personal selling in agribusiness.

(RE) Prerequisite(s): Economics 201.

356 Marketing Team Participation (1-2) Participation in the development of a total marketing plan for a product sold to or by farmers. Includes product identification, market research, and development of an action plan including an extensive promotional plan, financial analysis, and evaluation. Requires preparation of final plan for presentation in written, oral and visual formats. Plan presented in national competition during the National Ag Marketing Conference.

Repeatability: May be repeated. Maximum 6 hours.

Registration Permission: Consent of instructor.

360 Rural Economic Development (3) Use of economic principles and analytical concepts in understanding the theory and process of rural economic development at the regional and subregional levels. Integrating historical, current information, students will explore the impetus of efficiency and equity as driving forces behind public sector and private sector initiatives to induce, manage and forecast development.

(RE) Prerequisite(s): Economics 201.

410 Seminar in Agricultural Economics and Business (1) Practice of critical thinking, ethical behavior, teamwork, and conflict resolution within the content of agribusiness decision-making. Analysis of contemporary issues in the field of agricultural economics.

Registration Restriction(s): Agricultural economics and business major; minimum student level – senior.

412 Agricultural Finance (3) Macro-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.

(RE) Prerequisite(s): 212 and Accounting 200. Recommended Background: Introductory economics and microcomputer competence.

420 International Agricultural Trade and Marketing (3) Introduction to real and monetary aspects of international trade effect on agricultural commodity flows; partial equilibrium analysis of international trade in agricultural products; institutional aspects of international marketing of agricultural products.

(RE) Prerequisite(s): 320.

430 Agricultural Policy (3) Values, goals and policy process. Economic rationale and effects of policy. Historical development and current characteristics of commodity, credit, food, and trade policy.

(RE) Prerequisite(s): 320.

442 Agribusiness Management (3) Advanced concepts in developing business and marketing plans and in applied management principles such as inventory control and pricing techniques. Discussion of management issues including going national, employee supervision, management succession and guerrilla marketing. Teamwork emphasized in managing an agribusiness firm through game simulation. Written and oral presentation required.

(RE) Prerequisite(s): 212 and Accounting 200. Recommended Background: Intermediate microeconomics.

444 Economics of Precision Farming Technologies (3) Economic rationale for precision farming technologies. Topics include technology adoption, production economics, development of decision-making tools and the use of spatial data for management of crop production systems.

(RE) Prerequisite(s): Economics 201 and Agriculture and Natural Resources 290.

342 Farm Business Management I (3) Principles and procedures for determining the business organization and management of agricultural enterprises and businesses; nature of managerial processes; business records and their uses; budgeting; acquisition and management of capital, land, labor and machinery; farm business planning.
Air Force Aerospace Studies (094)

101 The Air Force Today (1) Survey that focuses on the organizational structure and missions of the Air Force; officer'ship and professionalism, and includes an introduction to communicative skills. A weekly Leadership Laboratory (LLAB) consisting of Air Force customs and courtesies, health and physical fitness, and drill and ceremonies is mandatory.

(Re) Corequisite(s): 103.

102 The Air Force Today (1) Survey that focuses on the organizational structure and missions of the Air Force; officer'ship and professionalism, and includes an introduction to communicative skills. A weekly Leadership Laboratory (LLAB) consisting of Air Force customs and courtesies, health and physical fitness, and drill and ceremonies is mandatory.

(Re) Corequisite(s): 104.

103 Leadership Laboratory (1) Includes a study of Air Force customs and courtesies, drill and ceremonies, and giving military commands; instructing, correcting, and evaluating the preceding skills; studying the environment of an Air Force officer; and learning about opportunities available to commissioned officers.

Grading Restriction: Satisfactory/No Credit grading only.

104 Leadership Laboratory (1) Includes a study of Air Force customs and courtesies, drill and ceremonies, and giving military commands; instructing, correcting, and evaluating the preceding skills; studying the environment of an Air Force officer; and learning about opportunities available to commissioned officers.

Grading Restriction: Satisfactory/No Credit grading only.

201 The Development of Air Power (1) Focuses on factors contributing to the development of air power from its earliest beginnings through two world wars; the evolution of air power concepts and doctrine; and an assessment of communicative skills. A weekly Leadership Laboratory (LLAB) consisting of Air Force customs and courtesies, Air Force environment, drill and ceremonies, and field training orientation is mandatory.

(Re) Corequisite(s): 203.

202 The Development of Air Power (1) Focuses on factors contributing to the development of air power from its earliest beginnings through two world wars; the evolution of air power concepts and doctrine; and an assessment of communicative skills. A weekly Leadership Laboratory (LLAB) consisting of Air Force customs and courtesies, Air Force environment, drill and ceremonies, and field training orientation is mandatory.

(Re) Corequisite(s): 204.

203 Leadership Laboratory (1) Includes a study of Air Force customs and courtesies, drill and ceremonies, and giving military commands; instructing, correcting, and evaluating the preceding skills; studying the environment of an Air Force officer; and learning about opportunities available to commissioned officers.

Grading Restriction: Satisfactory/No Credit grading only.

204 Leadership Laboratory (1) Includes a study of Air Force customs and courtesies, drill and ceremonies, and giving military commands; instructing, correcting, and evaluating the preceding skills; studying the environment of an Air Force officer; and learning about opportunities available to commissioned officers.

Grading Restriction: Satisfactory/No Credit grading only.

205 Field Training (Academic Program) (1-4) Open only to 2-year program applicants. Role of United States military forces in contemporary world, with particular attention to the 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.

Repeatability: Not repeatable for credit. May be taken once for 1-4 hours.

Registration Permission: Consent of department head.

301 Air Force Leadership and Management (3) Study of leadership and quality management fundamentals, professional knowledge, leadership ethics, and communicative skills required of an Air Force officer. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied. A mandatory weekly Leadership Laboratory (LLAB) provides advanced leadership experiences in office-type activities and gives students the opportunity to apply leadership and management principles to this course.

(Re) Corequisite(s): 303.

302 Air Force Leadership and Management (3) Study of leadership and quality management fundamentals, professional knowledge, leadership ethics, and communicative skills required of an Air Force officer. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied. A mandatory weekly Leadership Laboratory (LLAB) provides advanced leadership experiences in office-type activities and gives students the opportunity to apply leadership and management principles to this course.

(Re) Corequisite(s): 304.

303 Leadership Laboratory (0) Consists of activities classified as advanced leadership experiences. They involve planning, organizing, staffing, coordinating, directing, and controlling the military activities of the cadet corps; preparation and presentation of briefings and other oral and written communications; and providing interviews, guidance, and information which will increase the understanding, motivation, and performance of other cadets.

(Re) Corequisite(s): 403.

304 Leadership Laboratory (0) Consists of activities classified as advanced leadership experiences. They involve planning, organizing, staffing, coordinating, directing, and controlling the military activities of the cadet corps; preparation and presentation of briefings and other oral and written communications; and providing interviews, guidance, and information which will increase the understanding, motivation, and performance of other cadets.

401 National Security Forces in Contemporary American Society (3) Examines the need for national security, analyzes the evolution and formulation of the American defense policy, strategy, and joint doctrine; investigates the methods for managing conflict, and overviews regional security, arms control, and terrorism. Special topics of interest focus on the military as a profession, officer'ship, the military justice system, and current issues affecting military professionalism. Within this structure, continued emphasis is given to the refinement of communicative skills. A weekly Leadership Laboratory (LLAB) consisting primarily of advanced leadership experiences in office-type activities is mandatory.

(Re) Corequisite(s): 404.

402 National Security Forces in Contemporary American Society (3) Examines the need for national security, analyzes the evolution and formulation of the American defense policy, strategy, and joint doctrine; investigates the methods for managing conflict, and overviews regional security, arms control, and terrorism. Special topics of interest focus on the military as a profession, officer'ship, the military justice system, and current issues affecting military professionalism. Within this structure, continued emphasis is given to the refinement of communicative skills. A weekly Leadership Laboratory (LLAB) consisting primarily of advanced leadership experiences in office-type activities is mandatory.

403 Leadership Laboratory (0) Consists of activities classified as advanced leadership experiences. They involve planning, organizing, staffing, coordinating, directing, and controlling the military activities of the cadet corps; preparation and presentation of briefings and other oral and written communications; and providing interviews, guidance, and information which will increase the understanding, motivation, and performance of other cadets.

404 Leadership Laboratory (0) Consists of activities classified as advanced leadership experiences. They involve planning, organizing, staffing, coordinating, directing, and controlling the military activities of the cadet corps; preparation and presentation of briefings and other oral and written communications; and providing interviews, guidance, and information which will increase the understanding, motivation, and performance of other cadets.

American Studies (099)

310 Introduction to American Studies (3) Explores dynamics and nature of the culture(s) of the United States through interdisciplinary study and interpretation. Considers both mainstream and minority cultures. Writing-emphasis course.

312 Popular Culture and American Politics (3) (See Political Science 312.)

320 American Cultures (3) (See Anthropology 320.)

334 Film and American Culture (3) (See English 334.)

343 Race and Ethnicity (3) (See Sociology 343.)

345 Collective Behavior and Social Movements (3) (See Sociology 345.)

355 Religion and Culture in the United States (3) (See Religious Studies 355.)

356 The 1960s in America (3) (See History 356.)

381 Introduction to Folklore (3) (See English 381.)

410 Topics in American Culture (3) Content varies.

Repeatability: May be repeated. Maximum 6 hours.

420 Political Attitudes and Behavior (3) (See Political Science 420.)

423 Geography of American Popular Culture (3) (See Geography 423.)

442 American Humor (3) (See English 442.)

450 Seminar in American Studies (3) Intensive study of a major issue in American studies scholarship.

469 Freedom of Speech (3) (See Communication Studies 469.)
Animal Science (113)

160 Introduction to Animal Science (3) Preparation of academic plans and career discussion. Introduction to structure and production principles of the food animal, horse industries. Overview of companion and alternative livestock. Market classes and grades of cattle, poultry and poultry products, lamb and wool, and swine.
Contact Hour Distribution: 3 labs.

220 Anatomy and Physiology of Farm Animals (3) Skeleton and joints; muscles; blood and microcirculation; the nervous,内分泌, cardiovascular, respiratory, and digestive systems; demonstrations of physical-chemical phenomena.
Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): Biology 130 or Biology 102.
Registration Restriction(s): Minimum student level – sophomore.

280 Biotechnology and Management Practices in Animal Production (3) Exposure to current animal agriculture management practices and biotechnique techniques as they affect beef, dairy, horse, poultry, sheep and swine industries. Includes animal behavior, restraint and welfare, computer applications, nutrients and nutrient utilization, waste management, food safety, animal reproduction, health and well being, and emerging technologies and opportunities in animal agriculture.
(WC) Contact Hour Distribution: Three 2-hour labs.

295 Horse Handling and Care (3) Proper procedures for horse-human interaction and the recommended management procedures for horse care. The basic behavioral characteristics of the horse, an understanding of his physical and mental parameters and their use in horse-human communication. Interactions include imprinting, haltering, halter training, lunging, long-line driving, bridling, bitting, round pen training, saddling, and teaching to guide. Basic care includes feed selection and management, post-natal care, restraint, foot care, dental care, grooming, loading and trailering, stall maintenance, internal and external parasite control, exercising, identification techniques, routine vaccinations and first aid. Safety for both horse and handler will be emphasized.
Contact Hour Distribution: Three 2-3 hour labs.

320 The Physiology of Reproduction and Lactation (3) Biology of sex and sexual differentiation, functional anatomy of male and female, reproduction and lactation, gametogenesis, neuroendocrinology and sex-specific reproductive efficiency and lactation; sex cycles, folliculogenesis, ovulation, spermatogenesis, fertilization, embryonic development, implantation, pregnancy, parturition, initiation of lactation and maintenance of the dry period, artificial control of reproduction and lactation. (Same as Biochemistry and Cellular and Molecular Biology 320.)
Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): Biology 130 or Biology 102.

330 Comparative Animal Nutrition (3) Nomenclature, structures, functions, utilization, and deficiency symptoms of essential nutrients in carnivores, omnivores and herbivores.
(RE) Prerequisite(s): Chemistry 130 or Chemistry 110.
(DE) Prerequisite(s): 220.

340 Principles of Animal Breeding (3) Genetic and environmental bases of animal variation. Selection and mating systems as mechanisms of genetic change. Planning breeding programs for economically important domestic species.
Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): 220.

Registration Restriction(s): Minimum student level – sophomore.

380 Animal Health Management (3) Characteristics, symptoms, prevention, and treatment of major diseases and parasites. Immunization, health regulations and herd health programs for all farm livestock species and poultry.
Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): 220.

381 Animal Nutrition and Production Systems (3) Fundamentals of production and management systems with an emphasis on nutrition in beef, dairy, pork, and poultry programs. Application of principles of nutrition, breeding, physiology, and marketing into enterprise systems. Decision-making management practices and information resources, enterprise evaluation, and comparison of production systems.
Contact Hour Distribution: 2 hours and 1 lab.
Registration Restriction(s): Not open to animal science majors.

395 Careers Seminar (1) Preparing students for career opportunities in animal agriculture including both industry and academic advancement. Topics will include resume preparation, interview skills, internship opportunities, and Web-based employment search guides.
Contact Hour Distribution: 1 hour and 2 labs.
(RE) Prerequisite(s): 320.
Registration Restriction(s): Minimum student level – senior.

420 Advanced Reproduction (3) Collection, evaluation, and preservation of ova, spermatozoa and embryos; application of methods of natural breeding and techniques of artificial insemination and embryo transfer; herd sire and dam evaluation; pregnancy determination; gestation and parturition; infertility; recent advances in theriogenology.
Contact Hour Distribution: 1 hour and 2 labs.
(RE) Prerequisite(s): 320.

430 Nutrient Evaluation and Ration Formulation (3) Ration nutrient analysis and formulation for beef and dairy cattle, sheep, horses, swine poultry, laboratory, zoo and companion animals. Mathematics and computer solutions and applications to formulating complex rations with constraints.
Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): 330.

461 Advanced Beef Cattle, Dairy Cattle, Horse, Poultry, Sheep and Swine Judging (1) Specialization in judging: evaluation, selection and presentation of oral reasons for classes of beef cattle, dairy cattle horses, poultry, sheep, and swine.
Contact Hour Distribution: 2 labs.
Grading Restriction: Satisfactory/No Credit grading only.
Registration Permission: Consent of department head.

481 Beef Cattle Production and Management (3) Integration of principles of nutrition, breeding, physiology, and marketing into complete production and management programs. Structure of industry, enterprise establishment, systems of production, production practices, and improvement programs. Management evaluated in terms of production response and economic returns. Comparisons made to small ruminant, forage-based production systems.
Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): 330 and 380.
(RE) Corequisite(s): 320 and 340.

482 Dairy Cattle Production and Management (3) Integration of principles of nutrition, breeding, physiology, and marketing into complete production and management programs. Structure of industry, enterprise establishment, systems of production, production practices and herd improvement programs. Alternatives evaluated in terms of production responses and economic returns.
Credit Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): 330 and 380.
(RE) Corequisite(s): 320 and 340.

483 Pork Production and Management (3) Integration of principles of nutrition, breeding, physiology, and marketing into complete production and management programs. Structure of industry, enterprise establishment, systems of production, production practices, and improvement programs. Management evaluated in terms of production responses and economic returns.
Credit Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): 330 and 380.
(RE) Corequisite(s): 320 and 340.

484 Poultry Production and Management (3) Integration of principles of nutrition, breeding, physiology, and marketing into complete production and management programs. Structure of industry, enterprise establishment, systems of production, production practices, and improvement programs. Management evaluated in terms of production responses and economic returns.
Credit Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): 330 and 380.
(RE) Corequisite(s): 320 and 340.

485 Horse Production and Management (3) Integration of principles of nutrition, breeding, physiology and ethology into complete production and management programs. Types of enterprises, management of feed and pasture resources, health maintenance and first aid, breeding and foaling, farm structures and equipment.
Contact Hour Distribution: 2 hours and 1 lab.
(RE) Prerequisite(s): 330 and 380.
(RE) Corequisite(s): 320 and 340.
489 Companion, Zoo, and Lab Animal Management (3) Principles of nutrition, physiology, breeding, handling, and history of breeds of common household pets, zoo animals, and animals used in scientific research. Specific species requirements and peculiarities. Laws and agencies governing use of laboratory animals. Laboratory analysis of blood metabolites commonly used to monitor health and nutritional status.

Contact Hour Distribution: 2 hours and 1 lab.

(RE) Prerequisite(s): 330 and 380.

(Re) Corequisite(s): 320 and 340.

492 Animal Science Field Study (1-6) Off-campus work experience approved by the department. Objective is to complement traditional classroom activities and give the student an opportunity to gain experience in industry. Students must submit official approval form prior to registration. The student will be evaluated on knowledge and skills and must submit a written summary after program completion.

Registration Restriction(s): Minimum student level – sophomore.

Registration Permission: Consent of department head.

493 Independent Study in Animal Science (1-3) Approved supervised study in areas not formally presented in a course offered in the department. Written proposal of study is approved by the Department of Animal Science Undergraduate Committee. After completion of study, a written report is required and this report is maintained on file in the reference room of the department.

Registration Restriction(s): Minimum student level – sophomore.

Registration Permission: Consent of department head.

494 Animal Science Teaching Assistant (1) Assist the primary instructor in laboratory instruction and demonstrations.

Grading Restriction: Satisfactory/No Credit grading only.

Registration Restriction(s): Minimum student level – senior.

Registration Permission: Consent of department head.

495 Ethics in Animal Agriculture (1) Discussion and presentations on issues related to ethics in animal research and industry.

Registration Restriction(s): Minimum student level – senior.

Anthropology (122)

110 Human Origins (3) Survey of humanity’s background, fossil primates, fossil human remains, and living races of mankind. (NS)

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

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. (SS)

210 Principles of Biological Anthropology (3) Mechanisms of biological evolution and adaptation in living and prehistoric humans.

(Re) Prerequisite(s): 110.

302 Anthropology of Religion (3) (See Religious Studies 302.)

304 Genetics and Society (3) (See Biochemistry and Cellular and Molecular Biology 306.)

305 Evolution and Society (3) (See Ecology and Evolutionary Biology 305.)

310 North American Indians (3) Comparative overview of Indian cultures of North America. Topical coverage ranges from prehistory and aboriginal lifeways to problems resulting from contact and acculturation. Writing-emphasis course.

(Re) Prerequisite(s): 130.

311 Southeastern Indians (3) Survey of Southeastern American Indian cultures at the time of European contact. Emphasis on Cherokee culture and on the social, economic, and religious organization of aboriginal groups.

(Re) Prerequisite(s): 130.

312 Appalachian Culture (3) Traditional Southern Appalachian subsistence patterns and economy, social organization, beliefs and values, folklore and customs; socio-cultural impacts of industrialization and modernization. Writing-emphasis course.

(Re) Prerequisite(s): 130.

313 Peoples and Cultures of Mesoamerica (3) Pre-Columbian and Hispanic cultures of Mexico, Guatemala, Belize, El Salvador and Honduras. Patterns of cultural continuity and cultural change throughout Mesoamerica’s history. Writing-emphasis course. (Same as Latin American Studies 313.)

(Re) Prerequisite(s): 130.

315 The African Diaspora (3) An overview of anthropological perspectives on people of African descent and the impact of an African presence on societies in the Americas. The sociocultural experiences of U.S. African-Americans and their counterparts elsewhere in the hemisphere are situated in the context of a broader diaspora. Writing-emphasis course. (Same as Africana Studies 315.)

(Re) Prerequisite(s): 130.

316 Peoples and Cultures of South America (3) An introduction to contemporary analysis and debate on South America that places the concept “culture” in historical perspective and discusses the anthropological notion of "people" within the complexity of indigenous and black social formations. Writing-emphasis course. (Same as Latin American Studies 314.)

(Re) Prerequisite(s): 130.

319 Caribbean Cultures and Societies (3) Anthropological approaches to key aspects of Caribbean history, sociocultural pluralism, racial and class stratification, patterns of economic development, and local and national-level political processes. Writing-emphasis course. (Same as Africana Studies 318.)

(Re) Prerequisite(s): 130.

320 American Cultures (3) Anthropological perspectives on cultural diversity in America, including the immigrant experience and expressions of ethnicity, intercultural relations, occupational and interest group subcultures. Writing-emphasis course. (Same as American Studies 320.)

(Re) Prerequisite(s): 130.

321 Indians of Northwest North America (3) Survey of American Indian cultures found in the Northwest Coast, Columbia Plateau, and Northern Great Basin culture areas. Writing-emphasis course.

(Re) Prerequisite(s): 130.

322 Topics in Ethnography (3) Overview of culture patterns and ethnographic research on selected social groups or culture areas.

Repeatability: May be repeated. Maximum 6 hours.

(Re) Prerequisite(s): 130.

325 Peoples and Cultures of North America (3) Survey of American Indian cultures found in the United States from 15th to 20th centuries.

(Re) Prerequisite(s): 130.

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

(Re) Prerequisite(s): 120.

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.

(Re) Prerequisite(s): 120.

363 Prehistory of Tennessee (3) Archaeological principles and theory illustrated in history of archaeological research in Tennessee and through survey of prehistoric Indian cultures from initial occupation of the state to European contact. Writing-emphasis course.

(Re) Prerequisite(s): 120.

365 Topics in Archaeology (3) Examination of selected frameworks and techniques for retrieval and analysis of archaeological materials.

Repeatability: May be repeated. Maximum 6 hours.

(Re) Prerequisite(s): 120.

373 African Religions (3) (See Religious Studies 373.)

400 Readings in Anthropology (1-6) Problem-oriented directed readings in anthropology.

Repeatability: May be repeated. Maximum 6 hours.

Registration Permission: Consent of instructor.

410 Principles of Cultural Anthropology (3) Exploration and illustration of major concepts, theories, and methods in cultural anthropology, with application to analysis of specific ethnographies.

(Re) Prerequisite(s): 130.

411 Linguistic Anthropology (3) Basic linguistic concepts applied to research in cultural anthropology, particularly investigation of relationships between language and culture. (Same as Linguistics 411.)

(Re) Prerequisite(s): 130 or Linguistics 200.

412 Folklore in Anthropology (3) Introduction to anthropological study of folklore, using folklore and folklore materials from various tribal, peasant, and complex societies.

(Re) Prerequisite(s): 130.
413 Dynamics of Culture (3) Definition and in-depth study of major forms 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, ethnographic, and contemporary cases. (RE) Prerequisite(s): 130.

414 Political Anthropology (3) Examination of the organization and dynamics of power and politics in both stateless and state-level societies. The role of symbols, rituals, and ideologies in producing and reproducing power relations. The relationship between actors (individuals) and structures. The encapsulation of traditional political forms and systems within modern states. Writing-emphasis course. (RE) Prerequisite(s): 130.

415 Environmental Anthropology (3) Overview of theoretical and methodological approaches to the study of human / environmental interactions. Impacts of environmental change on society and culture; human impacts on environmental change. (RE) Prerequisite(s): 130.

416 Applied Anthropology (3) Introduction to principles, practice and ethics of anthropology applied to practical problems in non-academic settings. Overview of career opportunities in various domains of applied anthropology. (RE) Prerequisite(s): 130.

430 Fieldwork in Archaeology (3-9) Practicum work in archaeological data recovery and analytical techniques. Repeatability: May be repeated. Maximum 9 hours. (RE) Prerequisite(s): 120.

431 Ethnographic Research (3) Conceptual and practical exploration of methods and techniques cultural anthropologists use in fieldwork. (RE) Prerequisite(s): 130.

432 Anthropology of Warfare and Violence (3) Origins and tactics of warfare; overview of cultural foundations of warfare and structural violence; and effects on communities, social institutions, environments, and social organization. (RE) Prerequisite(s): 130.

435 Historical Archaeology Laboratory (3) Laboratory procedures for the processing, identification, and interpretation of artifacts from historical sites. Artifactual material from historic East Tennessee sites will be used for class projects. (RE) Prerequisite(s): 120. Recommended Background: 361.

436 Cities and Sanctuaries of the Greek and Roman World (3) (See Classics 436.)

442 Intensive Survey of the Archaeology of the Prehistoric Aegean (3) (See Classics 442.)

443 Intensive Survey of the Archaeology of Greece (3) (See Classics 443.)

444 Intensive Survey of the Archaeology of Etruria and Rome (3) (See Classics 444.)

450 Current Trends in Anthropology (3) Analytical, integrative review of current directions of research and theory in anthropology. Repeatability: May be repeated. Maximum 6 hours.

457 Senior Honors in Anthropology (3) Research and writing of the senior honors thesis. (RE) Prerequisite(s): 357. Comment(s): B or better in 357 and 3.5 in anthropology courses required.

459 Selected Topics in Anthropology (3) Theoretical issues in anthropology for undergraduate students. Topics may include practical experience or laboratory study of anthropological materials. Repeatability: May be repeated. Maximum 6 hours. Registration Permission: Consent of instructor.

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. Writing-emphasis course. (RE) Prerequisite(s): 120.

463 Rise of Complex Civilizations (3) Development of complex societies in Old World from origins of agricultural economies to rise of States. Focus on Mesolithic, Neolithic, and Metal Age lifeways in Africa, Europe, and Asia. Writing-emphasis course. (RE) Prerequisite(s): 120.

464 Principles of Zooarchaeology (3) Basic osteological studies of major vertebrate groups, 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. (RE) Prerequisite(s): 120.

465 Urban Archaeology (3) Field archaeology and interpretation of archaeological remains on historic urban sites in the United States. Course content will include lectures and field and laboratory research on urban sites in East Tennessee. (RE) Prerequisite(s): 120. Recommended Background: 361.

480 Human Osteology (4) Intensive examination of the human skeleton. Contact Hour Distribution: 3 hours and 1 lab. (RE) Prerequisite(s): 110.

481 Museum Studies I: Museums, Purpose and Function (3) (See Art 481.)

482 Museum Studies II: Exhibition Planning and Installation (3) (See Art 482.)

484 Museum Studies III: Field Projects (1-12) (See Art 484.)

485 Oral Biology (4) Intense examination of human dentition and oral skeletal structures including dento-facial embryology/growth, histology, gross tooth morphology and pathology. (RE) Prerequisite(s): 480.

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. Registration Restriction(s): Anthropology major. Registration Permission: Consent of instructor.

491 Foreign Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Registration Permission: Consent of instructor.

492 Off-Campus Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Registration Permission: Consent of instructor.

493 Independent Study (1-15) Repeatability: May be repeated. Maximum 15 hours. Registration Permission: Consent of instructor.

494 Primate Behavior (3) Social organization and behavior of selected primates including group composition, size, and structure; patterns of mating; other social interactions; communication; and cultural behavior. Application of primate studies to human ethology. Registration Restriction(s): Anthropology major.

495 Human Paleontology (4) Intensive survey of the human fossil record from the earliest hominin remains to the earliest origins of modern human form. Registration Restriction(s): Anthropology major.

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. (Same as Africana Studies 496.) Registration Restriction(s): Anthropology major.

Arabic (127)

121 Elementary Modern Standard Arabic I (5) (See Asian Studies 121.)

122 Elementary Modern Standard Arabic II (5) (See Asian Studies 122.)

221 Intermediate Modern Standard Arabic I (5) (See Asian Studies 221.) (CC)

222 Intermediate Modern Standard Arabic II (5) (See Asian Studies 222.) (CC)

Architecture (133)

101 Introduction to the Built Environment (3) Scope and definition of the built environment in relation to contemporary society, building industry, and allied-design professions. Architectural design as a creative process. Orientation to courses and programs of the school. (RE) Corequisite(s): 171.


111 Architecture and the Built Environment (3) An introduction to architecture and the built environment for non-architecture majors. Significance of our surroundings, forces that create them. Creative aspects of design. Survey of examples from local to global. Strategies for individual and collective involvement. (AH)

121 Drawing and Perception (2) Exploration of drawing as a means of visual thinking and method of communication, addressing perceptual phenomenon. Exploration of different media, concentrating on freehand drawing. Includes line drawing, tone, shade, shadow, and depth cues. Compositional principles will be introduced. Drawings based on observation, including figure drawing and campus visits. (RE) Corequisite(s): 171.
122 Drawing and Abstraction (2) Exploration of drawing as a means of visual thinking and method of communication, addressing process of abstraction and transformation inherent in drawing. Exploration of different media and techniques of representation. Drawings based on observation, abstraction, and transformation.


172 Design Fundamentals II (4) Fundamentals of architectural design, conceiving form and space. Elements of form and space including lines, planes, volumes, void, and mass. Spatial sequence and scale. Development of architectural representation.

180 Introduction to Architecture (2) Introduction to architecture as an intellectual discipline. Design as a creative endeavor central to the discipline and its profession.

211 History and Theory of Architecture I (3) Architecture and ideas of building and community form in major world cultures from the prehistoric era to about 1500 AD. (AH)

212 History and Theory of Architecture II (3) Architecture and ideas of building and community form from 1500 AD to the mid-20th century. (AH)

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. (WC)

231 Computer Applications in Design I (3) Introduction to computer systems, software and hardware, and their application in architecture. Emphasis on learning how the computer can assist in the design process by modeling, visualizing and analyzing building designs. Introduction to drafting, three-dimensional modeling, and desktop publishing.

232 Introduction to Architectural Technology (3) Place of building technology in architectural design. Introduces concepts and theory of structures; building materials and construction; and environmental controls.

271 Architectural Design I (6) Introduction to contextual determinants in architectural design. Role of the city and the landscape in architectural design. Methods of analyzing place and form in determining design strategies. Representational skills developed including drawing, diagramming and modeling techniques.

272 Architectural Design II (6) Studies in architectural space. The role of function, habitation, movement, structure and scale as determinants of spatial form explored through a series of design projects ranging in scale from furniture to dwellings. Development of design processes, including analytical skills, diagramming, and determining design organizational strategies. Use of computer aided visualization techniques.

281 Principles of Architectural Form (6) Principles of architectural form emphasizing building configuration and order. Design of simple buildings which explore possibilities of site, use, shape materials and color.


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 the role materials and methods play in the design process.

331 Architectural Structures I (4) Structural properties of building materials under loading and stress. Mechanics of foundations, properties of cross-sections of structural members and analysis of statically determinate trusses, beams, columns and simple assemblies. (QR)

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 construction and building codes, handbooks and design tables – selection of structural members.

335 Structures in Architecture I (3) Introduction to the structural properties of materials, foundations and simple statically determinant assemblies of buildings.

336 Structures in Architecture II (3) Continuation of analysis and design of simple structures in wood, steel, and concrete. Introduction of building codes, loading tables and handbooks for selection of structural members.

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


361 Principles of Environmental Control I (3) Introduction to electrical design and wiring, lighting and acoustics in buildings.

371 Architectural Design III (6) Design synthesis. Integration of design determinants and development of building concepts.

372 Architectural Design IV (6) Design synthesis. Integration of design determinants, structure, environmental controls, materials and construction.

401 Architectural History/Theory I (3) Survey of architectural history and theory from earliest beginnings to about 1600 in Europe, Asia, and the Americas. Examination of theoretical ideas, building forms, and urban patterns in cultural and historical context.

402 Architectural History/Theory II (3) Survey of architectural history and theory from about 1600 through the present day. Examination of theoretical ideas, building forms, and urban patterns in cultural and historical context.

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.

406 Ideas in Architecture (3) Historical and critical review of the major ideas of architecture through the ages.

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

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

415 Medieval Architecture (3) History of architecture from the decline of Rome to the beginning of the Renaissance. (Same as Medieval Studies 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 History of American Architecture (3) Consideration of architecture and city planning in the United States from the pre-Columbian period until the mid-20th century.

(RE) Corequisite(s): 172.

(REF) Prerequisite(s): 231 and 232.

(REF) Prerequisite(s): 272 and 212.

(REF) Prerequisite(s): 211.

(REF) Prerequisite(s): 212.

(REF) Prerequisite(s): 213.

(REF) Prerequisite(s): 271 and 212.

(REF) Prerequisite(s): 231.

(REF) Prerequisite(s): 241.

(REF) Prerequisite(s): 251.

(REF) Prerequisite(s): 261.

(REF) Prerequisite(s): 271 and 212.

(REF) Prerequisite(s): 281.

(REF) Prerequisite(s): 291.

(REF) Prerequisite(s): 301.

(REF) Prerequisite(s): 311.

(REF) Prerequisite(s): 321.

(REF) Prerequisite(s): 331.

(REF) Prerequisite(s): 341.

(REF) Prerequisite(s): 351.

(REF) Prerequisite(s): 361.

(REF) Prerequisite(s): 371.

(REF) Prerequisite(s): 381.

(REF) Prerequisite(s): 391.

(REF) Prerequisite(s): 401.

(REF) Prerequisite(s): 411.

(REF) Prerequisite(s): 421.

(REF) Prerequisite(s): 431.

(REF) Prerequisite(s): 441.

(REF) Prerequisite(s): 451.

(REF) Prerequisite(s): 461.

(REF) Prerequisite(s): 471.

(REF) Prerequisite(s): 481.

(REF) Prerequisite(s): 491.

(REF) Prerequisite(s): 501.
198 COURSES OF INSTRUCTION

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>425</td>
<td>Special Topics in Architecture</td>
<td>(1-6) Faculty-initiated courses. Topics vary. Repeatability: May be repeated. Maximum 12 hours. Registration Restriction(s): Architecture major or interior design major.</td>
</tr>
<tr>
<td>431</td>
<td>Structural and Mechanical Applications</td>
<td>(3) Case study analysis and selection of structural and mechanical systems, investigating the conceptual integration of technical information into a unified design solution. (RE) Prerequisite(s): 332 and 342. (RE) Corequisite(s): 471.</td>
</tr>
<tr>
<td>432</td>
<td>Computer Applications in Design II</td>
<td>(3) Advanced computer-aided design using three-dimensional modeling software. Design analysis using computer animation, rendering techniques, visualization, and video. (RE) Prerequisite(s): 231.</td>
</tr>
<tr>
<td>433</td>
<td>Computer Applications in Design III</td>
<td>(3) Advanced course that integrates three-dimensional modeling and technical analysis using computers to augment building design. Independent studies under faculty direction. (RE) Prerequisite(s): 231.</td>
</tr>
<tr>
<td>445</td>
<td>Advanced Lighting</td>
<td>(3) In-depth analysis and innovative concepts in design of lighting. (RE) Prerequisite(s): 342 or 346.</td>
</tr>
<tr>
<td>462</td>
<td>Professional Practice</td>
<td>(4) Management and organizational 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. (RE) Prerequisite(s): 471.</td>
</tr>
<tr>
<td>463</td>
<td>Architectural Development</td>
<td>(3) Principles and practice of the architect as a developer. Impact of economics, finance and urban policy on the design and development of real estate.</td>
</tr>
<tr>
<td>471</td>
<td>Architectural Design V</td>
<td>(6) Project from conceptual through design development phase. Specification of component building systems including structure, mechanical, lighting and construction details. (RE) Prerequisite(s): 372. (RE) Corequisite(s): 431. Comment(s): Minimum 2.3 GPA in all design courses is required.</td>
</tr>
<tr>
<td>472</td>
<td>Architectural Design VI</td>
<td>(6) Order and form in complex buildings developed to address programmatic, structural, energy and environmental issues. (RE) Prerequisite(s): 471. Comment(s): Minimum 2.3 GPA in all design courses is required.</td>
</tr>
<tr>
<td>473</td>
<td>Architectural Photography</td>
<td>(3) Photography as a design, research, and presentation medium. Application of photographic techniques, printing and processing. Color, black and white. Registration Restriction(s): Architecture major or interior design major.</td>
</tr>
<tr>
<td>480</td>
<td>Preparation and Programming for Projects</td>
<td>(3) Formation of project statement, documentation and analysis of project data. Preparation of background and program information. Goals and concepts set forth. To be taken the semester prior to 482. (RE) Prerequisite(s): 471.</td>
</tr>
<tr>
<td>481</td>
<td>Advanced Architectural Design Topics</td>
<td>(6) Faculty-initiated design projects. Advanced architectural topics not covered under 483, 484, 485, 486, or 489. (RE) Prerequisite(s): 471. Comment(s): Minimum 2.3 GPA in all design courses is required.</td>
</tr>
<tr>
<td>482</td>
<td>Self-directed Design Project</td>
<td>(6) Student-selected project under faculty direction. Exploration of design hypothesis that informs the character of a substantial building design. Completed project will address issues of environment, structure, enclosure, use and ethical consideration of design appropriateness. 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. (RE) Prerequisite(s): 480. Comment(s): Minimum 2.3 GPA in all design courses is required.</td>
</tr>
<tr>
<td>483</td>
<td>Urban Design</td>
<td>(6) Urban design projects responding to specific community conditions. Exploration of urban issues in making and understanding the architecture of the city. (RE) Prerequisite(s): 471. Comment(s): Minimum 2.3 GPA in all design courses is required.</td>
</tr>
<tr>
<td>485</td>
<td>Development and Design</td>
<td>(6) Exploration of image making, consumerism and the allocation of scarce resources. Issues of finance, economics, urban economics, and marketing are analyzed in relation to urban and architectural design. Application of financial feasibility models. (RE) Prerequisite(s): 471 and 463.</td>
</tr>
<tr>
<td>486</td>
<td>Design of Sustainable Architecture</td>
<td>(6) Architectural design studio emphasizing concern for the environment, consideration of energy conservation techniques, and use of renewable resources. (RE) Prerequisite(s): 471. Comment(s): Minimum 2.3 GPA in all design courses is required.</td>
</tr>
<tr>
<td>489</td>
<td>Structural Innovations</td>
<td>(6) Building design with innovative structural configuration and technology. Exploration of new materials, detailing, and methods in building construction. (RE) Prerequisite(s): 471. Comment(s): Minimum 2.3 GPA in all design courses is required.</td>
</tr>
<tr>
<td>491</td>
<td>Foreign Study</td>
<td>(1-15) Research and design projects conducted in various locations abroad.</td>
</tr>
<tr>
<td>492</td>
<td>Off-Campus Study</td>
<td>(1-15) Studies conducted under direction of architect or expert in an allied profession, in service to public service organizations or agencies of government, and public groups. Credit Restriction: Not a design course elective.</td>
</tr>
<tr>
<td>493</td>
<td>Independent Study in Architecture</td>
<td>(1-6) Individual studies and projects under faculty direction. Credit adjusted to complexity and level of effort required. Repeatability: May be repeated once. Registration Permission: Consent of dean.</td>
</tr>
<tr>
<td>494</td>
<td>Foreign Studies Sketchbook</td>
<td>(1-3) Investigations of historic urban fabric and architecture in various locations abroad. Analysis and sketch records in sketchbook format required.</td>
</tr>
</tbody>
</table>

Art (140)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Studio Fundamentals: Drawing and Design</td>
<td>(3) Introduction to basic drawing media, concepts and techniques and to the elements and principles of pictorial organization.</td>
</tr>
<tr>
<td>103</td>
<td>Studio Fundamentals: Three-Dimensional Design</td>
<td>(3) Projects dealing with real space and three-dimensional materials.</td>
</tr>
<tr>
<td>150</td>
<td>The Idea of Graphic Design</td>
<td>(3) An overview of design as visual message-making and as an act of cultural interpretation. Contemporary and historic design and its forms are examined, along with an introduction to design and creative concepts, and the role of criticism and theory. Student assessment will come from exams, short writings and visual laboratory projects.</td>
</tr>
<tr>
<td>200</td>
<td>Special Topics</td>
<td>(3) Student- or instructor-initiated course offered at convenience of department. Repeatability: May be repeated. Maximum 6 hours.</td>
</tr>
<tr>
<td>295</td>
<td>Intermediate Design and Color</td>
<td>(3) Further exploration of basic techniques of two-dimensional design, with emphasis on color theory and technique. (RE) Prerequisite(s): 101 and 103.</td>
</tr>
<tr>
<td>299</td>
<td>Special Topics</td>
<td>(3) Student- or instructor-initiated course offered at convenience of department. Repeatability: May be repeated. Maximum 12 hours.</td>
</tr>
<tr>
<td>481</td>
<td>Museum Studies I: Museums, Purpose and Function</td>
<td>(3) Purposes, functions and development of museums of art, history, natural and applied science. (Same as Anthropology 481.)</td>
</tr>
<tr>
<td>482</td>
<td>Museum Studies II: Exhibition, Planning and Installation</td>
<td>(3) Exhibition concept development and implementation. Exhibition design and installation techniques. Publicity, production, matting and framing, shipping and storage. (Same as Anthropology 482.)</td>
</tr>
<tr>
<td>484</td>
<td>Museum Studies III: Field Projects</td>
<td>(1-12) Special field projects including restoration, preservation, registration, and other related research on or off campus. (Same as Anthropology 484.) Repeatability: May be repeated. Maximum 12 hours.</td>
</tr>
<tr>
<td>491</td>
<td>Foreign Study</td>
<td>(1-6) Repeatability: May be repeated. Maximum 12 hours.</td>
</tr>
<tr>
<td>492</td>
<td>Off-Campus Study</td>
<td>(1-6) Repeatability: May be repeated. Maximum 12 hours.</td>
</tr>
<tr>
<td>493</td>
<td>Independent Study</td>
<td>(1-3) Repeatability: May be repeated. Maximum 15 hours.</td>
</tr>
<tr>
<td>494</td>
<td>Individual Problems</td>
<td>(3) Repeatability: May be repeated. Maximum 12 hours.</td>
</tr>
<tr>
<td>495</td>
<td>Visiting Artist Seminar</td>
<td>(2) Study and discussion of contemporary art issues conducted by different visiting artists each semester. Repeatability: May be repeated. Maximum 8 hours. Credit Restriction: Not be applied toward the art history requirement.</td>
</tr>
<tr>
<td>499</td>
<td>Special Topics</td>
<td>(3) Student- or instructor-initiated course offered at convenience of department. Repeatability: May be repeated. Maximum 12 hours.</td>
</tr>
</tbody>
</table>
Art Ceramics (135)

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines.
Repeatability: Course may be repeated. Medium may not be repeated. Maximum 12 hours.
Registration Restriction(s): Non-majors only (not for BA and BFA – studio art majors and BFA – graphic design majors).

221 Ceramics: Handbuilding I (3) Introduction to handbuilding, glazing, clay preparation and firing.
Repeatability: May be repeated. Maximum 12 hours.
Registration Restriction(s): Studio art majors only.
Registration Permission: Consent of department.

222 Ceramics: Throwing I (3) Introduction to throwing, glazing, clay preparation and firing.
Repeatability: May be repeated. Maximum 12 hours.
Registration Restriction(s): Studio art majors only.
Registration Permission: Consent of department.

225 Portfolio Practicum – Handbuilding (3) Intense post-introductory studio experience to develop work for application to 320 (Ceramics: Portfolio Review).
Repeatability: May be repeated once.
(RE) Prerequisite(s): 221 and 222.
Comment(s): Successful completion required prior to registration for junior and senior courses.

321 Ceramics: Handbuilding II (4) Continued investigation of handbuilding with an emphasis on the development of individual ideas and expression.
Repeatability: May be repeated. Maximum 12 hours.
Registration Restriction(s): Student or instructor initiated courses to be offered at convenience of department.
(RE) Prerequisite(s): 320.

322 Ceramics: Throwing II (4) Continued investigation of throwing with an emphasis on the development of individual ideas and expression.
Repeatability: May be repeated. Maximum 12 hours.
(RE) Prerequisite(s): 321 and 322.

421 Ceramics: Advanced Handbuilding (6) Continued investigation of ceramic form with an emphasis on the development of individual direction.
Repeatability: May be repeated. Maximum 12 hours.
(RE) Prerequisite(s): 321 and 322.

422 Ceramics: Advanced Throwing (6) Continued, in depth investigation of ceramic form with an emphasis on the development of individual direction.
Repeatability: May be repeated. Maximum 12 hours.
(DE) Prerequisite(s): 320.

424 Ceramics: Clays and Glazes (3) Clay chemistry, clay bodies, glaze theory, and calculation. Formulating, mixing and testing of clay bodies and glaze formulas.
(RE) Prerequisite(s): 320.

429 Ceramics: Special Topics (3) Student- or instructor-initiated courses to be offered at convenience of department.
Repeatability: May be repeated. Maximum 12 hours.
(RE) Prerequisite(s): 320.

493 Independent Study (1-4) Repeatability: May be repeated. Maximum 15 hours.
Registration Permission: Consent of instructor.

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

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

Art Design/Graphic (136)

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines.
Repeatability: Course may be repeated. Medium may not be repeated. Maximum 12 hours.
Registration Restriction(s): Non-majors only (not for BA and BFA – studio art majors and BFA – graphic design majors).

251 Beginning Graphic Design I (3) Introduction to the elements and principles of graphic design including typography and layout. Survey of graphic design tools, materials and processes. Emphasis on visual problem-solving.
Repeatability: May be repeated. Maximum 6 hours.
(RE) Prerequisite(s): Art 101 and Art 103.

252 Beginning Graphic Design II (3) Continuation of 251 and the exploration of the elements and principles of graphic design including typography and layout. Survey of graphic design tools, materials and processes. Emphasis on visual problem-solving.
Repeatability: May be repeated. Maximum 6 hours.
(RE) Prerequisite(s): 251.

256 Individual Projects in Graphic Design (3)
Repeatability: May be repeated. Maximum 6 hours.
Registration Permission: Consent of instructor.

259 Special Topics: Graphic Design (3) Student or instructor initiated course offered at discretion of department.
Repeatability: May be repeated. Maximum 12 hours.
Comment(s): Prerequisite(s) determined by department for individual topics.

350 Graphic Design Portfolio Review (6) Review of prior work in graphic design.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated once.
(RE) Prerequisite(s): 251.
Comment(s): Successful completion required prior to registration for junior and senior courses.

351 Intermediate Graphic Design I (3) Concept development and the study of graphic design elements including typography and imagery and their interrelationships within the graphic design layout.
(RE) Prerequisite(s): 350.

352 Intermediate Graphic Design II (3) Investigation of sign, symbols, marks and identity systems.
(RE) Prerequisite(s): 351.

356 Graphic Design Production (3) Traditional and computer-generated techniques for the production of print media in graphic design. Introduction to computer systems, software and techniques.
(DE) Corequisite(s): 351.

400 Typography (3) Principles of typography as well as classical and contemporary type forms as vehicles for communication. An intensive introduction to the fundamentals of type, from individual letterforms to large bodies of textual information. Attention to formal, technological, rhetorical and historical issues.
(DE) Prerequisite(s): Art 295 and Art Design/Graphic 251.

405 Computer Enhanced Graphic Design (3) Exploration of new technologies and their significance to graphic design.
Repeatability: May be repeated. Maximum 12 hours.
(DE) Corequisite(s): 351 and 356.

410 Advanced Typographic Investigation (3) Expands on principles introduced in Typography (Art Design/Graphic 400). Projects will include work in reflective as well as electronic environments with an emphasis on personal exploration.
(DE) Prerequisite(s): 400.

425 Illustration (3) Develops skills and critical analysis for effective visual communication. Projects will explore the relationship between image and meaning. Students will explore a variety of media as they develop a personal visual vocabulary.
Repeatability: May be repeated. Maximum 6 hours.
(DE) Prerequisite(s): Art 295 and Art Design/Graphic 251.

444 Graphic Design Center Practicum (3) Practical work experience in a student-managed, on-site studio.
Repeatability: May be repeated. Maximum 6 hours.
Registration Permission: Consent of instructor.

450 Design in Culture (3) A consideration of design as an act of cultural interpretation. Historic and contemporary design and design issues are examined through presentations, discussions, readings, and writings. Student assessment will come from writing, projects, presentations and contributions to class discussion.

451 Advanced Graphic Design (3) Theory and techniques of visual problem-solving as applied to advanced applications of graphic design.
(RE) Prerequisite(s): 352.

452 Graphic Design Seminar (3) Discussion of design and professional issues including politics, economics, and ethics for the graphic designer. Culminates in a student-initiated project.
(RE) Prerequisite(s): 451.

455 Graphic Design Professional Seminar (3) Professional practices including client relationships, design management and business practices. Assembly, organization and editing of the professional portfolio.
(RE) Corequisite(s): 452.

456 Graphic Design Practicum (1-12) Practical work experience in the graphic design field. Must be prearranged with the department.
Repeatability: May be repeated. Maximum 12 hours.
(RE) Prerequisite(s): 351 and 356.
Art Education (141)

301 Foundation of Art Education (3) Basic philosophy and structure including directed learning activities in art appreciation, and teaching methodology. 
Registration Permission: Consent of instructor.

302 Multiculturalism in Visual Art (3) Selected cognitive and productive experiences involving multicultural visual art. 
Registration Permission: Consent of instructor.

303 Concepts of Sculpture and Crafts (3) Processes in teaching of sculpture and crafts including pertinent literature and research. 
(Re) Prerequisite(s): 301.

350 Field Experience (1) Tasks related to teaching and to teacher roles. 
Grading Restriction: Satisfactory/No Credit grading only. 
Repeatability: May be repeated. Maximum 2 hours. 
Registration Restriction(s): Qualification – admission to teacher education.

400 Curriculum Planning and Teaching Strategies (3) Program development, instructional methods, professional literature, contemporary issues, simulation and micro teaching situations. 
(Re) Prerequisite(s): 301. 
Registration Restriction(s): Qualification – admission to teacher education.

Art History (139)

162 Art of Africa, Oceania, and Pre-Columbian America (3) Survey of the traditional arts of the cultures of Black Africa, the Pacific and the Americas (focusing primarily on the period before the European conquest). Sculpture, painting, pottery, textiles, architecture and human adornment will all be examined. (Same as Africana Studies 162.) (AH)

167 Honors: Art of Africa, Oceania, and Pre-Columbian America (3) Consent of instructor required. Survey of the traditional arts of the cultures of Black Africa, the Pacific and the Americas. Study grounded in reading, writing and discussion. Writing-emphasis course. (AH)

172 Western Art I (3) Major monuments in western art with emphasis on Europe from prehistory through the Middle Ages. (AH) 
Contact Hour Distribution: 2-hour lecture and 1-hour discussion each week.

173 Western Art II (3) Major monuments in the history of European and American art from the Renaissance to the present. (AH) 
Contact Hour Distribution: 2-hour lecture and 1-hour discussion each week.

177 Honors: Western Art I (3) Consent of Department required. Major monuments in Western art with emphasis on Europe from prehistory through the Middle Ages. Study grounded in reading, writing, and discussion. Writing-emphasis course. (AH)

178 Honors: Western Art II (3) Consent of Department required. Major monuments in the history of European and American art from the Renaissance to the present. Study grounded in reading, writing, and discussion. Writing-emphasis course. (AH)

183 Asian Art (3) Selected works of painting, sculpture, architecture, and other forms in India, China, Japan, and to a lesser extent, Korea and Southeast Asia from antiquity through the 19th century. (AH)

187 Honors: Asian Art (3) Consent of instructor required. Selected works of painting, sculpture, architecture and other forms in India, China, Japan, Korea and Southeast Asia, from antiquity through the 19th century. Study grounded in reading, writing, and discussion. Writing-emphasis course. (AH)

279 Special Topics in Art History (3) Student or instructor-initiated course offered at convenience of department. 
Repeatability: May be repeated. Maximum 12 hours. 
Registration Restriction(s): Qualification – admission to teacher education.

376 Seminar in Art History (3) Variable theme; emphasis on methodology and skills in writing. Required for art history majors. Writing-emphasis course. 
Repeatability: May be repeated with consent of instructor. Maximum 6 hours. 
Recommended Background: 12 hours of art history courses. 
Registration Restriction(s): Minimum student level – junior.

403 History of Photography (3) Survey of the history of photography from the introduction of the daguerreotype and calotype to more recent trends. Emphasis will be placed on aesthetics and the use of photography as a medium for artistic expression. 

411 Art of South and Southeast Asia (3) Survey of the art and architecture of the Indian subcontinent and Southeast Asia from 2000 BC to the 20th century. The major achievements of each period are examined in relation to their religious, political, and social contexts. Writing-emphasis course.

415 Art of China (3) A survey of the art and architecture of China from the Neolithic period to the 20th century. The major achievements of each period are examined in relation to their religious, political, and social contexts. Writing-emphasis course.

416 Chinese Art of the 20th and 21st Centuries (3) Survey of Chinese art from the late 19th century through the present. Hong Kong, Taiwanese, and expatriate artists are also considered. Writing-emphasis course.

419 Art of Japan (3) Survey of the art and architecture of Japan from the Neolithic period to the 20th century. The major achievements of each period are examined in relation to their religious, political, and social contexts. Writing-emphasis course.

425 Early Christian and Byzantine Art to 1350 (3) Art in Italy and the Eastern Empire from the beginnings of Christian art to c. 1350. Mosaic and painting, sculpture and architecture. Writing-emphasis course. (Same as Judaic Studies 425.)