In the Green Memorial Room are exhibits on the history of Knoxville, the University and East Tennessee. Changing temporary Lobby exhibits and other exhibits in the Museum are installed throughout the year.

**ART**  
Art exhibitions of international, national, regional, and local artists and craftsmen are sponsored on a regular basis by the UT Department of Art in gallery of the Art and Architecture Building.  
**Arrowmont School of Arts and Crafts,** Gatlinburg, Tennessee, displays works by faculty and students during the summer months.

**Christmas Art Sale** is an annual event sponsored by the Department of Art and held in the Art Gallery of the Museum in early December. Students, faculty, and regional artists display handmade works for purchase in time for Christmas. Numerous art exhibitions are scheduled in the Art Gallery throughout the year.

**Ralph E. Dunford Art Collection** and the Marian G. Heard Crafts Collection are housed and exhibited in the University Center. These collections are supplemented each year with purchases made possible through student programs. Art commissions by area artists are emphasized by the selection committee.

**MUSIC**  
**UT Choral Groups** consist of Concert Choir, University Chorus, Chamber Singers, and UT Singers. These groups are open to all students by audition, except University Chorus which does not require auditions.

**UT Singers** are known as the University's "Good Will Ambassadors." Among the many projects of this group are the annual statewide tour each spring and tours abroad on alternate years.

**UT Opera Theatre and Workshop** presents three season performances ranging from varied program of operatic music ranges from one-act to complete three-art operas with symphonic accompaniment, and from television opera to selected scenes from the classical repertory.

**UT Symphony Orchestra** plays several concerts on campus yearly as well as serving as orchestra for opera and choral productions.

**UT Bands.** UT's marching band, celebrated as the "Pride of the Southland," presents outstanding entertainment on football Saturdays at both home and out-of-town games.

During winter and spring quarters, the band is divided into two concert groups which tour the South: a variety pep band that performs at football games.

**Concerts**  
**Campus Entertainment Board** is a student and staff committee with the exclusive responsibility to sponsor popular entertainment on campus through a major concert series, a mini-concert series, and the much smaller Guest Artist series.

**Cultural Attractions Committee.** A student, faculty, and staff committee, this group is responsible for the presentation of programs in the arts to include dance, music, and theatrical production.

**LECTURES**  
Each quarter the Issues Committee presents programs around a current theme. The programs are centered around speakers who are considered experts and represent diverse points of view on the designated topic.

**BROADCASTING**  
**WUOT** is a public radio station operating on 91.9 mHz from Chattanooga, serves the public radio needs and interests of people in East Tennessee with cultural, informational, and educational programs. WUOT broadcasts in stereo with 100,000 watts power and WUTC broadcasts with 50,000 watts power. The stations are on the air 24 hours each day with a classical, fine arts format designed to enrich and improve the quality of life for those within the receptance range. Programming includes classical, folk, and jazz music; news and public affairs; drama; documentaries; discussion and exposition of current events; and other programs of social significance.

**WUTC** is an affiliate of National Public Radio and the Southern Educational Communication Association radio division. WUTC is an associate member of both organizations. WUOT meets the Corporation for Public Broadcasting criteria for full service operation as a public radio station; WUTC is in process of meeting the criteria.

**Annual Faculty Phi Kappa Phi Lectures**  

**Athletics**  
The University of Tennessee, Knoxville, encourages athletics as a part of its educational program. Men's intercollegiate sports are directed by the Department of Intercollegiate Athletics, George R. Woodruff, Director. Women's intercollegiate sports are administered through the Division of Student Affairs and are under the direction of the Department of Intercollegiate Athletics for Women, Joan Cronan, Director.

There are men's teams in football, basketball, cross country, indoor and outdoor track and field, baseball, swimming, wrestling, tennis, and golf. Intercollegiate games are played according to the rules of the National Collegiate Athletic Association (NCAA) and the Southeastern Conference (SEC). Eligibility for participation is determined by the NCAA, SEC, and the University faculty.

There are women's teams in basketball, swimming, tennis, volleyball, cross country, and indoor and outdoor track and field.

Intercollegiate varsity games are played according to the rules of the NCAA and the SEC. Eligibility for participation is determined by the NCAA, the SEC, and the University faculty.

A varied intramural and sports club program is provided for all students. These programs are directed by the Office of Recreation and are housed at the Student Aquatic Center.

**NEYLAND STADIUM**  
Neyland Stadium, the University's football stadium, was named in memory of the late General Robert R. Neyland, longtime football coach and athletics director. Shields-Watkins Field, the football field, is named in honor of William S. Shields, former member of the University Board of Trustees, and his wife.

The stadium, built and developed by the Department of Athletics over a period of years, can now accommodate over 91,249 spectators.

**STOKELY ATHLETICS CENTER**  
The hub of the University's sports program is Stokely Athletics Center, which houses a 12,700-seat basketball arena and a fine indoor track. Also located here are coaches' offices, dressing rooms for all sports, and a Hall of Fame room.

**OTHER FACILITIES**  
The University is proud, too, of its Tom Black Track, host to regional and national meets and built to Olympic specifications. Hudson Field, baseball field and stadium seating 1,500 fans in addition to providing dugouts and press box facilities, is one of the best complexes in the conference. Also, new tennis courts afford an excellent vantage point for spectators.

**Student Publications**  
A number of student publications are printed during each school year to serve as sources of information for new students, to report the many events of interest to the campus community, and to record the year's activities.
The Daily Beacon, a student newspaper, The Volunteer, yearbook of campus activities, and The Phoenix, a quarterly literary magazine, are sponsored by The University of Tennessee Student Publications Board.

Other student publications are: Sorority Scope, published annually by the Panhellenic Council to provide information about the sororities at the University. IFC Rush Brochure, published annually by the Interfraternity Council to acquaint male students with the fraternities. The Tennessee Engineer, published by students and faculty of the College of Engineering to inform students and alumni of progress in the engineering field. The Tennessee Farmer, published quarterly by the College of Agriculture Student-Faculty Council for those students and alumni interested in developments in agriculture. The Tennessee Law Review, published quarterly by students of the College of Law.

Traditions

Traditions play an important part in the life of a University student by recalling the history and heritage of the past and by setting examples for future achievements.

For instance, the Volunteer Symbol, spirit of the state and University, is ever present during the student's campus life. This traditional symbol admonishes would-be leaders to hold their "torch" high, shadowing themselves to give light to others. It is this symbolic "torch" which first gives the new student a glimpse of one of the many traditions at the University.

But traditions at the University may be light-hearted as well as serious. Among the less serious traditions are three annual all-student productions which have become part of the University way of life. These are the noise and bustle of Homecoming, the lilt and melody of All-Sing, and the spangle and wit of Carnicus.

Homecoming is a time when former students return to the campus to visit and to renew old friendships. This is also the time when alumni have an excellent opportunity to interact and see what students are saying and doing.

All-Sing, begun in the early 1930s to encourage interest in harmony groups, features outstanding singing groups representing campus organizations. Carnicus, which began as a parade and presentation of a Carnival Queen, has evolved through the years to the present form of competitive skits presented by campus organizations. This entertainment event features skits chosen for their humor, continuity, and perfection of presentation.

The Memorial Research Center and Hospital

The University of Tennessee Memorial Research Center and Hospital is a modern medical facility located just off the Alcoa Highway in Knoxville. The 520-bed general hospital provides patient care and training programs for interns, residents, medical students, nurses, dietitians, medical technologists, x-ray technicians, and ancillary health personnel. Out-patient services are furnished to both area residents and UTCHS and UTK students. A modern medical library is available for student and physician use. The Research Center conducts an active and vigorous research program that centers on hematological and oncologic problems. Excellent facilities for animal and laboratory experimentations are available. Postgraduate studies are pursued in cooperation with other life-sciences departments of the University. Special clinical investigations and the testing of experimental drugs involve both research and hospital staff and facilities. A continuing seminar and conference program presented by hospital and research staff and visiting lecturers serves to acquaint local medical and life-science workers with the most recent scientific developments.

University Publications

The various colleges, departments, and continuing education units composing the University issue many publications dealing with their educational, research, and public service programs. In addition, several publications are issued on a University-wide basis.

The University of Tennessee Record includes Undergraduate Catalog, Graduate Catalog, Report on Research, Publications, and Creative Achievements; The President's Report, The Library Development Report; and other publications of a record nature. The Torchbearer, issued four times a year, contains news, pictures, and other information about UT's teaching, research, and continuing education activities and is distributed to alumni, faculty and staff, and friends of the University. Other publications on programs of the institution may also be issued on a University-wide basis in response to requests of the various colleges, departments, and continuing education units. All of the publications are for free distribution.

University publications are under the general supervision of The University of Tennessee, Knoxville, Publications Committee appointed by the Chancellor of the University. The operating office for this committee is the Publications Service Bureau, located in the Communications and University Extension Building. Technical services of the Publications Service Bureau are offered to all colleges, departments, and other units of the University system needing assistance with publication design, artwork, copyreading, editing, proofreading, and preparing specifications for printers. These services assist University departments in issuing the highest quality of publications possible within their printing budgets.

Learning Research Center

Recognizing that the learning process is exceptionally complex, the University established the Learning Research Center in 1964.

Its primary purpose is to encourage faculty members to utilize the results of research in creating arrangements and conditions for learning.

The Learning Research Center publishes the Teaching-Learning Issues quarterly which circulates throughout the University system and on other campuses across the nation.

The University of Tennessee Press

The University of Tennessee Press is the institution's agency for the publication of scholarly books and monographs, non-fiction works of general and regional interest, and specialized textbooks for Tennessee and the Southeast. Manuscripts are solicited from University personnel and other authors. The Press imprint is controlled by an Editorial Board, to which recommendations are made by the director acting with the counsel of scholarly appraisers, and the books are distributed on a sales basis. The Press office is located in the Communications and University Extension Building.

Student Government Association

Composed of the Student Senate, the Academic Council, and the Graduate Student Council, the Student Government Association is the governing body of the students at UTK. Some objectives of the S.G.A. are to provide a vehicle for responsible and effective student participation in the organization and operation of student life and to promote the recognition of student rights and responsibilities.

The president of the student body serves as chairperson of the Student Senate while the vice president administers the student services staff (including the Legislative Interest Groups, communications staff program, and voter registration). Student Senate members are elected in the spring quarter to represent geographical areas of the campus as well as various student organizations. The Academic Council and Graduate Student Council representatives are elected from the academic colleges and graduate student programs, respectively. Offices of the S.G.A. are located in room 341 of the University Center.
Graduate Studies

The College of Law
Kenneth L. Penegar, Dean
Mary Jo Hoover, Associate Dean
Julia P. Hardin, Assistant Dean
N. Douglas Wells, Assistant Dean

The College of Law has, since 1890, continuously sought to provide high quality legal education in a university community. The college offers a professional curriculum leading to the degree of Doctor of Jurisprudence. The College of Law and the College of Business Administration offer a coordinated dual degree program leading to the conferment of both the Doctor of Jurisprudence and the Master of Business Administration degrees.

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

College of Veterinary Medicine
Hyram Kitchen, Dean
W. H. Grau, Jr., Associate Dean
C. F. Reed, Jr., Associate Dean

The College of Veterinary Medicine, established in 1974, offers a professional curriculum leading to the degree of Doctor of Veterinary Medicine (D.V.M.). The college offers graduate studies leading to the degrees of Master of Science (M.S.) and Doctor of Philosophy (Ph.D.). 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 from the Director of Admissions, 202 Student Services Building, The University of Tennessee, Knoxville, Tennessee 37996.

Applications must be received by January 15 of the year of expected 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.

The Graduate School
Clarence W. Minkel, Vice Provost and Dean of the Graduate School
Mary P. Richards, Associate Dean of the Graduate School
Thomas H. Klintz, Assistant Dean of the Graduate School
Diana Lopez, Director, Graduate Admissions and Records
Clea Greenawalt, Assistant Director, Graduate Admissions and Records

The University of Tennessee, Knoxville, is the official land-grant institution for the State of Tennessee. It is a comprehensive institution offering a wide range of graduate programs leading to the Master's and doctoral degrees. The University offers Master's programs in 112 fields of specialization and doctoral work in 52. Approximately 6,000 graduate students are enrolled, both on and off campus. Administration of graduate student policies and regulations, and associated record keeping, is the responsibility of the Dean of the Graduate School. Much of the day-to-day administration of graduate study is conducted by department heads or faculty advisors and committees responsible for particular programs. In addition to departmental units, numerous interdisciplinary programs, institutes and centers have been developed on campus and in locations throughout the state.

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

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

Graduate School of Biomedical Sciences
W. E. Barnett, Director
R. J. Preston, Associate Director

Full-Time Faculty
Professors:
D. Billen, Ph.D. Tennessee; D. E. Olins, Ph.D. Rockefeller.
Research Associate Professor:
M. D. Mamrack, Ph.D. Baylor.

Research Professor:
Research Associate Professor:
C. T. Hadden, Ph.D. Washington.

Research Assistant Professor:
E. A. Hiss, Ph.D. Notre Dame.

The Graduate School of Biomedical Sciences publishes supplementary information in addition to the regular Graduate Catalog. All inquiries concerning admission should be addressed to: Director, The University of Tennessee-Oak Ridge Graduate School of Biomedical Sciences, Biology Division, ORNL, P.O. Box Y, Oak Ridge, Tennessee 37830.

Consult the Graduate Catalog for listing of graduate level courses.
<table>
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<th>College of Agriculture</th>
<th>DEGREE</th>
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<tr>
<td>Agricultural Economics</td>
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<td>M.S., PH.D.</td>
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<td>Agricultural Engineering</td>
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<td>M.S.</td>
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<td>Agricultural Extension</td>
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<td>M.S.</td>
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<tr>
<td>Agricultural Mechanization</td>
<td>M.S., PH.D.</td>
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<tr>
<td>Animal Science</td>
<td>M.S.</td>
<td>M.S.</td>
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<tr>
<td>Entomology and Plant Pathology</td>
<td>M.S., PH.D.</td>
<td>M.S., PH.D.</td>
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<td>Food Technology and Science</td>
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<td>Forestry</td>
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<td>M.S.</td>
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<tr>
<td>Ornamental Horticulture and Landscape Design</td>
<td>M.S.</td>
<td>M.S.</td>
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<tr>
<td>Plant and Soil Science</td>
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<td>M.S., PH.D.</td>
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<tr>
<td>Wildlife and Fisheries Science</td>
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<td>Statistics</td>
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<td>Communications</td>
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<td>Adult Education</td>
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<td>Agricultural Education</td>
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<td>Art Education</td>
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<td>Business Education</td>
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<td>College Student Personnel</td>
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<td>Curriculum</td>
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<td>Education</td>
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<td>Guidance</td>
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<td>Health Education</td>
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<td>Mathematics Education</td>
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<td>Recreation</td>
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<td>Science Education</td>
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<td>Social Science Education</td>
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<td>Vocational-Technical Education</td>
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<td>Consumer Studies and Housing; Public Policy</td>
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<tr>
<td>(Memphis, Nashville, and Knoxville)</td>
<td>M.S.S.W., Ph.D.</td>
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Comparative and Experimental Medicine

Joint Coordinating Committees: H. Kitchen (Chairperson); J. E. Fuhr, J. E. Lawler, R. L. Michel.

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

Medical Biology

UNDERGRADUATE

4110-20-30 Undergraduate Research Participation (2) Research participation in medical research projects under supervision of faculty. Students may conduct their own research projects within designated areas. Prereq: Junior or senior standing; prior consent of faculty member. S/NC grading only.

4210 Introduction to The Study of Cancer (3) Lectures, classroom discussion, and case reports surveying the major topics of oncology. Prereq: Bio 3110-20 or consent of instructor.

4310 Introduction to Hematology (4) Pathophysiology of the blood and the blood forming systems. Lectures, class discussions and demonstrations. Prereq: Upper division biology background to include histology and/or general anatomy.

4430 Clinical Genetics (5) Lecture and discussion of human genetic disorders using case presentations. Prereq: General biology and general genetics background or consent of instructor.

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

Energy, Environment, and Resources Center

Director: E. W. Colglazier, Jr., Ph.D. California Institute of Technology

The Energy, Environment, and Resources Center was created to encourage interdisciplinary studies at UT, directed at solutions to problems related to energy and the environment. The Center provides assistance to faculty interested in developing research and public service projects, manages research and development projects that involve several disciplines, and assists Tennessee government and industry in specific problems related to energy and environment. It also participates in the Statewide Consumer Education Program, especially in developing materials for the program.

Graduate School of Library and Information Science (620)

Ann E. Prentice, Director

Professors:

Associate Professors:

Assistant Professors:
M. H. Ramsey, M.S. South Carolina; M. S. Stephens, Ph.D. North Texas State.

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

The Undergraduate Program

The undergraduate library education program leads to a minor in the College of Education or the College of Liberal Arts. Students in other colleges may elect a minor in library and information science with the approval of their faculty advisors. The undergraduate minor is planned for the following groups of people: (1) students preparing for positions as school librarians in elementary and secondary schools; (2) teachers who wish to become better acquainted with books and other instructional materials; (3) school administrators who wish to explore the place of the library in the instructional program; (4) prospective candidates for the graduate program in library education; (5) persons seeking a position at the level of Library Associate as described in the manpower policy of the American Library Association.

The minimum requirements for a full-time position as school librarian in the state of Tennessee (both elementary and secondary) can be met through fulfilling the requirements for teacher certification and completion of the following library courses: 3510, 3520, 3530, 4140, 4150, 4270, 4430, and 4750.

The Graduate Program

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

UNDERGRADUATE

3510 Books and Related Materials for Children (3) Readings based on materials for children in leisure time or classroom activities; criteria for selecting books, magazines, recordings, films and related objects for encouraging reading. Undergraduate credit only. Prereq: Admis- sion to teacher education or junior standing in College of Liberal Arts. (Same as Educ. C & I 3510.)

3520 Books and Related Materials for Young People (3) Basically same approach as 3510, but adapted to needs and interests of teenagers. Undergraduate credit only. Prereq: Admission to teacher education or junior standing in College of Liberal Arts. (Same as Educ. C & I 3520.)

4140 Libraries and Librarianship (3) Librarianship as an occupation; its organization, responsibilities, problems, and prospects.

4150 School Library Administration (3) Objectives, functions, and place of school library; relationship to local and state services; cooperative planning for quarters and materials; evaluation. (Same as Educ. C & I 4150.)

4270 Organization of Library Collections I (6) Acquisitions, cataloging, and maintenance of library collections.

4310 History of the Book (3) History of writing and various methods of bookmarking from earliest times through 19th century.

4320 Adult Materials and Reading Interests (3) Fiction and subject categories, popular and standard; evaluation of materials to meet adult interests; consideration of selection aids.

4330 Introduction to Reference Materials (3) Basic information sources and services for all libraries.

4750 Utilization of Instructional Media (3) (Same as Educ. C & I 4750 and Vocational-Technical Education 4750.)

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

Life Sciences


The programs leading to the M.S. and Ph.D. degrees in Life Sciences are interdepartmental and intercollegiate programs which augment the programs of individual departments.

The graduate program in Life Sciences supports studies and research in the following concentrations: animal physiology, cellular and molecular biology, environmental toxicology, ethology, plant physiology/biochemistry, and reproductive and developmental biology. Students interested in any of these areas should contact either the chairperson or the director of the area of interest. For complete information, refer to the Graduate Catalog.

Graduate School of Planning (782)

J. A. Spencer, Director

Professors:

Associate Professor:
G. E. Bowen, M.A. George Washington.

Assistant Professors:
D. Arbelt, Ph.D. Cornell; P. Fisher, Ph.D. Florida State; A. Loeb, Ph.D. Missouri.

The Graduate School of Planning offers a two-year graduate course leading to a degree of Master of Science in Planning.

UNDERGRADUATE

4100 Survey of Planning (3) History of city development and of planning with special attention to the U.S. experience in urban and other levels of planning. State of the art, the process, the comprehensive plan, and the implementation on devices. Planning issues in society. Not for credit for Master of Science in Planning degree. (Same as Urban Studies 4100.)

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

Radiation Biology (844)

Consult the Graduate Catalog for listing of graduate level courses.
Graduate School of Social Work (905)

Ben P. Granger, Dean
Lou M. Beasley, Branch Director, Nashville
Roger M. Noce, Branch Director, Knoxville
M. Kate Mullins, Branch Director, Memphis

Professors:
B. P. Granger (Dean), Ph.D. Brandeis; M. H. Bloch, M.S. Ohio State; R. C. Bonovich, D.S.W. Washington (St. Louis); W. G. Fryer, Ed.D. Columbia; G. McLamar (Emeritus), M.S.W. Tennessee; M. K. Mullins, Ph.D. Chicago; R. M. Noce, D.S.W. Tulane; B. Orchard (Emeritus), M.S. Western Reserve; H. Rubenstein, Ph.D. Chicago; S. W. Spencer (Emeritus), M.S. New York School of Social Work.

Associate Professors:
G. W. Ayres, D.S.W. Tulane; L. M. Beasley, Ph.D. Denver; W. J. Bell, D.S.W. Tulane; J. R. Cates, Ph.D. Michigan; M. Celinger, Ph.D. Washington; C. T. Cuthberts, D.S.W. Tulane; J. C. Eades, Ph.D. Southern Illinois (Carbondale); C. Faier, Ph.D. Michigan; M. D. Fett, Ph.D. Pittsburgh; R. K. Green, J.D. Tennessee; C. F. Hirston, Ph.D. Western Reserve; W. D. Harrison, Ph.D. Minnesota; H. Hinayama, D.S.W. Pennsylvania; A. E. Moses, D.S.W. California (Berkeley); R. B. Rowen, Ph.D. Arizona; N. P. Tate, Ph.D. Brandeis; H. H. Vaughn, Ed.D. Memphis State; A. R. Wachter, M.S.S.W. Tennessee; C. S. Wilks, Ph.D. St. Louis; P. G. Zarbock, M.S.W. Wisconsin.

Assistant Professors:
P. M. Campbell, M.S.S.N. Tennessee; J. Charing, Ph.D. Peabody; J. C. Collier, M.S.W. Tulane; H. F. Coyle, Ph.D. Western Reserve; L. C. Faust, M.S.S.W. Tennessee; A. R. Ford, M.S.W. Alliana; V. A. Gates, M.S.S.W. Tennessee; J. Jennings, Ph.D. Michigan; D. C. Johnston, M.S.W. California (Berkeley); C. Lowry, M.S.S.W. Tennessee; J. R. Michael, M.S.W. Ohio State; M. P. Strong, M.S.W. Tulane.

The University of Tennessee School of Social Work is a fully accredited two-year graduate professional school, with a program (thesis or non-thesis option) leading to the degree of Master of Science in Social Work. The full two-year curriculum is offered in all three branch locations. The School also offers a Doctor of Philosophy degree with a major in Social Work. This newly approved Ph.D. program began Fall Quarter 1983.

A special bulletin describing the facilities, admission, fees, and degree requirements is obtainable from The School of Social Work, Henson Hall, Knoxville, Tennessee 37996-3353.

Consult the Graduate Catalog for listing of graduate level courses.

Space Institute

Kenneth E. Harwell, Dean
Arthur A. Mason, Associate Dean

Professors:
G. W. Braun (Emeritus), Ph.D. Goettingen; L. W. Crawford, Ph.D. Cincinnati; J. B. Dicks, Jr.*, Ph.D. Vanderbilt; F. W. Donaldson, Ph.D. Texas; W. Frost, Ph.D. Washington; B. H. Goethert (Emeritus), Ph.D. Technical University of Berlin; K. E. Harwell, Ph.D. California Institute of Technology; E. C. Huobschimann, Ph.D. Texas; M. Kuroseka, Ph.D. California Institute of Technology; A. A. Mason, Ph.D. Tennessee; M. K. Newman (Emeritus), Ph.D. Columbia; T. Paludan, Ph.D. Denver; K. C. Reddy, Ph.D. Indian Institute of Technology (India); F. Shahrokh, Ph.D. Oklahoma; C. H. Weaver (Dean, Space Institute; Vice President for Continuing Education), Ph.D. Wisconsin, P.E.; M. A. Wright, Ph.D. Wales; J. M. Wu, Ph.D. California Institute of Technology; Y.C.L. Wu, Ph.D. California Institute of Technology; R. L. Young, Ph.D. Northwestern, P.E.

Associate Professors:

Assistant Professors:
B. Antar, Ph.D. Texas; J. M. Carter, Ph.D. Missouri; J. E. Caruthers, Ph.D. Georgia Institute of Technology; R. J. Dose, Ph.D. Case Institute of Technology; T. C. Powell, Ph.D. Kentucky; V. K. Smith, III, Ph.D. Georgia Institute of Technology.

*Alumni Distinguished Service Professor

The Space Institute is an interdisciplinary institute of graduate study and research offering academic programs leading to the M.S. and Ph.D. degrees in selected areas of engineering and the aerospace and physical sciences. Further information concerning the Institute may be obtained from the Dean, The University of Tennessee Space Institute, Tullahoma, TN 37388.

Aviation Systems (169)

The University of Tennessee Space Institute offers a program leading to the Master of Science with a major in aviation systems. The aviation systems program is designed for those who possess Bachelor's degrees in engineering or science and who wish to study under a "systems philosophy" toward careers in research and development or administration in various phases pertinent to aviation. The program features 18 quarter hours of major field credit in various aspects of aviation systems, six or more quarter hours of credit in each of the areas of research development and administration, and electives which permit further specialization in either area.

Consult the Graduate Catalog for listing of graduate level courses.

Transportation Center

Director:
M. S. Bronzini, Ph.D. Pennsylvania State, P.E.

Associate Director:
B. P. Middendorf, Ph.D. Tennessee.

Assistant Directors:
J. D. Beeson, B.S. Emporia
D. H. Jones, M.S. Tennessee, P.E.

The Transportation Center, utilizing an interdisciplinary approach to transportation research, brings together both University faculty and students in a setting conducive to the solution of problems associated with the transportation of goods and people. The Center provides support for undergraduate and graduate students, as well as faculty, in projects associated with research in the field of transportation. Support, while providing needed financial assistance to students, enables the Transportation Center to undertake research that ultimately contributes to the solution of the nation's transportation problems.

Water Resources Research Center

William F. Brandes, P.E., Director

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

W. W. Armistead, Vice President
B. H. Pentecost, Assistant Vice President

The Institute of Agriculture traces its history to 1869 when the University was designated as Tennessee's Federal Land-Grant Institution. Under terms of the Federal Land-Grant Act, the University was enabled for the first time to offer instruction in agriculture. This later was expanded to include research for the development of new knowledge and extension for dissemination of such knowledge to rural people. Today, the Institute has four main divisions: College of Agriculture, College of Veterinary Medicine, Agricultural Experiment Station, and Agricultural Extension Service. In addition to agriculture and veterinary medicine the Institute conducts research and extension programs in home economics.

Agricultural Experiment Station

Dorsey M. Gossett, Dean
Thomas J. Whitley, Associate Dean
John I. Sewell, Assistant Dean

The Agricultural Experiment Station was established in 1887 by an act of Congress known as the Hatch Act. The purpose of the Experiment Station is to promote fundamental and applied research on all problems primarily affecting the people of Tennessee, but also having national and international implications. The research program embraces studies of the productivity of soils, plants, animals, other capital and people and the combination of these resources necessary to maintain a viable agriculture. Specific research projects relate to development of new and improved crop varieties, insect, disease, and weed control methods, cultural and harvesting techniques, and improved genetics, nutrition, physiology and management of livestock. Other studies deal with various aspects of processing and distributing food and fiber, consumer preferences, food safety and nutritional needs and maintenance of institutions to serve people.

The results of investigations are carried to the clientele in the form of bulletins, circulars, and reports through the Agricultural Extension Service, and the state educational system through the Colleges of Agriculture and Education.

Headquarters as well as the Main Station of the Agricultural Experiment Station are located at Knoxville. Eleven branch stations are located across the state. These stations are essential as research laboratories to test the performance of crop and livestock enterprises grown under different soil, climatic, and environmental conditions. The locations of the Branch Stations are as follows:

- **Ames Plantation** near Grand Junction includes 18,500 acres (about 10,000 acres in forest). The resources are held in trust by the Hobart Ames Foundation for use by the Institute of Agriculture. Large scale experiments involve forestry, farm management, crop production, and genetics and management of beef cattle and swine.
- **Dairy Experiment Station** near Lewisburg is operated in cooperation with USDA/SEA/AR. Major emphases are genetics, physiology, nutrition, and management of jersey cattle. Production, handling and preservation of feed for dairy cattle are also being evaluated along with waste management systems.
- **Forestry Experiment Stations and Arboretum at Oak Ridge, Tullahoma, and Wartburg.** The 250-acre arboretum at Oak Ridge places emphasis on woody plants. Research in forestry studying genetics, species adaptation, fertilization, and other management practices is underway on the adjoining land. The Cumberland forest consists of two tracts of land in Morgan and Scott counties. Research at this location deals with many of the forest problems in the Cumberlands including strip-mine reclamation. The Highland Rim Forestry Station is located near Tullahoma. Research at this location deals primarily with tree improvement through genetics and also management problems associated with the forest of the Highland Rim.
- **Highland Rim Experiment Station** near Springfield emphasizes research on field crops and beef cattle. A major thrust is on the development and culture of improved darkfired tobacco varieties. Other research involves problems associated with other agronomic crops, horticultural crops, forages produced on the Highland Rim, and management of beef cattle.
- **Middle Tennessee Experiment Station** near Spring Hill is representative of high phosphate Central Basin soils. Research studies are underway with agronomic crops, vegetables, fruits, ornamental horticulture, beef cattle, and dairy cattle of the Holstein breed.
- **Milan Experiment Station** is located in West Tennessee. Research emphases are production problems and mechanization of corn, cotton, and soybeans. Minimum tillage and other approaches to reduce soil erosion are a major thrust at this location.
- **Plateau Experiment Station** near Crossville consists of three farms. Studies with beef cattle, and agronomic and vegetable crops provide information about results to be expected under the cooler, more humid climate and special soil conditions of the Cumberland Plateau.

**Tobacco Experiment Station** is located near Greeneville. Extensive research on all phases of burley tobacco is in cooperation with USDA/SEA/AR. In addition, research is underway with beef cattle and other field crops.

**UT Martin**—The research farm, adjacent to the UT Martin campus, is used for both research and teaching. The research staff at Martin, jointly employed by the Experiment Station and the School of Agriculture, cooperate with other station personnel in planning and conducting research on field crops, beef cattle, dairy cattle, and swine. Emphasis is on problems of importance to the northwestern part of the state.

**West Tennessee Experiment Station** is located at Jackson. Major emphases are all phases of production on agronomic crops produced in the western part of the state. In addition, research deals with problems associated with fruit and vegetable production and dairy production. The USDA/SEA-AR cooperates with research on the soybean cyst nematode.
The Agricultural Extension Service serves the entire state of Tennessee. This educational service of the Institute of Agriculture is active in every county extending educational instruction, and extension for developing the units of the Institute—the Agricultural Extension Service works closely with the other administrative and related subjects to farm families and other citizens. This educational organization was established July 1, 1914, by an act of Congress commonly known as the Smith-Lever Act. Staff members of the Agricultural Extension Service use a wide range of methods—farm and home visits, educational meetings, field demonstrations, publications, and mass media—in providing educational programs for people who do not have the opportunity to enroll in resident courses of instruction at colleges.

Extension staff members develop and carry out programs to meet the specific needs of the residents of their counties. They work with both adults and youth. Educational activities for boys and girls are carried out through 4-H Clubs which are organized in schools and in communities.

County, state, and federal governments cooperate in carrying out the Agricultural Extension Service program. The United States Department of Agriculture, the State of Tennessee, and each county government provide the financial support. Any county which appropriates funds for the program may have an office located there to serve its residents. Most offices are located in county seat towns. Headquarters for the Agricultural Extension Service is at Knoxville and district administrative offices are located in Cookeville, Knoxville, Chattanooga, Nashville, and Jackson.

As a distinct administrative unit of the Institute of Agriculture, the Agricultural Extension Service works closely with the other units of the Institute—the Agricultural Experiment Station, the College of Agriculture, the College of Veterinary Medicine—in providing a total program of research, instruction, and extension for developing the agriculture of the state.

College of Agriculture
O. Glen Hall, Dean

Curricula in Agriculture

Broad opportunities for individuals to prepare for a future in agriculture, forestry, and wildlife and fisheries science are offered in the College of Agriculture. The college provides curricula leading to the degrees of Bachelor of Science in Agriculture, Bachelor of Science in Agricultural Engineering, Bachelor of Science in Forestry, and Bachelor of Science in Wildlife and Fisheries Science. The professional degree program in agricultural engineering receives strong support from the College of Engineering and is fully accredited by the Accreditation Board for Engineering and Technology. The forestry curriculum is fully accredited by the Society of American Foresters.

A pre-professional curriculum in veterinary medicine is offered in the college. This program is designed to prepare students for admission to the College of Veterinary Medicine located on the Knoxville campus. Students pursuing programs leading to the degree of Bachelor of Science in Agriculture major in one of the specialized areas of agriculture offered in the college. These major areas are agricultural business, agricultural economics and rural sociology, agricultural education, agricultural mechanization, animal science, food technology and science, ornamental horticulture and landscape design, and plant and soil science. Specific courses required for each of these areas are given under the departmental headings in this section of the catalog. A student must complete the curriculum outlined by the department in which the student is majoring in order to receive a degree. In all areas of specialization, particular emphasis is placed upon the sciences as a background for agricultural instruction; other courses are included to provide a liberal education. In all subject matter areas there is the opportunity to select elective courses appropriate to the educational objectives of individual students. The choice of electives in each curriculum should be made with the guidance of the faculty advisor.

All academic and general requirements of the University as stated in the front section of this catalog must be met by agricultural students, and they must complete the requirements in one of the organized curricula. Students transferring into the College of Agriculture from other than the UTK campus must have a grade point average of 2.0. Each curriculum leading to the degree of Bachelor of Science in Agriculture includes the requirements of the basic curriculum for agriculture. For this degree, the minimum requirement is 188 quarter-hour credits. A minimum of 45 hours in agricultural courses is required. For the degrees of Bachelor of Science in Forestry and the Bachelor of Science in Wildlife and Fisheries Science, the minimum requirement is 189 quarter-hour credits. For the degree of Bachelor of Science in Agricultural Engineering, the minimum requirement is 200 quarter-hour credits.

The use of transfer credit in technical agriculture appropriate to each organized curriculum will be considered and approved by the advisor of that curriculum and the dean of the College of Agriculture. When desirable, validating or proficiency examinations may be requested to determine competence in an area and to avoid unnecessary repetition. Such examinations should be taken during the first quarter in residence and must be conducted under the supervision of the head of the department in which the course is offered.

A minimum of 27 quarter hours of upper-division technical agriculture appropriate to a specified major requirement, and approved by the major advisor, must be completed in residence to fulfill the requirements of baccalaureate degrees offered in the college.

Satisfactory/No Credit Courses

Students may include a maximum of 30 hours in non-directed electives taken on a satisfactory/no credit basis in the total hours required for graduation.

Graduate Study in Agriculture

MASTER OF SCIENCE PROGRAMS

Programs of graduate study leading to the Master of Science degree are offered in all departments in the College of Agriculture. See the Graduate Catalog for details.

A Winter Short Term for Agricultural Extension personnel and other professional agricultural workers is held each year during the last half of the winter quarter. Those attending must be accepted by The Graduate School. Students may take three courses and earn nine quarter hours of graduate credit toward the Master of Science degree. A number of courses are offered annually in agricultural education and in other departments in the Colleges of Agriculture and Home Economics. Additional information and a five-year schedule of course offerings may be obtained by writing to Professor R. S. Dotson, Head, Department of Agricultural Extension Education, College of Agriculture, Knoxville.

DOCTORAL PROGRAMS

Graduate study programs lead to the Doctor of Philosophy degree in animal sciences, agricultural economics, agricultural engineering food technology and science, and plant and soil science.

General requirements and policies of The Graduate School of The University of Tennessee relating to admission to the Graduate School, residence, language, research, examination, and admission to candidacy shall apply to these programs and are described in the Graduate Catalog.

Facilities

The College of Agriculture uses the facilities on the agricultural campus, on University farms located near Knoxville, and on the main University campus. On the agricultural campus are found the main agricultural building, Morgan Hall; the Agricultural Engineering Building; McCord Products Building; McLeod Food Technology Building; C. E. Brehm Animal Sciences Building, which includes a large pavilion; Ellington Plant Sciences Building which houses the plant science departments; greenhouse facilities for teaching and experimental work. The buildings which have been erected recently provide facilities comparable to the best in the country for the departments which they serve. Four farms adjacent to or within eight miles of the agricultural campus are used both for instructional and experimental purposes. Morgan Farm (80 acres), Cherokee Farm (550 acres), Plant Science Farm (212 acres), and a livestock farm (510 acres) provide excellent field laboratory facilities for instructional programs offered in the College. Cherokee Woodlot (120 acres), the Oak Ridge Forest (2,260 acres), and Ames Plantation (6,000 acres of forested land) provide excellent facilities for field work in forestry.

Transportation by bus is provided for classes of agricultural students from the agricultural campus to the University farms and to other points of interest where instruction may be given. Transportation by bus is provided between the agricultural campus and the main University campus so that students may make the change between classes without serious inconvenience.
Selection of Curriculum

Agricultural students who have determined their area of special interest may choose the curriculum most adaptable to their needs when they register at the University. An advisor from the department will be assigned for their counseling. It is not necessary, however, that freshman students select their curriculum until the end of the first year. Those who are in doubt will be assigned a special advisor to assist them in exploring agriculture and to guide them in the planning of appropriate courses of study for the freshman year. When they choose a curriculum, an advisor will be assigned from that department.

Students with special interest in science, business, or production technology should consult the advisor about selection of appropriate course of study. Students who have transferred from another college in UTK, or from another college in another institution, or from any other college or institution, should consult the dean of the College of Agriculture if in doubt about the curriculum they wish to follow and for assignment to an appropriate advisor. Requests for substitutions for courses or special examinations should be submitted for consideration during the first quarter of study in the selected curriculum.

BASIC CURRICULUM FOR AGRICULTURE

All students except those majoring in Food Technology and Science, Ornamental Horticulture and Landscape Design working for a degree of Bachelor of Science in Agriculture will include in their course of study the following minimum requirements. The sequence and the selection of courses not specified will be guided by the advisor.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Agriculture 1110 Introduction to Social Science for Agriculture</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Agriculture 1120 Introduction to Agricultural Engineering</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Agriculture 1130 Animal Science for Agriculture</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Agriculture 1140 Plant Science for Agriculture</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Agriculture 1150 Food Technology and Science for Agriculture</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Agricultural Science. (courses listed in department subject-matter areas)</td>
<td>26</td>
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<tr>
<td>English and Communications. (English 1010 or 1011; 1020; 1031 or 1032; Speech 2311, and 6 hours literature or communications)</td>
<td>18</td>
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</tr>
<tr>
<td>Mathematics 1540-50-60. (general)</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Biological Science. (entomology and plant pathology, biology, botany, microbiology, or zoology)</td>
<td>12</td>
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<tr>
<td>Physical Science. (Chemistry 1110-20-30 or 510-20-30 and physics or geology)</td>
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<tr>
<td>Social Science and Humanities. (Economics 2510-20 and electives, 10 hours—not more than 3 areas)</td>
<td>16</td>
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<td>Other Courses or Elective Hours Specified</td>
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<td>By Departments</td>
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<td>TOTAL:</td>
<td>138</td>
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</tbody>
</table>

The five basic courses in agriculture are not departmental, but the course outlines and content were prepared by a group of experienced teachers representing the appropriate subject-matter areas. They are presented by a team of teachers who work together in the department. Each course is required of all agricultural students, except those majoring in another major in the College of Agriculture. Students who have determined an appropriate subject-matter major are encouraged to take these courses.

An Honors Seminar is offered as a challenge to exceptional students who desire to explore in greater depth some special topic of unusual significance to agriculture. A team of faculty members share in this seminar as participants and resource people. The students gain experience and are encouraged to assume responsibilities not available in formally organized courses. Association with students and faculty from all phases of agriculture in the study of a common problem provides an unusual challenge.

COURSE LOAD

Students desiring to take more than 19 hours per quarter must have the approval of the dean of the college.

Agricultural Economics and Rural Sociology

AGRICULTURAL BUSINESS CURRICULUM

Advisors: Professors Martin, Brooker, McLemore, Mundy, Assistant Professors: Park and Whipple.
AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY CURRICULUM

Advisors: Professors Martin, Boecker, McLemore, Mundy. Assistant Professors Park and Whipple.

This curriculum is designed to provide students with training in the social sciences as well as in the physical and biological sciences and technical agriculture. Recognition is given to the desire of many college graduates to work in agriculture where the major emphasis is in farm production and related areas. Students are prepared for positions such as farm managers, county agricultural agents, managers of farm supply and purchasing firms, agricultural journalists, and farm loan agents. This curriculum also provides the necessary background for graduate work in agricultural economics.

Freshman

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
<th>Course</th>
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<tr>
<td>20</td>
<td></td>
<td>Agriculture 1110-20-30-40-50</td>
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<tr>
<td>8</td>
<td></td>
<td>Biology 1210-20</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>English 1010 or 1011; 1020; 1031 or 1032 or 1033</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>Mathematics 1540-50-60 or 1840-50-60</td>
</tr>
<tr>
<td>12</td>
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<td>Sophomore</td>
</tr>
</tbody>
</table>

Sophomore

- Agricultural economics elective: 3
- Biological science elective: 4
- Chemistry 1110-20 or 1510-20 and Physics 1210-20 or Geology 1410-20 or Chemistry 1110-20-30 or 1510-20-30 and Physics 1210 or Geology 1410-20: 16
- Computer Science 1410 or 1510 or Office Administration 2750: 3 or 4
- Economics 2510-20: 8
- Non-departmental social science and humanities electives: 4
- Speech 2311: 3
- Statistics 2100: 3
- Electives: 4 or 5

Junior

- Agricultural Economics 3120: 3
- Agricultural economics and rural sociology electives: 6
- Economics 3111-12-20 or Economics 3110-20 and 3 hours economics electives: 9
- Non-departmental agricultural electives: 6
- Non-departmental social science and humanities electives: 8
- Rural Sociology 3420: 3
- Statistics 3110: 3
- Electives: 12

Senior

- Agricultural Economics 4140, 4320 and 4330: 9
- Agricultural economics and rural sociology electives: 6
- Economics electives: 3
- English 4140: 3
- Finance 3510: 3
- Non-departmental agricultural electives: 6
- Speech 3021: 4
- Statistics 3220: 3
- Electives: 12

TOTAL: 198 hours

AGRICULTURAL EDUCATION

Advisors: Professors Wiegens and Craig. Associate Professor Todd

The curriculum in agricultural education is planned in cooperation with the College of Education. All agricultural education courses are offered in the College of Education. This curriculum is designed to prepare students for positions in vocational agricultural education service. Graduates are qualified to teach vocational agriculture. The curriculum also provides training for those who wish to enter farming, industry, and governmental services associated with agriculture, and other occupations.

The senior courses in agricultural education (except Ag. Ed. 4110) are taught at selected off-campus centers. These courses are scheduled concurrently each quarter during the regular school year.

Students should file applications for student teaching in the College of Education. (See admission to Teacher Education and Student Teaching section.)

Students meeting the requirements for general vocational agriculture certification may secure endorsements in ornamental horticulture and agricultural mechanics by meeting the following requirements:

Ornamental Horticulture—18 quarter hours of courses in ornamental horticulture and landscape design and/or plant and soil science. Subject matter areas must include plant propagation, greenhouse management, growing media, landscape design, and nursery management.

Agricultural Mechanics—18 quarter hours of courses in agricultural mechanization. Subject matter areas must include agricultural power and machinery, soil and water conservation, and agricultural structures.

Freshman

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
<th>Course</th>
</tr>
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<tbody>
<tr>
<td>16</td>
<td></td>
<td>Introductory biological sciences</td>
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<tr>
<td>8</td>
<td></td>
<td>English 1010 or 1011; 1020; 1031 or 1032 or 1033</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>Mathematics 1540-50-60</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Sophomore</td>
</tr>
</tbody>
</table>

Sophomore

- Agriculture 1150: 4
- Entomology and Plant Pathology 3210: 4
- Plant and Soil Science 2130: 12
- Chemistry 1510-20-30: 12
- Economics 2510-20: 8

TOTAL: 198 hours

AGRICULTURAL ENGINEERING

Advisors: Professors Luttrell, Bledsoe, Henry, and McDow. Associate Professors: Mote, Tompkins, VonBemuth, and Wilhelm.

The College of Agriculture, with the cooperation of the College of Engineering, offers a four-year curriculum leading to the degree of Bachelor of Science in Agricultural Engineering. The curriculum is fully accredited by the Accreditation Board For Engineering and Technology. Industry, government agencies, research and testing organizations, and foreign service offer employment opportunities to agricultural engineers.

The minimum requirements for admission include two units of algebra, one unit in geometry, and one-half unit in trigonometry. Students may remove deficiencies by registering for special classes during the freshman year.

The curriculum gives training in the fundamentals of engineering applied to problems of agriculture. In the senior year, the comprehensive design of systems and their components is emphasized.

Graduates may pursue careers in design, analysis, or development in these following specialty areas: agricultural power and machinery, agricultural structures and environment, electric power and processing, soil and water conservation engineering, and food engineering.

The curriculum provides for elective courses which can be taken in the student's area of interest. Students should check with their advisors each quarter regarding the selection of courses.

Students majoring in agricultural engineering are eligible to participate in the Engineering Cooperative Scholarship program, Engineers' Day program, and other student activities in the College of Engineering. They are also eligible for selection into Tau Beta Pi and Alpha Zeta.

Agricultural engineering majors interested in the Cooperative Engineering Scholarship program should consult with the head of the Department of Agricultural Engineering.

Freshman

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
<th>Course</th>
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<tbody>
<tr>
<td>3</td>
<td></td>
<td>Agricultural Engineering 1130</td>
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<td></td>
<td>Agriculture 1130-20-30-40</td>
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<tr>
<td>3</td>
<td></td>
<td>Basic Engineering 1410</td>
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<td>9</td>
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<td>Chemistry 1110-20-30-40</td>
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<td>6</td>
<td></td>
<td>Engineering Science and Mechanics 3111</td>
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<td>12</td>
<td></td>
<td>Engineering Science and Mechanics 3700</td>
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<tr>
<td>9</td>
<td></td>
<td>Mathematics 2840-50-60</td>
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<td>4</td>
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<td>Physics 2150-20-30</td>
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<td>Junior</td>
</tr>
<tr>
<td>3</td>
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<td>Agricultural Engineering 3100</td>
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<td>Agricultural Engineering 3100-20-30-40</td>
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<td>6</td>
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<td>Engineering Science and Mechanics 3110</td>
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<td>Mechanical Engineering 3540</td>
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<td>3</td>
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<td>Speech 2311 or Speech 2361</td>
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<td>3</td>
<td></td>
<td>Plant and Soil Science 2130</td>
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<tr>
<td>4</td>
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<td>Economics 2510</td>
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<td>3</td>
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<td>Senior</td>
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<td>3</td>
<td></td>
<td>English 4140</td>
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<td>Agricultural Engineering 3640</td>
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<td>Humanities or Social studies electives</td>
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<td>Electives</td>
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</table>

TOTAL: 200 hours

1One hour must be in PE.

2Equivalents honors course.
AGRICULTURAL MECHANIZATION CURRICULUM
Advisors: Professors Luttrell, Bledsoe, Henry and McDavid. Associate Professors: Mote, Tompkins, Von Bernuth and Wilhelm.

The agricultural mechanism curriculum is administered by the Department of Agricultural Engineering and leads to the degree of Bachelor of Science in Agriculture. The curriculum prepares students to apply principles, techniques, and systems of engineering, agricultural science, and business to the broad industry of agriculture.

Agricultural mechanization courses encompass power and machinery, electification and processing, structures and environment, and soil and water conservation. Students, with the assistance from their advisor, may structure their program to obtain either a broad or a highly specialized education.

Graduates are employed in industry, government, and educational institutions generally in the areas of management, promotion, sales, and training related to agricultural products, materials, and services.

Minor in Agricultural Mechanization consists of 28 credit hours as follows: 2110, 2130, 3110, 3210, 3220, 4210, and any three (3) courses from the following: 3510, 3560, 4160, 4170, 4810. Prerequisites will not be waived.

GASTORADEN AGRICULTURAL MECHANIZATION CURRICULUM
Advisors: Professors Luttrell, Bledsoe, Henry and McDavid. Associate Professors: Mote, Tompkins, Von Bernuth and Wilhelm.

The agricultural mechanism curriculum is administered by the Department of Agricultural Engineering and leads to the degree of Bachelor of Science in Agriculture. The curriculum prepares students to apply principles, techniques, and systems of engineering, agricultural science, and business to the broad industry of agriculture.

Agricultural mechanization courses encompass power and machinery, electification and processing, structures and environment, and soil and water conservation. Students, with the assistance from their advisor, may structure their program to obtain either a broad or a highly specialized education.

Graduates are employed in industry, government, and educational institutions generally in the areas of management, promotion, sales, and training related to agricultural products, materials, and services.

Minor in Agricultural Mechanization consists of 28 credit hours as follows: 2110, 2130, 3110, 3210, 3220, 4210, and any three (3) courses from the following: 3510, 3560, 4160, 4170, 4810. Prerequisites will not be waived.

Agricultural Extension Education
Advisors: Professors Dotson, Dickson and Carter.

No formal undergraduate curriculum is offered in agricultural extension education, but undergraduate courses are available as electives in various formal curriculum. Courses are designed to: (1) develop in prospective extension workers and other interested students an understanding of the functions, responsibilities, and techniques of the Cooperative Agricultural Extension Service, and (2) provide prospective extension workers with practical extension work experience in selected training counties. Graduate majors and minors are offered in agricultural extension education. Graduate courses are designed to develop in present extension workers and other interested students those competencies needed for improving the effectiveness of their work. Professor Dotson will give guidance for desired emphasis in agricultural extension education.

Animal Science
Advisors: Professors Barth, Erickson, Lidall, McLaren, Montgomery, Richardson, Shirley, Shrode; Associate Professors Backus, Hitchcock, Massinup, Robbins; Associate Professors Bell, Godkin, Hellman, Katteh, and Smaling.

This curriculum is designed to prepare students for careers in livestock agriculture and in related industries. Swine, poultry, sheep, dairy, and beef cattle production and management may be involved, providing the opportunity for special or additional training in the dynamic livestock and husbandry technology (production). Through course selection, the student, therefore, may prepare for general or livestock farming, management, business, or science, or elect the pre-veterinary courses preparatory for specialization. Elective selection permits special training for work with feed companies, meat animal, milk, egg, or poultry production, managerial or marketing groups, other educational agencies, supply and equipment business, agricultural extension services, agricultural communication, public relations, and various organizations associated with agriculture.

Students have the opportunity, through appropriate course selection, to obtain double majors by combining the animal science curriculum with another curriculum. Students majoring in the animal science curriculum may if they desire arrange to minor in various other curricula. The requirements for these minors shall be stipulated by the department supervising that particular curriculum. Students majoring in other curricula may opt to minor in animal science.

A minor in animal science consists of 28 credit hours including 2610, 2810, 3210, 3310, 3410, 3510 and one 3600 course and one 4800 course. Students outside of the College of Agriculture should add Agriculture 1130-39. Requests for substitution of similar courses in biology or zoology will be considered on an individual basis. It is suggested that the 3600 and 4800 series deal with the same class of livestock.

Freshman Hours Credit
Agriculture 1110, 22-30-40-50 20
Biology 1230 4
English 1010 or 1011; 1020, 1031 or 1032 or 1033 9
Mathematics 1540-50-60 or 1840-50-60 12
Sophomore
Agricultural Mechanization 2110 3
Agricultural Mechanization 2130 3
Animal Science 2100 3
Chemistry 1110-20 or 1510-20-30 12
Economics 2510-20 8
Journalism 2210 4
Physics 1210-20 8
Speech 2311 4
Speech 2311 and communications elective 4
Junior
Accounting 2110 3
Entomology and Plant Pathology 3210 4
Agricultural Mechanization 3100 3
Agricultural Mechanization 3110 3
Agricultural Mechanization 3210-20 6
Agricultural Mechanization 3510 or 3560 4 or 3
Computer Science 1410 or Office Administration 2750 3
Microbiology 2910-11 4
Plant and Soil Science 3220 4
*Social science or humanities electives 4
*Option electives 6
Electives 9 or 3
Senior
Agricultural Economics 3410 or 3440 or 3610 3
Agricultural Economics 4710 4
Agricultural Mechanization 4120 4
Agricultural Mechanization 4130 4
Agricultural Mechanization 4160 3
Agricultural Mechanization 4210-20 7
Agricultural Extension 3110 3
Food Technology and Science 3020 or 3840 or 4140 4 or 3

Electives allow students to select an area for specialization. Those interested in production would select additional courses in agriculture; in business administration, economics, agricultural economics, finance, and accounting; in research in chemistry, zoology, physics, and statistics, etc. Electives

TOTAL: 198 hours

*Or equivalent honors courses.

TOTAL: 198 hours

Institute of Agriculture
should be chosen with career objectives in mind and in consultation with the advisor.

**PRE-VETERINARY MEDICINE OPTION**

**CURRICULUM**

Advisors: Professors Barth, Erickson, Lidvall, McLaren, Montgomery, Richardson, Young, Strode; Associate Professors: Backus, Hichcock, Masincupp; Robbins; Assistant Professors Bell, Godkin, Heilman, Katesh, Smalling.

This program is designed to guide the student in meeting the admissions requirements of The University of Tennessee College of Veterinary Medicine. The completion of specific subject matter requirements by the end of the third year and the attainment of a satisfactory grade point average comprise the minimum requirements for entrance into the professional curriculum of the College of Veterinary Medicine. However, each year the number of applicants is much greater than the number of available spaces. Therefore, meeting or surpassing the minimum requirements by the student is strongly recommended. It is strongly recommended that each interested student plan to pursue at least a three-year pre-veterinary program. Inquiries concerning possible coursework substitutions and the combining of the pre-veterinary program with a degree program should be directed to the department’s pre-veterinary advisor. It is possible for students who are accepted into the College of Veterinary Medicine at the end of their third year to receive a B.S. in Agriculture with a major in animal science upon successful completion of the first year in the College of Veterinary Medicine (3 and 1 program). See the College of Veterinary Medicine section in the Graduate Catalog for additional information.

A suggested schedule for the Pre-veterinary Medicine—Animal Science student is given below which will (1) allow for the completion of the above pre-veterinary requirements by the end of the third year, and (2) allow the student to make normal progress toward completing the requirements for a degree in agriculture with a major in animal science and (3) to complete the requirements for the 3 and 1 program. It is strongly recommended that the student carry a normal load of at least 16 to 18 hours per semester. See College of Veterinary Medicine admissions requirements for minimal course requirements for admission to the professional program in the College of Veterinary Medicine.

**First year**

<table>
<thead>
<tr>
<th>Hours</th>
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<tbody>
<tr>
<td>English 1010 or 1011; 1020; 1031 or 1035</td>
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<tr>
<td>Mathematics 1540; 1550, 1560</td>
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<tr>
<td>Biology 1210-20-30</td>
<td>12</td>
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<td>Chemistry 1110-20-20</td>
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<tr>
<td>Agriculture 1100</td>
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<tr>
<td>Humanities electives</td>
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<tr>
<td>Total</td>
<td>53</td>
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</table>

**Second year**

<table>
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<th>Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Chemistry 3211-21-31</td>
<td>9</td>
</tr>
<tr>
<td>Chemistry 2019-29-29</td>
<td>3</td>
</tr>
<tr>
<td>Physics 2210-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Agriculture 1110</td>
<td>4</td>
</tr>
<tr>
<td>Economics 2510</td>
<td>4</td>
</tr>
<tr>
<td>Speech 2311</td>
<td>1</td>
</tr>
<tr>
<td>Animal Science 2610A, 2610B, 3320A, 3320B, and 3340A and 3410A</td>
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**Third year**

<table>
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<th>Hours</th>
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<td>Biochemistry 4110-20</td>
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</tr>
<tr>
<td>Microbiology 2910-19</td>
<td>5</td>
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<td>Economics 2520</td>
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</tr>
<tr>
<td>Social science electives</td>
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<tr>
<td>Humanities electives</td>
<td>6</td>
</tr>
<tr>
<td>Animal Science 3420, 3800 level evaluation (3 hrs), 4800 level</td>
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</tr>
<tr>
<td>Electives</td>
<td>14</td>
</tr>
</tbody>
</table>

**TOTAL: 55 hours**

**Entomology and Plant Pathology**

Advisors: Professors Southard, Hilly, Fless. No undergraduate curriculum exists in the Dept. of Entomology and Plant Pathology, but a program leading to the Master of Science degree with a major in entomology and plant pathology is available (see Graduate Catalog). Courses in economic entomology, plant pathology, soil microbiology, and plant parasitic nematodes are available to agricultural students. The department is currently composed of two major disciplines: economic entomology and plant pathology. The primary objective of offering a major at the graduate level is to provide training in those disciplines which deal with the natural hazards that are the major causes of losses in agricultural production. The training gives such a graduate the foundation necessary for coping with the myriad insect and plant disease problems that constantly threaten Tennessee’s dynamic agriculture.

**Food Technology and Science**

Advisors: Professors Miles, Collins, Jaynes and S. Melton; Assistant Professor: Mount.

Food technology and science is the application of the sciences and engineering to the manufacture, preservation, storage, transportation, and consumer use of food products. Processing of raw foods into consumer products by canning, freezing, dehydrating, fermenting, preserving, etc., is taught with emphasis on basic principles rather than on specific commodity procedures. Therefore, men and women who plan to enter food technology must have an interest in the sciences, particularly chemistry, biology, microbiology, mathematics, etc. This curriculum is designed to prepare students for a professional career in positions within the food industry such as food microbiologist, food chemist, quality evaluation and control supervisor, technical agriculture manager, packing specialist, ingredients specialist, etc. The Model Curriculum of the Institute of Food Technologists was used as a guide in developing this curriculum. A special problem course provides opportunities for practical training in food processing plants and laboratories of both federal and state government laboratories.

**Major in Food Technology and Science**

Consists of 25-27 hours as follows: 3810 or 4810, 4130 or 4140, 4200, 4400 and three (3) elective Food Technology and Science courses numbered 2500 or above.

**Freshman**

<table>
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<tr>
<th>Hours</th>
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<tbody>
<tr>
<td>Agriculture 1110-30-40 (choose two)</td>
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<tr>
<td>Agriculture 1120</td>
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<td>Biology 1220</td>
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<td>English 1010-20-33</td>
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<tr>
<td>Mathematics 1540-50-60</td>
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</tr>
<tr>
<td>Physics 1210-20</td>
<td>8</td>
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<tr>
<td>Humanities-social studies elective</td>
<td>4</td>
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<tr>
<td>Chemistry 1510-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Food Technology and Science 2300</td>
<td>3</td>
</tr>
</tbody>
</table>
**Forestry, Wildlife and Fisheries**

Advisor: G. Schneider

The department offers two majors. The major in forestry leads to the degree Bachelor of Science in Forestry and the major in wildlife and fisheries science leads to the degree Bachelor of Science in Wildlife and Fisheries Science. The forestry major has three options, Forest Resource Management Option, Forest Recreation Option, and Wood Utilization Option.

**FORESTRY**

The profession of forestry is the science, the art, and the practice of managing and using forests. Foresters are managers of the natural resources which occur on and in association with forest lands. Benefits are derived from the multiple uses of the forest: wood, water, wildlife, recreation, forage, and environmental amenities. Foresters are managers of these resources. Thus, our principal instructional objective is to provide the broad education needed to deal effectively with the complex of forest resources.

**FOREST RESOURCE MANAGEMENT OPTION**

The Forest Resource Management Option provides an opportunity to obtain an education related to the management of the broad spectrum of woodland resources. In addition to the core of required courses there are at least 30 elective credit hours for broad studies of specialized training in one or more areas of forestry. These areas and examples of related fields of study include:

- **Forest Biology**—plant physiology and morphology, ecology, genetics, tree nutrition, forest soils.
- **Forest Business Management**—economics, accounting, finance, marketing, management science.
- **Forest Economics**—economics, business administration, social science.
- **Forest Engineering**—mathematics, computer science, photogrammetry.
- **Forest Inventory**—mathematics, statistics, computer science, photogrammetry.
- **Forest Recreation**—natural and social sciences.
- **Wildlife Management**—ecology, zoology, botany.

The University has over 21,000 acres of forest land available for teaching, research, and demonstration. The Tennessee Valley Authority, Great Smoky Mountains National Park, and Cherokee National Forest provide additional land and facilities available to the teaching program. Contained within these areas is a wide variety of tree species and forest types ranging from elements of the boreal forest to southern pines and hardwoods.

Lumber, pulp, and paper, and other wood-using industries cooperate in conducting tours and demonstrating industrial processes.

Upon completion of the four-year forestry curriculum the degree of Bachelor of Science in Forestry (B.S.F.) is awarded.

A minor in Forestry consists of 24 credit hours from any courses having a Forestry designation. Prerequisites will not be waived.

**Freshman**

<table>
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<th>Hours Credit</th>
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<tbody>
<tr>
<td>Botany 1110-20 or Biology 1210-20</td>
<td>8</td>
</tr>
<tr>
<td>English 1010 or 1011; 1020; 1031 or 1032</td>
<td>8</td>
</tr>
<tr>
<td>French 1650</td>
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<td>French 3000</td>
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<tr>
<td>Mathematics 1700, 1841-51</td>
<td>12</td>
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<tr>
<td>Physics 1210 and 2220 or 2221 and 2220</td>
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</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
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<tr>
<td>Electives</td>
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**Sophomore**

<table>
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<tbody>
<tr>
<td>Computer Science 1510</td>
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<tr>
<td>Economics 2510-20</td>
<td>8</td>
</tr>
<tr>
<td>Forestry 3020-40-50</td>
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<tr>
<td>Forestry 3000</td>
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<tr>
<td>Mathematics 1841-50</td>
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<tr>
<td>Physics 1210; 1220</td>
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<td>Speech 2311</td>
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<td>Electives</td>
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**Junior**

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<td>Forestry 3020</td>
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<td>Forestry 4150, 4210-20-30, 4330, 4340</td>
<td>21</td>
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<td>Entomology and Plant Pathology 4030 or 4140, or Geography 3310</td>
<td>3-4</td>
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<tr>
<td>Electives</td>
<td>20-27</td>
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**Senior**

<table>
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<tr>
<td>Forestry 3240</td>
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<tr>
<td>Electives</td>
<td>18</td>
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</table>

**TOTAL: 198 hours**

**Forest Recreation Option**

The Forest Recreation Option provides students with opportunities to obtain an education in preparation for professional positions in the planning, development, interpretation, and management of private and public forested lands for recreational purposes. Students are also exposed to the basic philosophy and principles associated with leisure time and its use and the relationship of forest resources to the constructive utilization of leisure time.

**Freshman**

<table>
<thead>
<tr>
<th>Hours Credit</th>
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<tbody>
<tr>
<td>Botany 1110-20 or Biology 1210-20</td>
<td>8</td>
</tr>
<tr>
<td>English 1010 or 1011; 1020; 1031 or 1032</td>
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<td>French 1650</td>
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<tr>
<td>French 3000</td>
<td>1</td>
</tr>
<tr>
<td>Mathematics 1700, 1841-51</td>
<td>12</td>
</tr>
<tr>
<td>Physics 1210 and 1220 or 2210 and 2220</td>
<td>8</td>
</tr>
<tr>
<td>Speech 2311</td>
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<tr>
<td>Electives</td>
<td>3</td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Hours Credit</th>
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<tbody>
<tr>
<td>Computer Science 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Computer Science 1410</td>
<td>8</td>
</tr>
<tr>
<td>Economics 2510-20</td>
<td>8</td>
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<tr>
<td>Forest 3040</td>
<td>4</td>
</tr>
<tr>
<td>Forest 3000</td>
<td>1</td>
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<tr>
<td>Forest 3050 or Ornamental Horticulture and Landscape Design 3610 or Botany 3030</td>
<td>3-4</td>
</tr>
<tr>
<td>Accounting 2110 or Political Science 3565 or 3566</td>
<td>3-4</td>
</tr>
<tr>
<td>Sociology 1510</td>
<td>4</td>
</tr>
<tr>
<td>Sociology 3130 or 3010 or Rural Sociology 3420 or Psychology 3130</td>
<td>4</td>
</tr>
<tr>
<td>Psychology 3560</td>
<td>4</td>
</tr>
<tr>
<td>Plant and Soil Science 2130, 2150; Journalism 2201</td>
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<tr>
<td>Electives</td>
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**Junior**

<table>
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<tbody>
<tr>
<td>Forestry 3020, 3110, 3240, 3320, 4340</td>
<td>13</td>
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<tr>
<td>Wildlife and Fisheries Science 3250</td>
<td>3</td>
</tr>
<tr>
<td>Plant and Soil Science 3610</td>
<td>3</td>
</tr>
<tr>
<td>Forest 3060 or Entomology and Plant Pathology 4140 or 3210</td>
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<tr>
<td>Agricultural Mechanization 2130</td>
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<tr>
<td>Speech 3011 or 3021 or Journalism 3490</td>
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</tr>
<tr>
<td>Recreation 3140</td>
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<tr>
<td>Electives</td>
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**Senior**

<table>
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<tr>
<th>Hours Credit</th>
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<tbody>
<tr>
<td>Forestry 4150, 4210, 4230, 4240, 4330</td>
<td>16</td>
</tr>
<tr>
<td>Planning 4100</td>
<td>3</td>
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<tr>
<td>Ornamental Horticulture and Landscape Design 3610</td>
<td>4</td>
</tr>
<tr>
<td>Forest 4450</td>
<td>4</td>
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<tr>
<td>Electives</td>
<td>16-21</td>
</tr>
</tbody>
</table>

**TOTAL: 198 hours**

**U(W)O UTILIZATION OPTION**

The wood utilization option trains students for careers in forest products industries such as lumber, furniture, pulp and paper, or wood composites. Coursework is oriented toward the application of wood technology and engineering principles to wood processing. A sound background in basic sciences is required.

**Demand for forest products is forecasted to increase. This increased demand should continue to provide excellent employment opportunities for forest products graduates.**

**Freshman**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>English 1010 or 1011; 1020; 1031 or 1032</td>
<td>8</td>
</tr>
<tr>
<td>Botany 1110-20</td>
<td>8</td>
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<tr>
<td>French 1650, 3000</td>
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</tr>
<tr>
<td>Mathematics 1840 or 1841, 1850; 1860</td>
<td>12</td>
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<td>Physics 1210-20</td>
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<tr>
<td>Speech 2311</td>
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</tr>
<tr>
<td>Electives</td>
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</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Hours Credit</th>
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</thead>
<tbody>
<tr>
<td>Chemistry 1510-20</td>
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</tr>
<tr>
<td>Chemistry 1510</td>
<td>8</td>
</tr>
<tr>
<td>Mathematics 1841-50</td>
<td>12</td>
</tr>
<tr>
<td>Physics 1210 and 1220 or 2210 and 2220</td>
<td>8</td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
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<td>Electives</td>
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**Junior**

<table>
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<tr>
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<tbody>
<tr>
<td>Forest 3020 or Biology 1210-20</td>
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</tr>
<tr>
<td>French 1650</td>
<td>3</td>
</tr>
<tr>
<td>French 3000</td>
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<tr>
<td>Mathematics 1700, 1841-51</td>
<td>12</td>
</tr>
<tr>
<td>Physics 1210 and 1220 or 2210 and 2220</td>
<td>8</td>
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<tr>
<td>Speech 2311</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
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</table>

**Senior**

<table>
<thead>
<tr>
<th>Hours Credit</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives</td>
<td>18</td>
</tr>
</tbody>
</table>

**TOTAL: 198 hours**
**Ornamental Horticulture and Landscape Design**

Advisor: Professor Crater

Human needs go beyond food, clothing, and shelter. We require a degree of control over environment, especially immediate surroundings. Ornamental plants and their uses are recognized as part of the environment, hence a curriculum in ornamental horticulture and landscape design. The four areas of study within this curriculum are floriculture, nursery management, turfgrass management, and landscape design. The area of floriculture includes the science of producing flowering plants in field and greenhouse, and the art and science of using these plants for the benefit of humans. Opportunities are available as greenhouse managers, floral designers, retail salespersons, garden writers, research workers, and teachers.

Nursery management deals with the growing of trees, shrubs, and other ornamental plants for sale. Skills necessary to be a nursery manager include horticultural knowledge and a business sense. Students in this area are prepared to work in nurseries, garden centers, botanical gardens, and arboreta. They may find opportunities also in research, teaching, writing, sales, and landscape maintenance.

Turfgrass management includes all aspects of growing and caring for turfgrass, whether it be golf greens or home lawns. The increasing number of golf courses and home lawns and the increasing interest in turfgrass, whether it be golf greens or home lawns, is considerable. Opportunities in research, teaching, writing, sales, and landscape maintenance are recognized as part of the area of landscape design.

The plant and soil scientist must have a knowledge of the basic physical and biological environment, hence a curriculum in ornamental horticulture and landscape design. The four areas of study within this curriculum are floriculture, nursery management, turfgrass management, and landscape design. The area of floriculture includes the science of producing flowering plants in field and greenhouse, and the art and science of using these plants for the benefit of humans. Opportunities are available as greenhouse managers, floral designers, retail salespersons, garden writers, research workers, and teachers.

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sciences and, in addition, be trained in communication skills. The scientist may be broadly trained or may specialize in a more specific phase of the subject. Regardless of interest, many good jobs are available for the well-trained plant and soil scientist.

Employment opportunities differ depending upon the individual's type of training and interest. For the person who is scientifically inclined, positions are available with the Agricultural Extension Service as extension agents or as specialists, with the Soil Conservation Service, Forest Service, Farmers Home Administration, Production Credit Association, and other public agencies. Many plant and soil scientists are employed in private industry as technical specialists, supervisors, and salespersons. Banks and other financial institutions employ plant and soil scientists as appraisers and farm managers. Others may farm on their own, manage farms for others, or work in foreign agricultural programs. Certainly, plant and soil science is basic to all agriculture, and persons trained in the important field will find many opportunities to serve in modern agriculture.

A minor in Plant and Soil Science consists of 24 credit hours including 2130, 4410, and at least 16 elective hours to be taken by electing two (2) courses from Group A and three from Group B. 3610 will not be accepted as a course to meet minor requirements.

Each student selecting this major must complete the basic curriculum for agriculture and fulfill the major group requirements. The curriculum in plant and soil science showing the manner in which the required courses may be taken by years is as follows:

**Freshman**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Agriculture</td>
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<tr>
<td>Biology 1110 or 1120</td>
<td>1140</td>
</tr>
<tr>
<td>Lower-division biological sciences</td>
<td>12</td>
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<tr>
<td>English 1010 or 1011, 1020, 1031 or 1032</td>
<td>10</td>
</tr>
<tr>
<td>Mathematics 1450-50-60 or 1460-50-60</td>
<td>12</td>
</tr>
<tr>
<td>Humanities-social science elective</td>
<td>3</td>
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**Sophomore**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 1110-20-30 or 2150-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Economics 2510-20</td>
<td>8</td>
</tr>
<tr>
<td>Plant and Soil Science 2120-30</td>
<td>7</td>
</tr>
<tr>
<td>Speech 2111 or 2191</td>
<td>4</td>
</tr>
<tr>
<td>Physics 1210 or 2210</td>
<td>4</td>
</tr>
<tr>
<td>English and communications electives</td>
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<tr>
<td>Computer Science 1510 or 1410 or 1610</td>
<td>3-4</td>
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<tr>
<td>Biology or Physical Science electives</td>
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**Junior**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities-social science electives</td>
<td>7</td>
</tr>
<tr>
<td>Biology 3110</td>
<td>4</td>
</tr>
<tr>
<td>Entomology and Plant Pathology 3130 or 3210</td>
<td>12</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
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<tr>
<td>Chemistry 2230 or 2311-19 or Nut. and Microbiol. 3130 or Biochemistry 3110</td>
<td>12</td>
</tr>
<tr>
<td>Botany 2310</td>
<td>4</td>
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<tr>
<td>Plant and Soil Science 3110</td>
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<tr>
<td>Plant and soil science electives</td>
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**Senior**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Plant and Soil Science 3610, 4910</td>
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<tr>
<td>Animal Science 3310 or 3320</td>
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<td>Plant and Soil Science electives</td>
<td>12-16</td>
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<tr>
<td>Non-departmental electives</td>
<td>21-25</td>
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</table>

**TOTAL:** 198 hours

*Generally, this requirement will be met by Botany 1110-20 and Microbiology 2911-11, or Biology 1210-20-30.

Currently equivalent honors courses.

*Mathematics 1840-50-60 are suggested for students with high mathematics scores.*

*Students who intend to focus studies in the area of science should include: Math 1840-50-60; Chemistry 1110-20-30, 2111-19; Physics 2210. In addition, at least 6 courses beyond those electives in the curriculum in mathematical, physical, or biological sciences: suggested courses are Chemistry 2145-49, 3211-31, 3220-39; Physics 2230-20.*

*Student should consult with departmental advisor for suggested courses.*

*Only courses taught outside the College of Agriculture will satisfy this requirement.*

*Students who intend to focus studies in the area of business should include: at least 6 hours in Accounting, Agric. Economics, Business Law, Economics, Finance, Management, or Marketing.*

*Plant and soil science electives must include at least three courses from Group A and three from Group B.*

*Students without prior practical agricultural background are strongly encouraged to enroll in Plant & Soil Science 3610.*

**GROUP A**

Plant and Soil Science 3120, 3140, 3160, 3170, 3180, 3220, 3410.

**GROUP B**

Plant and Soil Science 4110, 4120, 4320, 4410, 4550, 4710.

In addition to the specific courses, students can specialize in areas of their interest by selecting courses from the following groups. These lists are suggestive only. The departmental advisor will guide the student according to the student's individual objective.

**Agriculture**

Agricultural Economics 4120, 4140, 4330; Agricultural Mechanization 3210, 4210; Animal Sciences 2810, 3410, 3510; Food Technology and Science 3840; Rural Sociology 3420.

**Business**

Accounting 2110-20; Business Law 4110-20-30; Economics 2520; Finance 3110; Management 3010; Marketing 3110-20; Office Administration 4310-20.

**Science**

Biology 3120-30; Botany 3030, 4310; Chemistry 2140-49, 3211-21-31, 3219-29-39; Geology 1410-20-30; Physics 1220-30.

**Credit for Cooperative Work**

A maximum of nine quarter hours of credit may be earned by supervised employment on approved jobs. To receive credit, the student must receive the recommendation of the employer, must present a satisfactory written report, and must receive a passing grade from the University professor in charge. Employment periods shall be not less than 12 weeks. At least one quarter must be spent in study on the campus between periods of employment. Prerequisites: Junior classification, with grade point average of 2.2 or above, and permission of the department head and the dean of the College of Agriculture to register. Three credit hours each quarter.

**Short Courses and Special Events**

Practical short courses in agriculture are offered for those who desire special training in certain fields. Some of these short courses are held on the Knoxville campus, others are at the Buford Ellington 4-H Club Training Center, Milan, Tennessee, or appropriate research stations. The Resident Instruction, Research, and Extension staffs join in teaching these special courses annually, and others are offered to meet immediate needs for special instruction. These are service courses and do not carry college credit.

In-service training is provided special groups, such as the teachers of vocational agriculture, through short-term courses which are offered at convenient locations in the state.

A special occasion known as Varsity Visit is held during the year. Delegates from all Future Farmers of America chapters are invited to spend a day on the agricultural campus with their advisors. Approximately 500 attend and inspect each department of the College.

**Departments of Instruction**

**Interdepartmental Offerings**

**Agriculture (088)**

1110 Introduction to Social Sciences for Agriculture (4) Social sciences as they relate to agriculture—agriculture in the economy; tools of social science analysis applied to agricultural problems; agriculture, its development, relation to man, industry, and government.

1200 Introduction to Agricultural Engineering (4) Agricultural power and machinery fundamentals, agricultural structures, soil and water conservation controls, and agricultural uses of electricity. 3 hrs. and 1 lab. F.

130 Animal Science for Agriculture (4) Animals in agriculture: Body systems and development, principles of inheritance, fundamentals of feeding, and function of farm animals, animal sanitation, animal products, and the relationship to public health. 3 hrs. and 2 labs. F, W.

1410 Plant Science for Agriculture (4) Plant structure, physiology, heredity, and environment in relation to growth, adaptation, and management of crops. 2 hrs. and 2 labs. S.

1500 Food Technology and Science in Agriculture (4) Utilization, processing, and distribution of food products. 3 hrs. and 1 lab. W, S.

4018 Honors: Seminar (3) Selected topics. Offered alternate years. Open to juniors and seniors by invitation. F.

**GRADUATE**

Consult the Graduate Catalog for listing of graduate level courses.

**Departmental Programs**

**Agricultural Economics and Rural Sociology**

Professors: J. A. Martin (Head), Ph.D. Minnesota; M. B. Badenhop, Ph.D. Purdue; J. R. Brooker, Ph.D. Florida; C. L. Oelan, Ph.D. Wisconsin; Irving Dubov, Ph.D. California (Berkeley); L. H. Kelter, Ph.D. Kentucky; T. H. Klink, Ph.D. Kentucky; F. O. Leuthold, Ph.D. Wisconsin; D. L. McMctre, Ph.D. Orlando; B. D. McManus, Ph.D. Purdue; S. D. Mundy, Ph.D. Tennessee; B. H. Penecost, Ph.D. Tennessee; W. P. Rambo (Emeritus), Ph.D. Minnesota; C. B. Sappington, Ph.D. Illinois; T. J. Whaley, Ph.D. Purdue.

Institute of Agriculture

Assistant Professors: W. M. Park, Ph.D. V.P.I. & S.U.; G. D. Whipple, Ph.D. Washington State.

Agricultural Economics (047)

2410 Economics of Food and Rural Resources (3) Analysis of prices and incomes in issues of public concern relating to food, agriculture, and rural areas using fundamental economic concepts. Farm income, food prices, world food problems, natural resources, environment, rural development. F, S.

3120 Agricultural Prices (3) Factors affecting prices in agricultural production/processing/distribution, prices and incomes in complex systems such as cattle and hog price and marketing, price and margins. Prereq: Agriculture 1110 and Economics 2520 or consent of instructor. W.

3320 Marketing Farm Products (3) Survey of the U.S. food and fiber marketing systems; marketing options of farmers and agricultural businesses; industry structure in market for specific agricultural products; basic tools to analyze marketing problems. Prereq: Agric. 1110 and Econ. 2520 or consent of instructor. F, S.

3410 Farm Business Analysis (3) Techniques of analyzing economic and physical performance of businesses. Farm records and accounts. Measures of farm income, cash flow, net worth, and production efficiency. Analysis of actual farm businesses. Prereq: Agric. 1110 and Econ. 2520. S.

3430 Agricultural Law (4) Survey of law and application to the farmer, his family, and agricultural industry. Problems of land tenure, landlord-tenant relations, landlord-tenant relationships; population characteristics and movement; problems of rural people; tenancy, farm labor, health, services, educational facilities, churches, local government, impact of industrialization. F, W.

4450 Diffusion of Agricultural Technology (3) Analysis of diffusion processes whereby new technology spreads from scientists to final adopters. Topics discussed include adoption process, communication behavior, mass media, role of professional change agents, opinion leadership, and two-step flow hypothesis. Prereq: Rural Sociology 3450, or consent of instructor. S.

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

Rural Sociology (680)

3420 Rural Sociology (3) Nature of rural society: social systems concept; rural-urban differences; nature of rural relations; population characteristics and movement; problems of rural people; tenancy, farm labor, health, services, educational facilities, churches, local government, impact of industrialization. F, W.

4500 Agriculture Education (3) Development of systems and components to prepare students to become effective professionals in education and leadership in agriculture. Prereq: Consent of department head. 3 hrs. when engaged in cooperative engineering or other problem. May be repeated for maximum of nine credit hours. F.

3610 Soil and Water Conservation Engineering (3) Principles in solving agricultural water management problems involving flood and erosion control, drainage, irrigation, and water quality. Coreq: Plant and Soil Science 2150, Engin. 3110. 3 hrs. and 1 lab. Graduate credit for non-majors only. F.

3620 Structures for Production, Environmental Control, and Waste Management (4) Analysis of loads and stresses; design of wood, steel, and concrete members; structural and environmental requirements of facilities for livestock and crop production and storage; physiological requirements; heat loads; insulation; ventilation; and operation; storage of wastes. 3 hrs. and 1 lab. Graduate credit for non-majors only. W.


3640 Power Units and Machinery (4) Components and operating characteristics of internal combustion engines and tractor systems; functional analyses and capabilities of agricultural machines; machinery systems performance and cost analyses. Prereq: Engrg. Sci. and Mech. 3700; Mech. Engrg. 3211. 3 hrs. and 1 lab. Graduate credit for non-majors only. F.

4120-30 Seminar (1) Presentations, discussions, reports. 4120—Professional development topics. F.

420 Special Problems in Agricultural Engineering (3) Selection, analysis, solution, and report of research problem. May be repeated for maximum of nine credit hours. Prereq: Engagement in research project approved by department head. W.

4610 Design of Water Control and Waste Utilization Systems (3) Design of water control and waste utilization systems including earth dams, irrigation, drainage, hydraulic transport of wastes, and application of wastes on agricultural land. Prereq: 3100 and consent of instructor. 1 hr. and 2 labs. W.

4620 Design of Structures for Production, Processing, and Environmental Control (3) Functional planning and structural design of agricultural buildings; emphasis placed on complete design of structure or system; design to include functional structural and environmental aspects. Prereq: 2520. 1 hr. and 2 labs. S.

4630 Design of Processing and Materials Handling Systems (3) Development of systems and components for integrated agricultural processing considering raw materials and product characteristics, equipment specifications, storage, handling, and economic merit. Prereq: 3030. 1 hr. and 2 labs. F.

4640 Design of Agricultural Machinery (3) Functional requirements of agricultural machinery. Elements of machine component design; synthesis of mechanisms, mechanical and hydraulic drives. Team effort in compacting machine design project. Prereq: 3640 or consent of instructor. 1 hr. and 2 labs. S.

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

Agricultural Engineering


Associate Professors: C. Roland Hole, Ohio State, P. E.; F. D. Tomkovich, Ph.D. Tennessee, P. E.; Robert Von Bernuth, Ph.D. Nebraska, L. R. Wilhelm, Ph.D. Tennessee, P. E.

Assistant Professors: D. O. Baxter, M. S. Missouri.

Instructors: W. E. Hart, M.S. Tennessee; J. B. Wilkerson, M.S. Tennessee.

Agricultural Mechanization (080)

2110 Agricultural Drawing and Mapping (3) Fundamentals of graphics and mapping, with emphasis on applications in agriculture and forestry. 1 hr. and 2 labs. F, W.

2130 Agricultural Surveying (3) Measurement of horizontal distances and angles; differential and profile leveling; topographic surveying and mapping, area computation. Prereq: Math 1560 or consent of instructor. 1 hr. and 2 labs. F.

3100 Seminar (1) Presentations, discussions, reports on research techniques. Prereq: Consent of department head. F.
4110-20 Field Studies (3.5) Supervised work experience with county extension agents in a designated county. For senior and graduate students. Prereq: Consent of instructor. 3 hrs. and 1 lab. Consent of instructor. 3 hrs. and 1 lab. W.

GRADUATE

Consult the Graduate Catalog for listing of graduate level courses.

Animal Science (113)

Professors:
D. O. Richardson (Head), Ph.D. Ohio State; K. M. Barth, Ph.D. Rutgers; M. C. Bell, Ph.D. Oklahoma State; J. K. Blieker (Emeritus), Ph.D. Ohio State; C. C. Chamberlain (Emeritus), Ph.D. Iowa State; B. H. Erickson, Ph.D. Kansas State; O. G. Hall, Dean, College of Agriculture (Emeritus) Ph.D. Iowa State; S. L. Hansard (Emeritus), Ph.D. Florida; C. F. Liddle, M.S. Tennessee; T. P. McDonald, Ph.D. Tennessee; J. B. McLaran, Ph.D. Auburn; J. K. Miller, Ph.D. Georgia; M. J. Montgomery, Ph.D. Wisconsin; G. M. Merriman (Emeritus), D.V.M. Michigan State; R. L. Murphee (Emeritus), Ph.D. Wisconsin; H. V. Shively, Ph.D. Illinois; R. R. Shrode, Ph.D. Iowa State; E. W. Swanson, Ph.D. Missouri; R. L. Tugwell (Emeritus), Ph.D. Kansas State; C. E. Wylie (Emeritus), A. M. Missouri.

Associate Professors:

Assistant Professors:
B. R. Bell, Ph.D. N.C. State; W. C. Cullen, Ph.D. Minnesota; R. A. Desch, Ph.D. Illinois; R. N. Heitmann, Ph.D. Maine; H. G. Katsch, Ph.D. VIP & SU; T. W. Schultz, Ph.D. Tennessee; J. D. Smithing, Ph.D. Texas A & M.

Instructor:
G. C. McGhee, B.S. Tennessee.

2610 Fundamentals of Food Animal Evaluation (4) Criteria food animal evaluation; market classes and grades of cattle, poultry and poultry products, lamb and wool, and swine, subjectively and objectively. Rating practices and skills for evaluation of beef cattle, dairy cattle, poultry, sheep, and swine. 2 hrs. and 2 labs.

2710 Introduction to Biometrical Aspects of Animal Science (3) Biometrical concepts for optimum animal production and to evaluate and quantify genetics, nutrition, environment, management, and other factors affecting animal productivity. 2 hrs. and 1 lab.

2810 Animal Behavior (3) Complex and multidimensional phenomena. Analysis of behavior in relation to animal needs and environment. Emphasis on applied behavior. 2 hrs. and 1 lab.

2820 Introduction to Light Horses (3) Scope and role of light horse industry; breeds—development, function, and use; unsoundness; tack; introduction to management practices. Prerequisite: elementary understanding or study of animal behavior. 2 hrs. and 1 lab.

2830 Animal Identification and Breeding (3) Identification and breeding practices. 2 hrs. and 1 lab.

2840 Animal Nutrition (3) Basic principles of animal nutrition. Emphasis on feeding value and efficiency. 2 hrs. and 1 lab.

2850 Animal Health (3) Basic principles of animal health. Emphasis on disease prevention and treatment. 2 hrs. and 1 lab.

2860 Animal Breeding (3) Basic principles of animal genetics. Emphasis on genetic variability and reproduction. 2 hrs. and 1 lab.

2870 Animal Welfare (3) Basic principles of animal welfare. Emphasis on animal health and well-being. 2 hrs. and 1 lab.

2880 Animal Genetics (3) Basic principles of animal genetics. Emphasis on genetic variability and reproduction. 2 hrs. and 1 lab.

2890 Animal Physiology (3) Basic principles of animal physiology. Emphasis on physiological functions and mechanisms. 2 hrs. and 1 lab.

2900 Animal Production (3) Basic principles of animal production. Emphasis on animal husbandry and management. 2 hrs. and 1 lab.

2910 Animal Reproduction (3) Basic principles of animal reproduction. Emphasis on reproduction, genetics, and management. 2 hrs. and 1 lab.

2920 Animal Behavior (3) Basic principles of animal behavior. Emphasis on behavior in relation to animal needs and environment. 2 hrs. and 1 lab.

2930 Animal Nutrition (3) Basic principles of animal nutrition. Emphasis on feeding value and efficiency. 2 hrs. and 1 lab.

2940 Animal Health (3) Basic principles of animal health. Emphasis on disease prevention and treatment. 2 hrs. and 1 lab.

2950 Animal Breeding (3) Basic principles of animal genetics. Emphasis on genetic variability and reproduction. 2 hrs. and 1 lab.

2960 Animal Welfare (3) Basic principles of animal welfare. Emphasis on animal health and well-being. 2 hrs. and 1 lab.

2970 Animal Genetics (3) Basic principles of animal genetics. Emphasis on genetic variability and reproduction. 2 hrs. and 1 lab.

2980 Animal Physiology (3) Basic principles of animal physiology. Emphasis on physiological functions and mechanisms. 2 hrs. and 1 lab.

2990 Animal Production (3) Basic principles of animal production. Emphasis on animal husbandry and management. 2 hrs. and 1 lab.

3010 Animal Reproduction (3) Basic principles of animal reproduction. Emphasis on reproduction, genetics, and management. 2 hrs. and 1 lab.

3020 Animal Behavior (3) Basic principles of animal behavior. Emphasis on behavior in relation to animal needs and environment. 2 hrs. and 1 lab.

3030 Animal Nutrition (3) Basic principles of animal nutrition. Emphasis on feeding value and efficiency. 2 hrs. and 1 lab.

3040 Animal Health (3) Basic principles of animal health. Emphasis on disease prevention and treatment. 2 hrs. and 1 lab.

3050 Animal Breeding (3) Basic principles of animal genetics. Emphasis on genetic variability and reproduction. 2 hrs. and 1 lab.

3060 Animal Welfare (3) Basic principles of animal welfare. Emphasis on animal health and well-being. 2 hrs. and 1 lab.

3070 Animal Genetics (3) Basic principles of animal genetics. Emphasis on genetic variability and reproduction. 2 hrs. and 1 lab.

3080 Animal Physiology (3) Basic principles of animal physiology. Emphasis on physiological functions and mechanisms. 2 hrs. and 1 lab.

3090 Animal Production (3) Basic principles of animal production. Emphasis on animal husbandry and management. 2 hrs. and 1 lab.

3100 Animal Reproduction (3) Basic principles of animal reproduction. Emphasis on reproduction, genetics, and management. 2 hrs. and 1 lab.

3110 Animal Behavior (3) Basic principles of animal behavior. Emphasis on behavior in relation to animal needs and environment. 2 hrs. and 1 lab.

3120 Animal Nutrition (3) Basic principles of animal nutrition. Emphasis on feeding value and efficiency. 2 hrs. and 1 lab.

3130 Animal Health (3) Basic principles of animal health. Emphasis on disease prevention and treatment. 2 hrs. and 1 lab.

3140 Animal Breeding (3) Basic principles of animal genetics. Emphasis on genetic variability and reproduction. 2 hrs. and 1 lab.

3150 Animal Welfare (3) Basic principles of animal welfare. Emphasis on animal health and well-being. 2 hrs. and 1 lab.

3160 Animal Genetics (3) Basic principles of animal genetics. Emphasis on genetic variability and reproduction. 2 hrs. and 1 lab.

3170 Animal Physiology (3) Basic principles of animal physiology. Emphasis on physiological functions and mechanisms. 2 hrs. and 1 lab.

3180 Animal Production (3) Basic principles of animal production. Emphasis on animal husbandry and management. 2 hrs. and 1 lab.

3190 Animal Reproduction (3) Basic principles of animal reproduction. Emphasis on reproduction, genetics, and management. 2 hrs. and 1 lab.

3210 Animal Nutrition (3) Basic principles of animal nutrition. Emphasis on feeding value and efficiency. 2 hrs. and 1 lab.

3220 Animal Health (3) Basic principles of animal health. Emphasis on disease prevention and treatment. 2 hrs. and 1 lab.

3230 Animal Breeding (3) Basic principles of animal genetics. Emphasis on genetic variability and reproduction. 2 hrs. and 1 lab.

3240 Animal Welfare (3) Basic principles of animal welfare. Emphasis on animal health and well-being. 2 hrs. and 1 lab.

3250 Animal Genetics (3) Basic principles of animal genetics. Emphasis on genetic variability and reproduction. 2 hrs. and 1 lab.

3260 Animal Physiology (3) Basic principles of animal physiology. Emphasis on physiological functions and mechanisms. 2 hrs. and 1 lab.

3270 Animal Production (3) Basic principles of animal production. Emphasis on animal husbandry and management. 2 hrs. and 1 lab.

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3310 Animal Breeding (3) Basic principles of animal genetics. Emphasis on genetic variability and reproduction. 2 hrs. and 1 lab.

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3340 Animal Physiology (3) Basic principles of animal physiology. Emphasis on physiological functions and mechanisms. 2 hrs. and 1 lab.

3350 Animal Production (3) Basic principles of animal production. Emphasis on animal husbandry and management. 2 hrs. and 1 lab.

3360 Animal Reproduction (3) Basic principles of animal reproduction. Emphasis on reproduction, genetics, and management. 2 hrs. and 1 lab.
4210 Physiology of Lactation (3) Development, anatomy, and function of mammary glands; endocrine integration for milk formation; development of milk, and secretion; factors affecting yield and composition of milk. Prereq: 3210.

4220 Avian Physiology (3) Anatomy and physiology of avian species with emphasis on poultry. Prereq: 3210. 2 hrs. and 1 lab.

4230 Applied Reproduction in Farm Animals (3) Application of methods and techniques in collecting, evaluating, processing, and preserving semen; insemination of females; pregnancy determination; estrus and parturition. Male and female infertility. Prereq: 3220 and permission of instructor.

4330 Feeding Applications for Farm Animals (3) Detailed application of feeding principles designed to allow students to discuss and evaluate feeding options available to producers through problem solving. Prereq: 3330. 1 hr. and 2 labs.

4340 Experimental Animal Nutrition Laboratory (2) Laboratory feeding trials to demonstrate the basic animal nutrition concepts and principal feeding of experimental diets. Prereq: 3330. 2 labs.

4610 Advanced Beef Cattle, Dairy Cattle, Horse Poultry, Sheep, and Swine Judging (2) Specialization in judging beef cattle, dairy cattle, horses, sheep, and swine. May not be repeated for credit. Prereq: Consent of Instructor. 2 labs.

4810 Beef Cattle Production and Management (4) Integration of principles of nutrition, physiology, and breeding into complete beef cattle management program. Topics will include structure of industry, enterprise establishments, systems of production, production practices, and herd improvement programs. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs. and 1 lab.

4820 Dairy Cattle Production and Management (4) Integration of principles of nutrition, physiology, and breeding into complete dairy cattle management program. Topics will include structure of industry, enterprise establishments, systems of production, production practices, and herd improvement programs. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs. and 1 lab.

4830 Pork Production and Management (4) Integration of principles of nutrition, physiology, and marketing into complete pork production and management program. Topics will include structure of industry, enterprise establishments, systems of production, production practices, and herd improvement program. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs. and 1 lab.

4840 Poultry Production and Management (4) Structure of poultry industry; organization and management of poultry enterprises including rearing, housing, feeding, processing, and marketing. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs. and 1 lab.

4850 Light Horse Production and Management (4) Integration of principles of nutrition, physiology, and breeding into light horse management program. Topics will include structure of industry, systems and practices of production, individual animal and herd improvement programs; tack, equipment, and facilities for both pleasure owners and commercial producers. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs. and 1 lab.

4860 Lamb and Wool Production and Management (4) Integration of principles of selection, nutrition, breeding, physiology, and marketing into complete lamb and wool production and management program. Topics will include structure of industry, enterprise establishment, systems of production responses, and economic returns. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs. and 1 lab.

4910 Seminar (2) Review of literature and presentations on special topics and current research in animal sciences. Prereq: Senior standing. 1 hr. and 1 lab.

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

Entomology and Plant Pathology (341)

Professors:

Associate Professors:
E. C. Bernard, Ph.D. Georgia; L. P. Lambdin, Ph.D. Virginia Tech.

Assistant Professors:
L. E. Kloetsermayr, Ph.D. Nebraska; B. R. Redick, Ph.D. Clemson.

4300 Introduction to Forest Protection (4) (Same as Forestry 3060).

3130 Plant Pathology (4) Principles of plant patho- lgy illustrated by diseases of common agricultural crop plants. Prereq: Botany 1120 or Biology 1220. 3 hrs. and 1 lab. (Same as Botany 3130.) F, S.

3210 Economic Entomology (4) Structure, live histo- ry, habits, and principles of control of important insect pests of farm, garden, orchard, and household. 3 hrs. and 1 lab. F, S.

3230 Apiculture (2) Biology of the honey bee, with emphasis on beekeeping equipment and apary man- agement practices relative to pollination of crops and production of honey and beewax. W.

4010 Biology of Soil Microorganisms (4) Morpho- logy and physiology of soil organisms, decomposition of organic matter, chemical transformations, and interactions between soil organisms and higher plants. Prereq: 3130 or introductory microbiology. 3 hrs. and 1 lab. (Same as Microbiology 4010.) S, A.

4030 Forest and Shade Tree Entomology (3) Identifi- cation, biology, ecology, and control of forest and shade pests. Prereq: 3210 or equivalent. 3 hrs. and 1 lab. S, A.

4140 Forest Pathology (3) Symptomatology, etiology, epidemiology, and control of forest and shade tree diseases, including wood decay and other diseases important to urban and production forestry. Prereq: 3130 or Forest- ry 3060. 2 hrs. and 1 lab. May be taken for graduate credit. F.

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

Food Technology and Science (390)

Professors:
J. T. Miles (Head), Ph.D. Wisconsin; J. L. Collins, Ph.D. Maryland; H. O. James, Ph.D. Illinois; S. L. Melton, Ph.D. Tennessee; W. W. Overcast (Emeritus), Ph.D. Iowa State.

Associate Professors:
P. M. Deck; R. C. Washington State; B. J. Demott, Ph.D. Michigan State; F. A. Draughn, Ph.D. Georgia; H. D. Loveland, Ph.D. Kansas State; R. J. Riemann, Ph.D. Kansas State.

Assistant Professors:
J. R. Mount, Ph.D. Ohio State.

Instructor:
G. S. Sanders, M.S. Tennessee.

2360 Food Laws and Regulations (3) State and federal laws concerning food industry. Organization and operation of regulatory agencies. Food grades and standards. W.

3020 Dairy Products I (4) Procurement, processing, and distribution of fluid milk, Manufacture of frozen and cultured dairy products. Prereq: 2360. 1 hr. and 2 labs. S.

3570 Evaluation and Grading Dairy Products (3) Market standards and grades of dairy products with practice in grading milk, ice cream, butter, cheese, and other specialized dairy products. 1 hr. and 2 labs. F.

3610 Meat Evaluation and Grading (3) Grading stan- dards for quality and quantity and principles of evaluat- ing beef, pork, and lamb. Practice in grading and judging carcasses and cuts. 1 hr. and 2 labs. F.

3810 Food Microbiology I (4) General methods for the enumeration of microorganisms in food products. Factors which affect the growth of microorganisms in foods and methods for controlling their growth. Prereq: Microbiology 2510-19 or equivalent. 2 hrs. and 1 lab. W.

3840 Meat Science (3) Processing methods, carcass characteristics of meat animals; slaughter, cutting selection, curing, freezing, and cookery. 2 hrs. and 1 lab. W.

4600 Problems in Food Technology (1-4) Research problems in student's area of interest. Required written report. Supervised experience in state or federal labora- tories or approved industries encouraged. May be repeated for credit. May be repeated for credit. 1-4 hrs. and 1 lab. W.

4000 Problems in Food Technology (1-4) Research problems in student's area of interest. Required written report. Supervised experience in state or federal labora- tories or approved industries encouraged. May be repeated for credit. May be repeated for credit. 1-4 hrs. and 1 lab. W.

4130 Food Chemistry I (3) Minerals, fats, oils, and vitamins in food as affected by processing and stor- age. Prereq: Nutrition and Food Sciences 3150 or equivalent. 2 hrs. and 1 lab. S.

4140 Food Chemistry II (3) Reactions of proteins, carbohydrates, and natural food colorants in food materials. Protein structure, food enzymology, and bonding reactions. Effects of storage and processing on proteins and carbohydrates with emphasis on nutri- tional value and functionality. Prereq: Nutrition and Food Sciences 3150 or equivalent. 2 hrs. and 1 lab. F.

4200 Food Processing I (4) Prevention of spoilage and deterioration of foods. Methods of preservation. Prereq: Agriculture Mechanization 3510. 3 hrs. and 1 lab. F.

4210 Food Additives (3) Substances used in food manufac- ture with emphasis on properties and func- tions. Prereq: Nutrition and Food Sciences 3150 or equivalent. F.

4210 Food Packaging (3) Characteristics and applica- tion of materials and containers to packaging requirements and methods of packaging foods. Prereq: 2300. 2 hrs. and 1 lab. S.

4400 Food Processing II (5) Design of food quality assurance programs with emphasis on sanitation. Ap- plication of general analytical techniques, regulations and unit operations to quality control in the food industry. Prereq: 3810. 3 hrs. and 2 labs. W.

4410 Food Crop Products (3) Food products from crops with emphasis on types, manufacturing systems, quality, attributes, and utility. A.

4420 Bakery Products (3) Baking ingredients and their interactions during production and storage of bakery products. Prereq: Food Technology and Science 4130 and Chemistry 2230 or equivalents. 2 hrs. and 1 lab. A.

4810 Food Microbiology II (4) Standard methods for the examination, cultivation, and identification of bacte- ria associated with food processing, food spoilage, and food poisoning. Prereq: 3810. 2 hrs. and 2 labs.

4840 Meat Products Manufacturing (3) Prepared meat products with emphasis on sausage making and
Forestry, Wildlife and Fisheries

Professors: G. Schneider (Head), Ph.D. Michigan State; J. W. Barrett (Emeritus), Ph.D. Syracuse; R. A. Buklicher, Ph.D. Arizona; F. L. Dupont, Ph.D. University of Idaho; J. H. Ford, Ph.D. Auburn; H. A. Core (Emeritus), Ph.D. Syracuse; R. W. Dimmick, Ph.D. Wyoming; M. R. Petion, Ph.D. Georgia; T. thor (Emeritus), Ph.D. North Carolina State; J. L. Wilson, Ph.D. Tennessee; F. W. Woods, Ph.D. Tennessee.


Assistant Professors: E. F. Dougall, Ph.D. Oregon State; S. E. Schlarbaum, Ph.D. Colorado State.

Forestry (396)

1620 Introduction to Forestry (3) History of forestry; establishment, care, protection, and use of forest stands; forest products industries; organization and agencies for establishment of forest policies; forest resources.

2500 Conservation of Renewable Natural Resources (3) Land, water, plants, and animals and their interactions as viewed from the biological and ecological basis for decisions about utilization of renewable natural resources; uses and abuses of forest, recreation, and aquatic resources; emphasis on management alternatives and aspects of pollution. S. F.

3000 Current Events in Renewable Natural Resources (1) Current events influencing forestry, wildlife, and fisheries management. Perspectives from other disciplines and professions which are affected by and which influence natural resource management. Extended views of natural resources, their allocation and management. Professional development and education for the disciplines of forestry, wildlife and fisheries. 1 hr. May be repeated. Maximum credit 4 hrs. S/NC. (Same as Wildlife and Fisheries Science 3000.) W.

3020 Forest Environments and Ecology (3) Environmental studies of forests and associated lands; emphasis on the application of ecological principles to contemporary problems. Available for graduate credit for non-forestry majors only. Prerequisites: 8 hrs. biology, botany, or zoology. 3 hrs. F.

3040 Forests and Trees of Eastern North America (4) Forest formations and associations of North America east of the Great Plains; dendrology and silvics of the trees and shrubs that comprise them. Emphasis will be on identification, nomenclature, and species-site relationships. Weekly field trips during scheduled labs plus one or more laboratory classes to be determined. Prerequisites: 3040, 6 hrs. basic biology or botany, 3 hrs. and 1 lab. F.

3050 Forest and Trees of Western North America (3) Forest formations and associations of North America west of the Great Plains; dendrology and silvics of the trees that comprise them. Largely an audio-visual presentation with emphasis on edaphic, topographic, and climatic site variables as they control species distributions. Available for graduate credit for non-forestry majors only. Prerequisites: 6 hrs. basic biology or botany, 2 hrs. and 1 lab. W.

3060 Introduction to Forest Protection (4) Biology of forest insects and diseases, including impact on forest ecosystems, control principles and techniques silvicultural systems for forest fire, including behavior, weather influence, prevention, control organizations, biological, economic, and sociological impacts. Prerequisites: 3040, 3 hrs. and 1 lab. (Same as Entomology and Plant Path. 3060.) W.

3110 Forest Measurements and Biometry (4) Measurements of individuals in animal and plant populations; linear regression, sampling of forest populations; growth and potential production. Prerequisites: Plant and Soil Science 3610. 3 hrs. and 1 lab. Available for graduate credit for non-forestry majors only. W.

3120 Wood Technology (4) Wood properties; identification of commercial woods by macro and micro characteristics. Prerequisites: 3040, 3050 (3050 may be taken concurrently). 2 hrs. and 2 labs. W.

3220 Forest Products and Utilization (3) Harvesting, processing, conversion, and intermediate and harvest cuts. Prerequisites: 3120. F.

3240 Introduction to Forest Recreation (3) Concepts of leisure time in recreation. Historical development of forest recreation. Forest recreation resources. Development of management and administration of forest recreation areas and systems. W.

3250 Ecological Problems of Forest Recreational Land (3) Examination of major forms of ecological impact on forest resources; emphasis on impact on vegetation, soil, and water quality; consideration of monitoring methods and management alternatives. Weekend field trip is required. Prerequisites: 3020 or equivalent, or consent of instructor. Plant and Soil Sciences 2130 recommended. 2 hrs. and 1 lab. F.

3260 Forest Land Use and Society (3) Past and present overviews of forest utilization in the U.S. from socio-economic and institutional perspectives. Major societal factors influencing forest resource use including land ownership. World forest resources use, and markets. Implications of alternative futures for forest resources. F.

3270 Principles of Silviculture (3) Influence of site factors of reproduction, growth, development, and character of forest vegetation; classification of forest types; development of seed source; selection of species. Prerequisites: 3060, 3100, Plant and Soil Science 2130. 3 hrs. W.

4002 Utilization (3) Wood-using industries; processing forest products-sawmills, log grading, pulping processes, flooring plants, treating plants; plant layout, flow diagrams. Prerequisites: 3120 or permission of instructor. S.

4003 Field Methods of Timber Inventory (4) Field measurements of forest trees; timber cruising; determining appropriate sample design for specific purposes; tree and stand growth; site evaluation; field problems. Prerequisites: 3110 and Agricultural Mechanization 3140. S.

4004 Forest Practice (3) Management of forest lands by public and private organizations; "multiple use" concept as it influences management decisions; impact of public pressure for outdoor recreation or management decisions. Prerequisites: 3260, 4006. S/NC. S.

4006 Silvicultural Methods (4) Methods and applications of silviculture and regeneration techniques; site preparation, planting and seedling, modifications of cutting methods to obtain desired goods and benefits. Prerequisites: 3060, 3320, 4002, 4003. S.

4010 Applied Forest Surveying, Road Construction, and Timber Harvesting (3) Application of surveying and timber harvesting field techniques to forestry problems. Interpretation and use of maps and aerial photography in forest field work. Discussion of forest harvesting equipment and practices. Considerations in logging equipment selection and use. Prerequisites: Ag. Mech. 5140. S.

4020 Forest Watershed Management (3) Water as a forest resource; role of forests in the hydrologic cycle; control of water quality, quantity, and regimen; water-quality planning. Prerequisites: 3260, 3320. Consent of instructor. 3 hrs. Two overnight field trips. W.

4110-20-30 Problems in Forestry (1-6, 1-6, 1-6) Special research or individual problems in forestry. Prerequisites: Senior standing. Total not more than 9 hrs. E.

4150 Forest Resource Economics (3) Application of economic analysis to determination of forest resource values; importance of the socioeconomic and biophysical characteristics of the resources; timber production economics and valuation; economic analysis of public forest projects. Prerequisites: Econ. 2520 and senior standing, or permission of instructor. F.

4210 Forestry Organization and Administration (3) Planning, organizing, and leadership concepts and cases; problem analyses and decision making in forest resource management. Prerequisites: Senior standing in forestry or wildlife and fisheries science or consent of instructor. 2 hrs. and 1 lab. W.

4220 Forest Resource Management (3) Decision-making principles, emphasizing forestry as an integration of resource use. Models of forestry as a system; concepts of forest finance and valuation; taxation of the forest firm. Prerequisites: 4150. W.

4230 Forest Resource Management Plans (4) Field problems and case studies in forest-resource management; the forest as a system; management of forest enterprises as a process involving multiple social, economic, and institutional perspectives. Emphasis on development and management of forest recreation areas; watersheds, and wildlife; producing multiple services; preparation of a complete plan based on optimizing forest uses. Prerequisite: 4210. S.

4240 Interpreting Forest Resources (3) Principles and techniques of interpreting forest resources; importance of environmental interpretation to management of forest resources; development and administration of interpretative services. Possible overnight field trips required. Prerequisites: 3240 or equivalent. 2 hrs. and 1 lab. S.

4330 Forest Policy (3) History of forestry in United States with emphasis on development of forest resource policies; current policies influencing development and management of forest resources; brief survey of policy implications of forest resource organizations in public and private sectors. Prerequisite: 4004. W.

4340 Aerial Photography in Forest-Resource Management (3) Use of conventional aerial photographs in forest-resource management; interpretation of detail, aerial inventories, preparation of cover-type maps, uses of other remotely sensed imagery. Prerequisites: 3110 or equivalent. 1 hr. and 2 labs. S.

4420 Forest Tree Improvement (3) Forest tree improvement related to forest management and forest genetics; principles of tree improvement and forest genetics; principles of tree cytology and population genetics; importance of selectiveness; variation, genetics; selection, hybridization, seed production, and seed certification. Prerequisites: 4006 or consent of instructor. 2 hrs. and 1 lab. S.

4430 Regional Silviculture of the United States (3) Factors that influence silvicultural management of important tree species in North America. Importance of forests and forestry to a region; physiography, geology, soils, climate, and other factors affecting site and site types, ecology, problems of protection, and silvicultural characteristics of the more important species. Prerequisites: 4406 or consent of instructor. F.

4440 Forest Recreation (3) Forest lands as a recreation resource; interrelationships of forest recreation and other management activities; development and management of forest recreation areas; socio-economic and political determinants of recreation development and management. Possible overnight field trips required. Prerequisites: 3120 and senior standing, or permission of instructor. S/NC. S.

4450 Recreational Behavior in Forest Environment (3) Review of sociological and psychological theories relevant to forest recreation studies; behavior of recreationists; conditions and administration. Implication and application of behavioral concepts to forest recreation problems, and review of methodologies for assessing recreational behavior. Prerequisites: 3240 and 6 hrs. in behavioral psychology and/or sociology, or consent of instructor. 3 hrs. W.
4540 Wood Drying and Preservation (4) Concepts of wood drying including wood-moisture relations, specific gravity, moisture content, density, and shrinkage. Discussion of practical relationship of wood moisture content to attack by wood destroying organisms. Methods and materials used in commercial wood preservation. Prereq: 3120, Math 1851, Physics 1220 or consent of instructor. 3 hrs. and 1 lab.

4550 Wood Composites and Gluing (4) Fundamentals of plywood and composite product manufacturing. Wood adhesive technology. Application of gluing to the manufacturing processes of plywood and composite products. Prereq: 3120, Math 1851, Physics 1220 or consent of instructor. 3 hrs. and 1 lab.

4560 Forest Products Marketing and Measurement (3) Discussion of market structure for various sectors of the forest products industry including standing timber, lumber, pulp and paper, wood composites, and treated products; measurement systems used by industry for the sale and transfer of these products. Prereq: 3120, Math 1851, Physics 1220 or consent of instructor. 3 hrs.

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

Ornamental Horticulture and Landscape Design (740) Professors: D. G. Ofer (Head), Ph.D. Ohio State; L. M. Callahan, Ph.D. Rutgers; N. D. Peacock (Emeritus), Ph.D. Michigan State; D. B. Williams, Ph.D. Pennsylvania State.
Assistant Professors: D. T. Kendall, M.L.A. Louisiana State.
Instructor: E. L. Abbott, M.S. Tennessee.

2100 Introduction to Wildlife and Fisheries Science (3) History, and philosophies of wildlife and fisheries management including the value of wild animals in the modern world; roles of research, management, public relations, and law enforcement in the conservation of wildlife and fisheries resources. Prereq: Forestry 1620, 8 hrs. of Botany/Biology.

3000 Current Events in Renewable Natural Resources (1) Current events influencing forestry, wildlife, and fisheries management. Perspectives from other disciplines and professions which are affected by forestry, wildlife, and fisheries resources. Prereq: 3000. 2 hrs. and 1 lab. Over night weekend trip may be required. W.

3220 Wildlife Resources and Their Conservation (3) Wild animal resources of the United States; their interrelationships with soil, water, forests, and other plant life; contribution to economic and social development, importance and methods of conserving wildlife. General course for nonwildlife and fisheries science majors. W.

3230 Wildlife Management (3) Lives and ecological relationships of wild animals; biological, social and economic importance of wildlife and fisheries management including the value of wild animals in the modern world; roles of research, management, public relations, and law enforcement in the conservation of wildlife and fisheries resources. Prereq: 3000. 2 hrs. and 1 lab. Over night weekend trip may be required. Maximum credit 4 hrs. S/NC. (Same as Forestry 3000.) W.

3320 Grounds Maintenance and Management (3) Practices and scientific basis of turfgrass culture: adaptation, culture, and landscape design. Prereq: 3620, 3630. 2 hrs. and 2 labs.

3330 Water Management (2) Irrigation, drainage, water supply, water supply, and environmental requirements for propagation. Prereq: 3610. 2 hrs. and 1 lab.

3410 Basic Floriculture (3) Principles and practices employed in propagation of flowering and indoor plants. Application of principles of plant physiology as they relate to the control of flowering, harvesting schedules, and post-harvest quality. Prereq: 3110, and Plant and Soil Science 3040 or equivalent. 2 hrs. and 1 lab.

3420 Specialty Floriculture (3) Specific practices in the production of minor cut flowers and potted plant crops. Production methods for scheduling flowering or vegetative growth of specialty florist crops in controlled environments. Prereq: 3410. 2 hrs. and 1 lab.

3430 Landscape Design (4) Principles and techniques of ornamental horticulture and landscape design as related to needs and natural and economic resources. Evaluation of aesthetic, functional, and other operational practices specific to the ornamental horticulture industry. 3 hrs.

3440 Landscape Planning (4) Application of management and marketing practices for greenhouses, nurseries, flower shops, garden centers, plant stores, and landscaping firms. Investigation of practices and the solution of problems as they relate to the students' areas of interest in the establishment and operation of floricultural, nursery, landscape planning and maintenance enterprises, including compliance with governmental regulations and other operational practices specific to the ornamental horticulture industry. 3 hrs.

3450 Landscape Construction (3) Principles and practices employed in construction of major landscape projects. Application of principles of plant physiology as they relate to the control of flowering, harvesting schedules, and post-harvest quality. Prereq: 3110, and Plant and Soil Science 3040 or equivalent. 2 hrs. and 1 lab.

3460 Landscape Design (4) Principles and techniques of ornamental horticulture and landscape design as related to needs and natural and economic resources. Evaluation of aesthetic, functional, and other operational practices specific to the ornamental horticulture industry. 3 hrs.

3470 Landscape Construction (3) Principles and practices employed in construction of major landscape projects. Application of principles of plant physiology as they relate to the control of flowering, harvesting schedules, and post-harvest quality. Prereq: 3110, and Plant and Soil Science 3040 or equivalent. 2 hrs. and 1 lab.

3480 Landscape Planning (4) Principles and techniques of ornamental horticulture and landscape design as related to needs and natural and economic resources. Evaluation of aesthetic, functional, and other operational practices specific to the ornamental horticulture industry. 3 hrs.
Plant and Soil Science (792)

Professors:
L. F. Seitz (Head), Ph.D. North Carolina State; F. F. Bell (Emeritus), Ph.D. Iowa State; D. L. Coffey, Ph.D. Purdue; B. V. Conger, Ph.D. Washington State; H. A. Fribourg, Ph.D. Iowa State; L. S. Jeffery, Ph.D. North Dakota State; L. M. Josephson (Emeritus), Ph.D. Wisconsin; W. L. Parks, Ph.D. Purdue; B. S. Pickett (Emeritus), Ph.D. Michigan State; J. H. Reynolds, Ph.D. Wisconsin; L. N. Skold (Emeritus), M.S. Kansas State; M. E. Springer (Emeritus), Ph.D. California (Berkeley); H. D. Swingle (Emeritus), Ph.D. Louisiana State.

Associate Professors:

Assistant Professors:
D. E. Dayton, Ph.D. North Carolina State; C. E. Sams, Ph.D. Michigan State; D. R. West, Ph.D. Nebraska; J. D. Wolt, Ph.D. Auburn.

‘Clyde B. Austin Distinguished Professor.

2120 World Food Production and Cropping Systems (3) Introduction to world crop plants and cropping systems with emphasis on origin and development, current technology and practices, and future (role, challenges, demands, functions, problems) of agriculture. F.

2130 Soils (4) Nature and properties of soils. Physical, chemical, biological processes in soils and their influence on plant growth. Prereq: Chemistry 1120 or 1520 or 1620. 3 hrs. and 1 lab. F, S.

3110 Soil Fertility and Fertilizers (4) Properties of soils in relation to plant nutrient availability and uptake. Methods of soil fertility evaluation and principles of fertilizer use; manufacture and properties of fertilizers. Prereq: 2130. 3 hrs. and 1 lab. W.

3120 Grain and Oil Crops (3) Distribution, improvement, morphology, culture, harvesting, and utilization of corn, soybeans, peas, and related crops. Prereq: 2130; 8 hrs. biological science. 2 hrs. and 1 lab. W.

3140 Forage Crops (4) Characteristics, adaptation, improvement, management, and utilization of grasses and legumes for pastures, hay, and silage. Prereq: 2130; 8 hrs. biological science. 3 hrs. and 1 lab. F, S.

3160 Cotton and Tobacco (4) Characteristics, adaptation, improvement, culture, harvesting, and marketing of cotton and tobacco. Prereq: 2130; 8 hrs. biological science. 3 hrs. and 1 lab. F.

3170 Vegetable Crops (4) Characteristics, economic importance, adaptability and production of vegetables for fresh and processing markets with emphasis on both warm and cool season crops. May be taken for graduate credit by non-majors only. Prereq: 2130; 8 hrs. of biological science. 3 hrs. and 1 lab. S.

3180 Fruit Crops Management (4) Soils, planting, cultivation, development of fruit crops plantations; pest control, harvesting, packing, storage and pruning. Prereq: 2130; 8 hrs. biological sciences. May be taken for graduate credit by non—majors only. W.

3220 Soil Management (4) Soil management for crop production including cropping systems, fertilizer use, and tillage operations for specified soil and farming conditions. Prereq: 2130. 3 hrs. and 1 lab. S.

3250 Soils in Forestry (3) Soil as a medium for tree growth; relation of physical, chemical, and biological properties of soils to tree growth and management of forest stands. Soil properties of importance in road location, recreational development, and watershed management. Prereq: 2130; Forestry 3320. 2 hrs. and 1 lab. W.

3410 Soil and Plant Analysis (3) Applied methods of soil and plant analysis as they relate to crop nutrition and soil evaluation including sampling procedures, sample preparation, soil physical and chemical analyses, and plan mineral content. Prereq: 3110. 1 hr. and 1 lab. W. Not for graduate credit.

3610 Statistics for Agricultural Research (3) Application of the principles of plant physiology and ecology to crop production. Effects of environmental factors (light, heat, water, soil, etc.) on physiological processes (respiration, photosynthesis, germination, flowering, etc.) Prereq: Botany 3210; 2130 and any PSS course at 3000-level except 3610. 3 hrs. and 1 lab. W.

3810 Practicum in Plant and Soil Science (3-6) Spend one quarter working with agricultural related enterprises with area of work being related to a student's career interest. Requires consent of 3-person faculty administering committee and of academic advisor. May not be used as a 3000-level prerequisite for any course in Plant and Soil Science. May not be taken for graduate credit. PSS majors only. F.

4110 Soil Chemistry (4) Colloidal systems; properties and behavior of colloidal soil materials; relations of chemical properties to plant nutrient availability. Prereq: 2130; Physics 1210. 3 hrs. and 1 lab. F.

4120 Principles of Crop Breeding (4) Genetic principles and techniques used in crop improvement. Prereq: Biology 3110 or equivalent. W.

4250 Agricultural Pesticides (4) Regulation of pesticide development, manufacture, transportation, marketing, and use. Structure, use, mode of action, degradation and environmental impact of pesticides used in agriculture, forestry and related areas. Prereq: 1 year biological sciences and 1 year chemistry. 3 hrs. and 1 lab. F.

4320 Soil Formation, Morphology, and Classification (4) Soil parent materials, basic pedogenic processes, soil forming processes, soil morphology and interpretation of morphology, taxonomic classification of soils. Use of soil surveys. Prereq: 2130. 3 hrs. and 1 lab. S.

4350 Soil Survey (2) Techniques of mapping soils, development of mapping legends and documentation and testing of mapping unit descriptions and interpretations. 1 hr. and 1 lab. Prereq: 4320 or concurrent. S.

4400 Problems in Plant and Soil Science (1-6) Special research or library problems in some phase of plant and soil science. May be repeated. Maximum credit 9 hrs. E.

4410 Crop Physiology and Ecology (4) Application of the principles of plant physiology and ecology to crop production. Effects of environmental factors (light, heat, water, soil, etc.) on physiological processes (respiration, photosynthesis, germination, flowering, etc.) Prereq: Botany 3210; 2130 and any PSS course at 3000-level except 3610. 3 hrs. and 1 lab. W.

4710 Principles of Weed Science (4) Principles of cultural, biological, and chemical control of weeds, effects on environment, principles of herbicide selectivity and activity, types of herbicides and specific recommendations for various crop and non-crop uses. Prereq: Agric. 1140 or 1120; Organic Chem. 2130 and any PSS course at 3000-level except 3610. 3 hrs. and 1 lab. S.

4910 Seminar (1) Review of literature. Oral and written reports. W.

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

Roy F. Knight, Dean
William J. Lauer, Associate Dean

The School of Architecture offers a program of professional studies which prepares its graduates for the practice of architecture. While emphasizing knowledge and skills required by architects in guiding the processes of building, the school is especially concerned that its students learn that kind of good judgment which particularly distinguishes the architect from all other professionals who serve the building industry. Therefore, the student is regularly called upon to pay attention to cultural, philosophical and ethical issues that appropriately concern the architect in performance of the art of building. The student is also required to discover and understand the principles by which our physical universe appears to operate in order to know the science of building as fully as possible. It is important for the student to learn the characteristics of the natural environment while learning the physical behavior of materials in structures. Furthermore, the program of the school is concerned with preparing the student to be adaptable to change. An understanding of society is important as we see it developing in sometimes surprising ways. This places special demands upon the architect. Consequently the program of the School emphasizes the process of learning with the intent of enabling its graduates to adapt to the changing circumstances of our world. How to learn about architecture is as important a matter for the student as learning itself.

Facilities

In the spring of 1981, a new building housing the School of Architecture and shared by the Art Department was completed. The Art and Architecture Building contains all the primary activities of the school. Expressly designed for the school in an open architectural competition, the building has received widespread recognition and has become one of the models sought out by other schools. The building was designed by the Knoxville architectural firm of McCarty, Bullock, Holsaple, Inc. It contains as its major feature a large interior mall or street. Opening off this large gathering space, which serves as a campus focal point, are amply designed classrooms, a reference library which contains extensive slide collections and other reference materials, computer rooms, faculty offices, lecture rooms, administrative offices, an elaborate darkroom, workshop, and a gallery in which architecture as well as art exhibits are mounted.

The principal library holdings of the school are located in the James D. Hoskins Library, with additional volumes in the Undergraduate Library. A reading and reference room is maintained in the Art and Architecture Building.

Financial Assistance for Students

A number of $500 sponsorships are made available each year by architectural firms, manufacturers of building materials, and other construction related industries. These grants are used to cover tuition, books and equipment. Scholarships are also available through the national headquarters of the American Institute of Architects. Honor students in all the upper four years are eligible for this aid, but it is primarily awarded to student's of third-and fourth-year standing.

Lecture Program

Throughout the academic year, the school organizes an extensive series of special lectures by experts in architecture and related subjects. Students are expected to attend regularly and benefit from this opportunity to hear the leading people of the field. The lectures are open to the University community and the public as well.

Included in the series is the ROBERT B. CHURCH MEMORIAL LECTURESHIP. Named for the school's second dean, it has become widely respected in the field as an honor to be appointed to this lectureship. The most prominent architects from around the world are brought to the school with income from the endowment.

Other important lectures are sponsored by the General Shale Corporation and the architectural branch of the Tennessee Valley Authority. Annually in the spring quarter a special program called TAASS is arranged. Within a period of one week the entire school participates in special lectures, seminars, exhibits, and informal gatherings. Featured are discussions by a series of visiting experts. TAASS is a student organized event.

Publications

Students in the school each year publish The University of Tennessee Journal of Architecture. Continuing several years of excellent publications covering work of the school and current thinking in the field, this journal has become a widely recognized part of the school's participation in the profession.

Financial Assistance for Students

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Foreign Studies Program

Each year the school offers at least two opportunities for foreign study to its students. In cooperation with the Danish International Student Committee a program is regularly offered in Copenhagen taught by outstanding Danish architects and educators. Within the school faculty, a person is assigned responsibility to lead a program in Europe each year at varied locations. These are designed to include visits to prominent new architectural sites and major historic locations.

Studies abroad, which are arranged to include a full quarter's credit for advanced students, include design, history, and theory of architecture.

Memphis and Knoxville Community Design Centers

Each year, throughout the year, advanced students may work at these locations off-campus enrolling in a course; Arch. 4445 Design Service in Communities, or Arch. 4400 Independent Design Studies. These programs enable students to gain first-hand experience and work alongside outstanding professional architects while dealing with actual community based projects. In both locations students may enroll in additional courses to complete a full quarter's program of study in keeping with curriculum requirements.
General Information
Students are advised to consult the University’s general requirements as stated in the front section of this catalog as well as the requirements described in the School of Architecture’s Student Handbook.
Self-advising will not be permitted in the School of Architecture. Students must plan their schedule by consulting with an assigned advisor. Electives will be chosen with the concurrence of the advisor and with full consideration of the necessary prerequisites.

Freshman Association
Requirements
The School of Architecture, being a professional program and having limited resources, has a restricted enrollment based on the following criteria:

1. Accept applicants with an ACT composite score of 27 or above.
2. Accept applicants with a total of 55 or above using the formula of the high school grade point average times 10 plus the ACT composite score. A minimum ACT composite score of 20 is required.
3. Refuse all applicants with an ACT score of 16 or below.
4. Refuse applicants not falling into items 1, 2, or 3 to the Committee on Admissions. The Committee meets during the second week of March.

Deadlines for Applications
Deadlines for application to the School of Architecture coincide with those set forth by the University of Tennessee. All applications must be received by August 1 for Fall quarter admission, and no later than three weeks before the start of classes for admission to any other quarter.

Requirements for Progression to Second-Year Architecture

(1) Satisfactory completion of first-year architectural program with grade point average at least 2.3; exceptions may be made by petition only.
(2) Accept applicants to the School of Architecture no later than June 15 preceding the start of the second year.
Students must maintain an overall 2.3 grade point average by the end of 51 hours (attempted) or attend a special “full status” program. Delinquent students must be put on “temporary status” for one quarter. These students will have one quarter to raise the overall GPA to a 2.3 or have minimum 2.3 on each quarter’s work until overall average is raised to 2.3. If the GPA is not brought up to a 2.3, the student will be dropped from the architecture program.

Third-Year Prerequisites
Students are required to have all first-and second-year courses satisfactorily completed before entering the third-year design courses, Architecture 3001-02-03. Students’ progress and design work in second year will be reviewed by a committee of the faculty determining their request for advancement to third year. Students who register for a third-year design course holding first-or second-year deficiencies may be required to drop the course at any point during the quarter.

Progression to 4000-level Courses
Architecture students must have attained third-year standing in the school before being admitted to any 4000-level course, with the exception of Architecture 4000 Service Practicum.

Minor
An undergraduate minor in architecture is offered in order to enable students in other colleges to obtain a minor in architecture which are relevant to their major areas of concentration. The minor will consist of not less than 18 hours. Persons interested must obtain the consent of the School of Architecture Academic Standards Committee and Dean of the School of Architecture, who will approve specific programs of study proposed by students.

Course Load
The average course load in any quarter is 16 credit hours. The minimum which may be taken by full-time students is 12 hours; the maximum which may be taken without approval of the dean is 19 hours.

Satisfactory/No Credit Courses
These courses, if successfully completed, will count as hours for graduation, although neither S nor NC grades will be calculated in the student’s grade point average. Satisfactory is defined as C or better work on the traditional grading scale, and no credit is defined as less than C. The following regulations apply: (1) S/NC courses may not count for required courses or architecture electives; (2) a student who desires to take a course S/NC should indicate this intention at the start of registration. A change from S/NC grading to regular grading or from regular grading to S/NC will not be permitted beyond the add deadline for each quarter. Exception: students who register for a course S/NC in a restricted area will be required to change to regular grading when the error is discovered.

Program Description
The curriculum for the Bachelor of Architecture Degree includes a combination of required and elective courses which offer the student both a solid professional program of study and a sound general education. While the majority of the courses are designated as required, students may use the available architecture electives to expand their knowledge in areas of special interest. Academic non-architecture electives allow students to broaden their education in areas of general interest: the humanities, natural sciences, social sciences or arts. All electives are to be taken only with the approval of the student’s advisor.

Curricula for Architecture
All students studying for a Bachelor of Architecture degree will include the following requirements in their course of study. Students are not allowed to enroll simultaneously in two design courses. For any additional specialized requirements, the student should refer to the Student Handbook of the School of Architecture and the student’s advisor.

SERVICE PRACTICUM REQUIREMENT
A three-month, non-credit internship in an architect’s office is required. Upon petition, work in an engineer’s, or contractor’s office or related work may be approved by the school. This work must be evidenced by a letter from the employer indicating type and quality of student’s work and time of employment prior to the fifth year. (See course description for Architecture 4000.)

Foreign students may need to obtain Immigration and Naturalization Service Employment Authorization before service practicum begins. To obtain authorization, foreign students should take their I-94 form to the Office of International Student Affairs not more than 60 days nor less than 30 days before the anticipated starting dates. Beginning service practicum employment without INS authorization constitutes unauthorized employment and may jeopardize foreign student’s continued stay in the United States.

Requirements for Progression to Second-Year Architecture

(1) Satisfactory completion of first-year architectural program with grade point average at least 2.3; exceptions may be made by petition only.
(2) Accept applicants to the School of Architecture no later than June 15 preceding the start of the second year.
Students must maintain an overall 2.3 grade point average by the end of 51 hours (attempted) or attend a special “full status” program. Delinquent students must be put on “temporary status” for one quarter. These students will have one quarter to raise the overall GPA to a 2.3 or have minimum 2.3 on each quarter’s work until overall average is raised to 2.3. If the GPA is not brought up to a 2.3, the student will be dropped from the architecture program.

Third-Year Prerequisites
Students are required to have all first-and second-year courses satisfactorily completed before entering the third-year design courses, Architecture 3001-02-03. Students’ progress and design work in second year will be reviewed by a committee of the faculty determining their request for advancement to third year. Students who register for a third-year design course holding first-or second-year deficiencies may be required to drop the course at any point during the quarter.

Progression to 4000-level Courses
Architecture students must have attained third-year standing in the school before being
Architecture 2114, 2214, 2314 ...

Second Year
Architecture 3100*, 3200*, 3300*
Architecture 3114, 3214, 3317
Architecture 3116, 3216, 3316
Architecture 3217
Architecture electives

Third Year
Architecture 4200*, 4300*, 4600*
Architecture 4101, 4501
Architecture 4116
Architecture elective

Architecture electives

Total: 143 hours

*Students are not allowed to enroll simultaneously in two of these design courses.

To be admitted to the third year the students must have his or her work reviewed by designated committee of faculty of the school. A GPA of 3.0 in Architecture 1100, 1290, 1390, 3100, 3200, 3300 is required along with an overall 2.5 GPA.

Approved Electives List

Approved Electives: First & Second Year Students

1100 Introduction to Architecture (3) Examination of scope and definition of architecture. Imaginative, intellectual, and professional background. The field and its relation to contemporary society, the building industry, and allied design professions. Architectural design as a creative process; orientation to courses and programs of the school.

1101 Design Drawing (3) Principles of design through graphic presentation of field observations. Techniques of freehand sketching and abstract graphic communication applied to local examples of buildings and sites. Examination and discussion of 1100. Training introduced which relates development of critical vision with drawing skill and the student's imaginative capacity.


1191 Second Degree Program: Architecture Seminar I (3) Study and practice of architecture. Orientation to the profession and program of the school. Coreq: 1190. F.


1201 Visual Design Principles (2) Basis of visual order: proportion, scale, balance, figure-ground relationships, and rhythm. Studies of two and three-dimensional forms. Light, shadow, and color. Creative abstraction exercises and sketches to focus on basic architectural principles. Prereq: 1100 and 1101. W.

1202 Second Degree Program: Basic Architecture II (8) Principles of site development and basic approaches to planning and design of buildings in relation to function and context. Prereq: 1190 and 1191; coreq: 1251. W.

1291 Second Degree Program: Architecture Seminar II (2) Beam and portal design. Analysis of site conditions. Prereq: 1190 and 1191; coreq: 1290. W.


1301 Structural Types (2) Basic building structural types and materials. Assembly of buildings, post and lintel, frames, slabs, stressed skin, geodesic frames, shells. Introduction to concepts of compression, tension, and bending moments. Properties of basic building materials. Prereq: 1200 and 1201. S.


200 Man Environment Systems I (4) Introduction to theory and applications of man-environment relations; study of both physical and psychological environmental impact upon human behavior patterns; cause-effect relationship of dynamics of developmental change on human behavior. Prereq: Second-year standing.

2100 Fundamentals of Site Design (4) Projects involving site orientation, climate, energy conservation, access, topography, grading and drainage. Prereq: 1300 and 1301; coreq: 2101. F.

2101 Design in the Environment (2) Introduction to design symbols, language and their application in urban contexts. Review of exemplary approaches in current practice. Prereq: 1300 and 1301; coreq: 2100. F.

2114 Computer Applications in Architecture (4) Demonstration of computer use in architecture, including exercises with computers.

2200 Elements of Architectural Design (4) Design of small buildings with special consideration for site, internal circulation patterns, space allocation, and structural order. Presentation sketches, constructed drawings, and sketch models. Prereq: 2100 and 2101; coreq: 2201. W.

2211 Building Use (2) Introduction to techniques of building programming. Space allocation and balance. Inter-related ship of spaces in terms of use. Examination of user requirements. Typical approaches to entry, access, circulation, and building service systems. Diagrammatic presentations and sketches from field observations. Prereq: 2100 and 2101; coreq: 2200. W.

2207 Architectural History I (3) Development of architecture from antiquity through the Byzantine period, with consideration for cultural conditions and form of settlements.

2214 Architectural Structures I (4) Introduction to structural properties of building materials under loading conditions. Analysis and selection of structural and environmental systems. Full scale model building occupancies including daylighting and electrical design. Prereq: 3200; coreq: 3317. S.

3100 Architectural Design I: Concepts (4) How to analyze and design of simple structures and how basic concepts are applied to specific cases. Design projects, drawings, and models for presentation of design solutions. Prereq: 2300 and 2301. F.

3107 Architectural History III (3) Study of the modern movement from its roots in Romanticism, Neo-Classicism, and the Industrial Revolution through the work of modern masters, with applications to current design issues. Prereq: 2307. E.

3114 Structures in Wood and Steel (4) Introduction to analysis and design of simple steel and wood structures based upon specific loading requirements. Use of construction and building codes, handbooks, and design tables - selection of structural members. F.

3116 Environmental Control (4) Human physiological response to heat, light, and sound in buildings. Study of climatological factors which affect buildings; introduction to heating, ventilating, and air conditioning. F.

3200 Architectural Design II: Concepts (6) Building concepts, forms, and functions studied through development and presentation of designs for buildings of moderate complexity. Preliminary structure, materials choice, energy considerations, and environmental setting. Solution to issues of site and context. Complete sketches, drawings, and models at site and building scales required. Prereq: 3100. W.

3214 Structures in Masonry and Concrete (4) Introduction to analysis and design of simple reinforced concrete and masonry structures. Full scale model building occupancies. Use of construction and building codes, handbooks, and design tables. Prereq: 3114. W.

3216 Mechanical Systems in Architecture (4) Continuation of the study of heating, ventilating, and air conditioning systems, including both passive and active systems and energy conservation, plumbing and fire protection systems. Prereq: 3116. W.

3217 Materials and Processes of Construction (4) Architectural materials and their use in building construction. W.

3300 Architectural Design III: Details (6) Design concepts developed in detail, with consideration of alternative structural and environmental systems. Full scale detail studies. Drawings and models showing detailed embrasures, materials, and structural systems, including daylighting techniques. Prereq: 3317. S.


3317 Structural and Mechanical Applications (4) Analysis and selection of structural and mechanical systems in specific case studies to integrate technical information into a unified design solution. Prereq: 3214 and 3216; coreq: 3300. S.

3910 Research Methods for Designers (3) General introduction to a variety of research methods and technologies.
440 Development and Design (6) Design conse-
quenives of feasibility studies, economics, finance,  maketability, environmental impact, and social con- siderations in development of real property.
445 Design Service in Communities (6) Studies conducted under direction of architect or expert in an allied profession, in service to public service organiza-
tions or agencies of city, county, state, and national governments. Off-campus locations.
4450 Working Drawings (6) Preparation of detailed working drawings, specifications, and other docu-
ments for typical architectural projects.
4460 Energy Efficient Design (6) Architectural de-
sign studies emphasizing detailed consideration of specialized energy conservation techniques.
4480 Structural Innovations (6) Building design with innovative structural configuration and technology. May be repeated. Maximum credit 12 hours.
4481 Architecture-Engineering Laboratory (6) Large scale architectural projects of complex nature with emphasis on engineering systems. Directed re-
search application of new structural concepts. Consid-
eration for sense of place, energy conservation, utility serv-
ices, environmental controls and construction.
4490 Computer Applications in Architectural De-
sign (6) Architectural design projects employing elec-
tronic data processing.
4501 Architectural Programming (3) Emphasis is placed on feasibility studies, economics, and on to identify critical basic issues in design. Examination of information sources and their proper use. Formulation of project objectives and requirements, written and diagrammatic presentation including a design pro-
sess, concept, and method. Preparation for 4600, W.
4600 Comprehensive Architectural Design Project (6) Development of design for complex buildings with attention to clarity of concept. Search for appropriate form and structure, technical requirements and design of details. Full complement of visual and written presentations which support students' arguments for design concept and its development. Required review by faculty representing all areas of the architecture program. Prereq: 4501 and satisfactory completion of all required hours in design courses. S.
4731-32 Earthquake Resistant Structure I, II (4, 4) Analysis and design of structures to resist earthquake effects. Earthquake phenomena. Vibration of single degree structural systems. Resonance and dampen-
ing. Introduction to dynamic analysis of structures. Instrumentation and structural response. Frame and shear wall behavior. Groundstructure interaction. Prereq: Consent of Instructor. (Same as Civil Eng. 4731-32.) 4732-W.
4801 American Architecture I (3) Development of North American architecture from immigration of 1607 until 1680. W.
4802 American Architecture II (3) Stylistic periods from the Gothic Revival through the twentieth century. S.
4803 Oriental Architecture (3) The eastward expan-
sion of the Fertile Crescent to the Indus Valley, Buddhist and Mughal architecture in India, Architec-
ture in China and Japan from the earliest beginnings. A.
4804 The International Style (3) Architecture of the Internation Style 1872-1932 with antecedents and influences. A.
4805 Indigenous Architecture (3) Study of worldwide "anonymous" architecture reliant upon climatic condi-
tions, availability of materials, and economic level of people. Examples from prehistoric structures through twentieth century vernacular. A.
4806 History of Architectural Technology (3) Build-
ing materials and construction techniques from antiqui-
ty to the present. A.
4807 Tennessee Architecture (3) History of settle-
ment patterns and building in Tennessee. F.
4808 History of the City (3) Examination of historical change in urban form and design. Survey. Case stu-
dies.
4846 Cost Analysis (3) Methods and theories of estimating project cost and building cost with reference to present techniques. Research in new techniques of cost analysis.

4847 Specifications (3) Theory, analysis, and methods of specifications. Emphasis placed on development and research of specifications.

4849 Supervision (3) Theories, methods, and site study of job inspection during construction phase and construction administration.

4850 Elementary Structural Matrix Methods (4) Introduction to the generalized matrix methods of analysis of structures. Review of matrix algebra and vectors; development of member stiffness and flexibility matrices; assembly of structure stiffness and flexibility matrices. Prereq: Consent of instructor. (Same as Civil Engineering 4850 and Engineering Science and Mechanics 4850.)


4862 Fire Protection in Structures (3) Characteristics of fires in buildings. Fire codes, building evacuation, sprinklers and other fire protection systems, emergency power and lighting, and fire resistant materials and construction.

4863-64-65 Advanced Mechanical and Electrical Systems (3,3,3) In-depth analysis and innovative concepts in design of heating, ventilating, air conditioning, lighting and electrical distribution systems in buildings. Prereq: 3216. 4863-F; 4864-W; 4865-S.

4870 Architectural Photography (3) Photography as a design, research, and presentation medium. Emphasis on architectural photography using black and white media. F, W, S.

4871 Advanced Architectural Photography (3) Application of special photographic techniques with emphasis on color printing and processing. Prereq: Consent of instructor. F, W, S.


4881-82 Advanced Structural Design I, II (4,4) Analysis, and design of basic building structures. Structural and constructional aspects of building, including structures in steel, concrete, masonry, and timber to satisfy loading and building code requirements. Prereq: 3214 or equivalent.

4883-84 Advanced Architectural Structures I, II (3, 3) Philosophy of structural design in relation to materials and form. Advanced mathematical and experimental analysis of structures, including use of computer programs. Prereq: 4891 or equivalent.

4887 Structural Design for Protection Against Extreme Hazards (3) Probability, risk, human values, insurance. Survey of possible hazards: floods, fire, hurricanes and tornadoes, earthquakes, nuclear effects, internal and external explosions. Building codes and engineered design of steel, masonry and wood structures to resist extreme effects. Protective construction for human needs. Fire protection engineers, fire phenomena, life safety analysis, high-rise building fires.


4891 Computer-aided Design (3) Survey of computer applications in architecture, with special emphasis on structural calculations. Prereq: 2114. S.

4892 Architectural Computer Graphics (3) Survey of architectural applications of computer graphics; program planning and implementation. Prereq: 2114. W.


4894 Advanced Design of Concrete Buildings (3) Precast and on-site concrete construction and maintenance, foundations, floor and wall systems. Domes and shell roofs. Prereq: 4891 or equivalent.

4900 Aspects of Urban Environment (4) Interdisciplinary course in urban problems. Prereq: Consent of one of the instructors. SAME as Urban Studies 4900.


College of Business Administration

C. Warren Neel, Dean
Roger L. Jenkins, Associate Dean for Graduate Programs
John R. Moore, Associate Dean for Undergraduate Programs
Richard C. Reizenstein, Associate Dean for Management Development Programs
David A. Hake, Director, Center for Business and Economic Research

The College of Business Administration seeks to prepare men and women for positions as executives and specialists in business. Seeing the business firm as operating in a dynamic social, political, and economic environment, the college has four functions with respect to its purpose: (a) to offer its students the firm base of liberal education consistent with that possessed by all educated people; (b) to present to its students business-oriented instruction in professional fields so that they may understand the business process as a whole and the function of specific areas of business in particular; (c) to associate closely with other colleges of the University in order to enrich the understanding of its students by offering an opportunity to learn from psychology, sociology, and other areas related to the behavior of people; (d) to develop in its students the ability to see their four years in the college as the initial step to a lifetime commitment to personal growth and intellectual maturity through continuing education.

The college centers its teaching, subject matter, and research activity around two themes: the manager as a planner, decision maker, implementer, and controller of operations in a business firm; and the manager as an analyst of and an adapter to the larger social, economic, and political environment in which the firm exists.

The college has one goal: to have each student leave school with a reasonably articulate and coherent, though flexible and ever-developing, personal philosophy of business; an understanding of the scientific, ever-changing technological world; and a firm awareness of their social responsibility as a future executive and enlightened wielder of power.

The nationally recognized body which accredits programs in business administration is the American Assembly of Collegiate Schools of Business (AACSB). The college has been a member of AACSB since 1941, and both its undergraduate and graduate programs are fully accredited. In addition, the AACSB has accredited the following accounting programs: B.S., M. Acc., M.B.A.

Association and Progression
Students wishing to receive a degree in business administration must seek association with the College. Details of the requirements for association are found on page 27 of this catalog.

Student Advising Center
The College of Business Administration maintains a Student Advising Center. The center is staffed with full-time academic advisors to assist freshman and sophomore students on an individual basis with their programs. Junior and senior students are assigned to advisors from the faculty of the student’s selected major. The objective of working with students individually is to assist them with their personal needs for academic information and to prepare them for self-sufficiency in responding to their questions and concerns.

Center for Business and Economic Research
The staff of the Center for Business and Economic Research engages in studies of the business and economic environment in Tennessee, the Southeast, and the nation. The center serves the business community, state government, individuals, and the University through dissemination of information, and aids the faculty in preparing research proposals. Staff members conduct research in regional economics, public finance, demography, and related socio-economic problems. The center publishes results of its research and that of others, in monograph form, so that significant developments in the various business disciplines can achieve widespread exposure. In addition, the center staff does contract research on business and economic problems for governmental organizations and private industry. As periodicals, the center publishes the Tennessee Statistical Abstract and the Survey of Business.

The center is a member of the Southeastern Economic Analysis Conference and the Association for University Business and Economic Research.

Management Development Programs Department
The Management Development Programs Department offers a wide variety of programs ranging from two-to-three-day public seminars and customized “in plant” programs to the four-week University of Tennessee Executive Development Program.

The University of Tennessee Executive Development Program (TEDP) is designed to provide extensive continuing educational opportunities for executives from firms and organizations in Tennessee, the South, and the nation. The major objectives of the program are to prepare and develop executives for increasingly higher levels of management responsibility and to sharpen existing executive skills needed for comprehensive decision making and leadership. Other major aims of the TEDP are to teach the fundamentals of analytical thinking and the use of decision tools and to examine the economic, political, technological, and other environmental factors affecting the firm’s operations.

The TEDP limits enrollment and participants live on campus for a total of four weeks spread over a three-month period. The fall Executive Seminar brings participants and spouses of all TEDP classes back to campus for sessions on relevant topics and current key issues. The Executive Seminar offers a continuing opportunity for personal growth and professional development. This arrangement provides executives with extensive opportunities to exchange ideas and operational concepts with contemporaries in other business areas and with TEDP faculty as well.
The faculty for the TEDP consists of senior professors who teach business-related subjects in the University's graduate programs as well as nationally recognized professors from other institutions. Each participating faculty member has substantive experience in either consultation or actual operations in business and industry. The TEDP faculty is augmented by outstanding practitioners in business and industry. The TEDP faculty is from other institutions. Each participating

Cooperative Program in Business

The College of Business Administration offers qualified students who have completed at least one year of work at the University and whose grades conform to the standards set by the college the opportunity to participate in the Cooperative Program in Business. This program, under the direction of a coordinator, combines classroom study with practical experience. Effort is made to place students in jobs which offer maximum educational and financial advantages. Students alternate quarterly between work in business or industry and study at the University. The Cooperative Program gives the student an opportunity for practical experience, develops a sense of responsibility and cooperation, helps in selecting a vocation, creates greater interest and incentive in studies, enables earning part of expenses, and may lead to permanent employment after graduation. The student may earn a maximum of nine hours of elective credit for field work but must do a satisfactory job as determined by the employer and coordinator, including reports covering job experiences. All students in the program are referred to the Center for Extended Learning, Student Services Building.

Preparation for Teaching

Students desiring to teach business, economics, or distributive subjects in the secondary schools of Tennessee may follow majors in accounting or marketing and also meet the requirements for certification by the State Department of Education. Students should consult an advisor in business or distributive education regarding the proper courses. Master's and doctoral degree programs leading to teaching in junior and senior colleges or universities are available as well.

Business Minor for Non-Business Majors

Students who are non-business majors, but who wish to obtain a minor in business, must successfully complete 20 hours of the following required courses: Accounting 2110-20-30, Economics 2510-20, and Statistics 2110. Also, non-business divisional business electives must be taken at UTK. Not more than six upper-division hours of accounting, economics, or statistics may be used for this minor. Students are responsible for meeting prerequisites listed for any upper-division courses taken in a particular concentration. Acceptance of the minor must have approval of the student's college of enrollment. Minors are unavailable to College of Business Administration students.

Course Load

The normal course load for a quarter is 15-17 hours. The maximum number of hours which may be taken by a freshman is 18. Other students may take 19. In unusual circumstances permission to take a course load in excess of these maximums may be granted by the Associate Dean for Undergraduate Programs in Business Administration.

Requirements for All Curricula

In order to qualify for the Bachelor of Science in Business Administration degree, a student must have been accepted for association with the College at the upper division level and must complete the curriculum outlined by the major department. Where no course number is indicated or where a choice is allowed, the student will fulfill the requirement by selecting from specified courses. Where electives are provided, the courses taken must meet the approval of the advisor. Non-departmental electives are considered as courses outside the student's major department. No more than 42 hours are permitted in any one subject area. A maximum of 30 credit hours of unconventionally graded (S/NCG, P, etc.) courses may be applied to the total credit hours required for a degree of Bachelor of Science in Business Administration. Such credit hours may be used to meet only the requirements identified in the curriculum as "non-business electives," "non-departmental electives," "business and/or non-business electives," and "business electives." A Management Science Option is available for students with facility and interests in mathematical applications to business. See page 87. NOTE: Students are advised to consult the University's degree requirements as stated in the front section of this catalog as well as the requirements for the college or department.

BUSINESS CORE REQUIREMENTS

The following core courses are required in all business programs: English 1010-20-30 (2110-20, 3210 for accounting and management majors); Business Administration 4430; Business Law 4110 and 4120; Economics 2510-20; Finance 3510 (Political Science 4750 for Management Science majors), 3120-30; Management 3010, 3110 (3111 for management majors); Marketing 3110-20; Business Administration 2750 or Computer Science 1410 (3150 for Management Science Option); and Statistics 2100 and three hours of upper-division statistics elective or as designated by the curriculum (3450-60 for Management Science Option).

ENGLISH REQUIREMENT

The English requirement can be fulfilled by English 1010, 1011, or 1019; 1020, and either 1031, 1032, or 1033, as well as hours selected from Accounting 2510-20-30, 2540, 2560-70-80, 2660-70-80, Speech 2511 or 2561, unless specifically required by a curriculum, may be used to satisfy four of the elective English hours required. English courses beyond 1000 level may be taken in any order. Students making a 3 average in freshman English are permitted to substitute for the 2000-level courses listed above any upper-division courses which the Department of English will allow them to take.

NATURAL SCIENCE REQUIREMENT

The natural science requirement can be fulfilled by an eight-hour sequence in any of the following fields: astronomy, biology, botany, chemistry, geology, or physics.

SOCIAL SCIENCE REQUIREMENT

The social science requirement can be fulfilled by selecting from the following courses: Anthropology 2510-20-30; Geography 1610-20, 2110-20-30; History 1510-20 (1519-28), 1610-20, 1950-60, 2510-20 (2518-28); Home 1198; Human Services 2690; Philosophy 1510-20, 2310, 2510-20; Political Science 2020, 2510-20 (2518-28); Psychology 2500 (2518), 2530-40, Religious Studies 2610 (2611), 2620; and Sociology 1510-20. Students who have not completed a year of American history in high school must select American History; History 2510-20 (or 2518-28) and 2511 or 2521 as part of the 16 hours of social sciences.

COMPUTER SCIENCE REQUIREMENT

A computer programming course is mandatory. Computer Science 1410 or Business Administration 2750 satisfy this requirement.

Accounting

The curriculum provides students with a general education, a general business education, and a general exposure to the primary areas of accounting. Students completing the curriculum are eligible to begin careers in public accounting, industry, and government. Students desiring greater depth or wishing to specialize in certain areas of accounting are encouraged to seek admission to the Master of Accountancy program during their junior or senior years. Together, the undergraduate accounting program and the Master of Accountancy constitute a five-year opportunity that fulfills the current educational recommendations of the American Institute of Certified Public Accountants.

Transfer Students: A minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 15 hours of accounting courses numbered 3000 or above and must include Accounting 4110, 4140, 4430, and 4630. Transfer students with nine quarter hours of introductory accounting will receive six hours of credit in Accounting 2110 and three hours of lower-division accounting credit.

<table>
<thead>
<tr>
<th>Hours Credit</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
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<tbody>
<tr>
<td>English</td>
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<tr>
<td>Freshmen</td>
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<td>9</td>
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<td>Science</td>
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<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>30</td>
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</table>
for students (aided by their department faculty advisor) to tailor their programs to fit their particular career goals and prepare for one (or more) of the following specialty areas:

INVESTMENTS & MANAGEMENT - This specialty area leads to career opportunities as a stock broker or investment counselor. In addition, students are prepared for investment analysis and portfolio management positions with commercial banks, investment banks, mutual funds, and insurance companies.

CORPORATE FINANCIAL MANAGEMENT - Career opportunities in this area include: corporate financial forecasting, planning, and control; managing the cash, short-term borrowing, and short-term investment positions of the firm; capital project analysis; and long-term financial planning.

BANKING AND FINANCIAL INSTITUTIONS - Courses in this area prepare students who are planning careers in management of commercial banks and branches, or as trust officers, investment or loan officers, or in savings or industrial banks, the Federal Reserve System, international monetary institutions, or state and federal bank regulatory agencies.

INSURANCE AND RISK MANAGEMENT - This concentration is designed to prepare students for entry into careers in insurance and business or public risk management. Opportunities include marketing, agency or home office administration, and management of those pure risks which threaten the solvency and operational efficiency of a business or the provision of cost efficient services by a governmental body.

FINANCIAL PLANNING AND SERVICES - This curriculum provides fundamental and advanced courses covering subjects which are essential in preparing persons for entry into the fields of financial planning and financial services — including Personal Financial Planning, Estate Planning, Investment, Retirement Planning, and Employees Benefits.

Transfer Students: A minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 12 hours of accounting, economics, and finance courses.

<table>
<thead>
<tr>
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<tr>
<td>Marketing 3110-20</td>
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<tr>
<td>Statistics 3220</td>
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<tr>
<td>Economics 3415</td>
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<td>3</td>
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<tr>
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<td>Accounting 4110</td>
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<tr>
<td>Finance 3130</td>
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**TOTAL:** 187 hours
Personnel Management—designed for students who wish to prepare for careers in personnel management, including the specialized fields of employment, wage and salary administration, job evaluation, training, and human resources management.

Office Systems Management—designed for students who wish to prepare as managers in word processing, information systems, and various administrative support functions.

General Management—designed for students who desire careers in management, but who do not wish to specialize in operations, personnel, or office systems. This concentration affords flexibility so that students tailor their programs of study to fit their career goals by selecting from a set of both departmental and non-departmental courses.

Transfer Students: A minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include at least 15 hours of management courses including 4210, 4320, 4460.

### PERSONNEL CONCENTRATION

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<td>Business and/or non-business elective</td>
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### OFFICE SYSTEMS CONCENTRATION

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### OPERATIONS CONCENTRATION

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<td>Finance 3120</td>
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<tr>
<td>Statistics 3110</td>
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### PERSONNEL CONCENTRATION

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<th>Course Code</th>
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### BUSINESS ADMINISTRATION MAJOR

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<tr>
<td>Business and/or non-business elective</td>
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</table>

### Marketing

This major is designed to prepare students for careers with companies engaged in the marketing of consumer and industrial goods and their distribution by wholesalers, and retailers. The curriculum trains students for positions in sales, advertising, promotion, research, and marketing management. The integrated sequence of courses enables students to obtain broad training in the analysis of marketing decision problems.

Transfer Students: A minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include the following required marketing courses: 3210, 4210, 4510, 4650, 4710.

### OPERATIONAL OR PERSONNEL CONCENTRATIONS

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<th>Course Code</th>
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<tr>
<td>Non-business elective</td>
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### GENERAL CONCENTRATION

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<td>Accounting 3210-20</td>
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### OFFICE SYSTEMS CONCENTRATION

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### OPERATIONS CONCENTRATION

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<td>Industrial Engineering 3600</td>
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<tr>
<td>Management 3311</td>
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### PERSONNEL CONCENTRATION

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>Accounting 3210-20</td>
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<tr>
<td>Industrial Engineering 3600</td>
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<td>Statistics 3310</td>
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</tr>
<tr>
<td>Management 3311</td>
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</tbody>
</table>

### Statistics

This major is designed for students interested in the use of statistics in business, government, and industry. All students complete a set of courses designed to provide a general understanding of statistical methodology and also complete one of the following concentrations:

- **Statistics**: designed for students interested in positions involving quantitative research, as well as for those interested in pursuing a graduate degree in statistics.
- **Industrial Statistics**: designed for students interested in process control and quality management in business, government, and industry. Students planning to pursue...
graduate work in statistics should also take
Math 2840-50-60.

<table>
<thead>
<tr>
<th>Hours</th>
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<tr>
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<td>Mathematics 1840-50-60</td>
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<td>Geography 2130</td>
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<td>Junior</td>
<td>Finance 3510, 3120-30</td>
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<td>Transportation 3110-15-20</td>
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<td>Transportation 4150</td>
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<td>Senior</td>
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<td>Transportation 4170...</td>
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<td>Technical electives</td>
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TOTAL: 187 hours

Transportation and Logistics

A major in transportation and logistics is recommended for students who plan careers with: (1) transportation companies that supply freight and/or passenger services; (2) industrial and marketing organizations that coordinate traffic, warehousing, and related distribution activities to achieve optimal business logistics systems; or (3) transport regulatory and planning agencies at all levels of government.

The program prepares students for the examinations of the American Society of Traffic and Transportation. A number of scholarships for transportation and logistics majors are available.

To graduate with a major in transportation and logistics, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 21 hours of transportation and logistics courses in residence.

<table>
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<tbody>
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<td>Freshman</td>
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<tr>
<td></td>
<td>Mathematics 1540-50-60 or 1840-50-60.</td>
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<tr>
<td></td>
<td>Natural science electives</td>
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<td></td>
<td>Social science electives</td>
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<tr>
<td></td>
<td>Business electives</td>
</tr>
<tr>
<td>Sophomore</td>
<td>Speech 2311 or 2361</td>
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</tbody>
</table>

Elective

STATISTICS CONCENTRATION

Math 2840-50-60 | 4 | 4 | 4
Statistics 3450-60 | 3 | 3 | 3
Non-business elective - | - | - | -

INDUSTRIAL STATISTICS CONCENTRATION

Statistics 2110, 2220, 3310 | 3 | 3 | 3
Non-business electives | - | - | 4

Elective

STATISTICS CONCENTRATION

Statistics 3550, 3310 | 3 | 3 | 3
Elective - | - | - | -

INDUSTRIAL STATISTICS CONCENTRATION

Statistics 3030, 3450-60 | 3 | 3 | 3
Non-business elective - | - | - | -

Management Science Option

The increasing use of electronic computers and modern management methods by industry and the business community has created a rapidly growing demand for persons capable of using mathematics, statistics, and computer methods for the use of quantitative techniques in solving management problems. The Management Science Option is available to students majoring in accounting, finance, general business, management, marketing, statistics, and transportation.

Accounting M.S.O.
The curriculum provides students with a general education, a general business education, and a general exposure to the primary areas of accounting. Students completing the curriculum are eligible to begin careers in public accounting, industry, and government.

Students desiring greater depth or wishing to specialize in certain areas of accounting are encouraged to seek admission to the Master of Accountancy program during their junior or senior years. Transfer students with nine quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 15 hours of accounting courses numbered 3000 or above and must include Accounting 4110, 4140, 4430, and 4630. Transfer students with nine quarter hours of introductory accounting will receive six hours of credit in Accounting 2110-20 and three hours of lower-division accounting credit.

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Freshman</td>
<td>English 1010 or 1011; 1020; 1031 or 1032 or 1033</td>
</tr>
<tr>
<td></td>
<td>Mathematics 1840-50-60</td>
</tr>
<tr>
<td></td>
<td>Natural science electives</td>
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<td>Social science electives</td>
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<td>Business electives</td>
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<tr>
<td>Sophomore</td>
<td>Speech 2311 or 2361</td>
</tr>
</tbody>
</table>

TOTAL: 187 hours

1. See Requirements for All Curricula.
2. Electives to be specified by the faculty advisor; these may include a maximum of 6 hours of transportation and logistics electives.
3. See Requirements for All Curricula.
4. One course of the Social Science electives must be taken in Political Science and one course must be from one of the following areas: Anthropology, Psychology, or Sociology.
5. It is strongly recommended that accounting majors select one of their English electives from English 3840 or 4140.
6. Accounting 4120 and 4200 are available as technical electives, upon approval of the department head. Other upper-division business or Computer Science courses may be used as a technical elective.

Finance M.S.O.

Transfer Students: An option in the Finance M.S.O. requires a minimum of 30 quarter hours of required upper-division College of Business Administration courses which must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 12 hours of finance courses.

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Freshman</td>
<td>English 1010 or 1011; 1020; 1031 or 1032 or 1033</td>
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<tr>
<td></td>
<td>Mathematics 1840-50-60</td>
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<td>Social science electives</td>
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<td>Business electives</td>
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<tr>
<td>Sophomore</td>
<td>Speech 2311 or 2361</td>
</tr>
</tbody>
</table>

TOTAL: 187 hours

1. See Requirements for All Curricula.

College of Business Administration

81
### General Business M.S.O.

Transfer Students: An option in General Business M.S.O. requires a minimum of 30 quarter hours of required upper-division College of Business Administration courses which must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 12 hours of accounting, economics, and finance courses.

<table>
<thead>
<tr>
<th>Hours Credit</th>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
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<tbody>
<tr>
<td></td>
<td>English 1010 or 1011, 1031 or 1033</td>
<td>Economics 2210, Mathematics 2840-50-60</td>
<td>Primary Language electives</td>
<td>Business Administration 4510, 4520, 4530</td>
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### Management M.S.O.

<table>
<thead>
<tr>
<th>Hours Credit</th>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
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<tbody>
<tr>
<td></td>
<td>English 1010 or 1011, 1020, 1031 or 1032 or 1033</td>
<td>Mathematics 2840-50-60, 4420, 4470, 4520, 4610, 4620, 4710; Students may, if available, substitute other courses for concentration electives.</td>
<td>Business Administration 4610, 4530</td>
<td>Business Administration 4510, 4520, 4530</td>
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### Graduation Studies

The College of Business Administration offers advanced programs in economics leading to the Master of Arts, and the Doctor of Philosophy degrees. The Master of Business Administration degree program offers concentrations in the fields of accounting, economics, finance, forest industries management, management science, marketing, statistics, and transportation and logistics. The Master of Accountancy is offered in accounting. The M.S. degree in statistics is also available. The Doctor of Business Administration degree program is offered in the fields of accounting, finance, management, marketing, and transportation and logistics. Advanced programs in management science lead to the M.S. and the Ph.D. degrees. The M.S. and the Ph.D. degrees are granted in industrial and organizational psychology jointly with the Department of Psychology. This college and the College of Law offer a coordinated dual program leading to the conferment of both Doctor of Jurisprudence and the Master of Business Administration degrees. See the Graduate Catalog for detailed information.

### Departments of Instruction

**Accounting and Business Law**


Distinguished Lecturer: S. B. Wolfe, B.S. Virginia Polytechnic.

**Accounting and Business Law**

2110-20 Fundamentals of Accounting (3,3) Introductory courses in financial accounting theory and practice with emphasis on proportion, reporting, and analysis of financial information. Prereq: For all other courses in accounting except for engineering majors, courses must be passed in sequence. Prereq: For 2110, Math 1550 or equivalent.

2150 Survey of Managerial Cost Accounting (3) User-oriented survey of managerial cost accounting topics designed for engineering majors. Topics include product costing, cost behavior analysis for decision making, standard costing, and budgeting. Prereq: 2120.
3110-20-30 Intermediate Financial Accounting (3, 3, 3) In-depth study of theory, principles, and procedures underlying the preparation of financial statements. Special topics include cost behavior, cost prediction, budgeting, and responsibility accounting. Accounting 2120 and Statistics 2100 are prerequisite. Prereq: for 2220. Credit is not given for both 2130 and 3210.

3210-20 Managerial Cost Accounting (3, 3, 3) In-depth analysis of costing tools, products, and management control. Special topics include cost behavior, cost prediction, budgeting, and responsibility accounting. Accounting 2120 and Statistics 2100 are prerequisite. Prereq: for 2220. Credit is not given for both 2130 and 3210.


3510 Not-for-Profit Accounting (3) Theory and practice of budgeting, financial and managerial accounting and reporting, planning, evaluation, and auditing for not-for-profit entities. Not available to students majoring in Accounting. Prereq: 2130 or 3210.

4110 Principles of Auditing (3) Role of auditing in society, professional auditing standards, auditor's legal responsibility, internal control, use of statistical sampling, audit evidence, and reporting. Prereq: 3130 with a grade of C or better. 4630. Prereq or conreq: Stat 4415.

4120 Advanced Auditing (3) Case-oriented course including audit of specific asset, liability, revenue, and expense accounts, with emphasis on reporting, data processing, statistical sampling, and internal auditing. Prereq: 4110 with grade of C or better and consent of Department Head.

4140 Advanced Financial and Fund Accounting (3) Analysis of issues and alternatives in advanced problem areas including business combinations, consolidated financial statements, and accounting for not-for-profit organizations. Prereq: 3130 with a grade of C or better.

4230 Advanced Managerial Accounting (3) Use of accounting data in planning models, incorporating uncertainty into budgets and performance reports, performance measurement of decentralized operations. Prereq: 3220 with a grade of C or better. Mgmt. Science 2120 or equivalent and consent of dept. head.

4430 Advanced Federal Taxes (3) Fundamental problems of federal taxation with emphasis on alternatives available for reporting taxable income. Prereq: 3130 and 3430 with a grade of C or better in both courses.


GRADUATE

See page 82 for information on graduate programs. Consult the Graduate Catalog for listing of graduate level courses.

Economics (285)

Requirements for a major in economics consist of: (1) Economics 2510 and 2520 or equivalent honors courses, and (2) a minimum of 33 additional hours in upper-division economics courses. Economics 3110 (or 3111 and 3112) and 3210 are required as a part of the upper-division work and should be taken as early as possible in the upper-division program as possible.

2001 Survey of Economic Ideas (3) Ideas of major economics including Adam Smith, Karl Marx and J. M. Keynes; evolution of capitalism; discussion of some current economics problems. Emphasis on non-technical treatment. May not be substituted for Economics 2510 or 2520.

2118-29-38 Honors: Introductory Economics (3, 3, 3) Honors lecture-series in microeconomics, macroeconomics, and the functioning of superpower economies. Ability and interest. Selected third-quarter freshmen will be accepted on basis of high school record, ACT scores, and grade record during first two quarters. Grade of B in 2118 is necessary for entrance into 2128. Grade of B or better in 2128 automatically gives credit for 2138.

2510-20 Introductory Economics (4, 4) 2510-Macroeconomics: supply and demand, competition, monopoly; 2520-Macroeconomics: national income, money and banking, employment, inflation, international trade. Prereq: 2510 for 2520. 3 hr. and 1 lab.

3110 Intermediate Micro Theory (3) Allocation of resources and price determination; market demand, production, cost, and supply; distribution. Students may not receive credit for both 3110 and 3111. Prereq: 2510.

3111 Intermediate Micro Theory I (3) Theory of consumer behavior and demand; preferences, utility and constrained utility maximization. Theory of exchange; introduction to welfare economics. Theory of production. Students may not receive credit for both 3110 and 3111. Prereq: 2510.


3120 Intermediate Macro Theory (3) Aggregate demand, output, and level of employment; price level, inflation, and deflation; economic growth. Prereq: 2520.


3211 International Economics II (3) Theory of international trade, barriers to trade, regional trade associations. Prereq: 2520.

3220 Principles of Economic Development (3) Theory of economic development with application to problems on local, regional, national, and international levels; technological, locational, and financial aspects of economic growth. Prereq: 2520.

3230 Regional Economics (3) Overview of regional differences; theory of industrial, agricultural, and residential location; the economic basis for land use patterns and central places; regional structure, growth and methods of analysis; national assistance for regional economic development. Prereq: 2520.

3240 Economic History of the United States (3) Historical developments in agriculture, industry, communications, transportation, banking, and trade, and changes in government economic policy. Prereq: 2520.

3250 Economic History of Europe (3) Beginnings of capitalism in medieval Europe, expansion of European commercial empires in early modern times, mechanization of industry, changes in agricultural organization, and growing importance of commerce in the second half of the 19th century and their economic consequences. Prereq: 2520.

3310 Comparative Economic Systems (3) Description and analysis of economic goals, institutions and practices, with emphasis on alternative organizational principles and structure. Systems examined will include soviet-type economies. Prereq: 2520.

3340 Government and Business I (3) Microeconomic objectives and alternative public policies for their achievement; prevention of monopoly and concentration through antitrust laws; direct regulation of business performance. Prereq: 2510.

3341 Government and Business II (3) Topics in antitrust policy, direct regulation, and other forms of social control; regulating information, product and managerial responsibility; government-business relations; selected cases. Prereq: 3340.

3410 Principles of Labor Economics I (3) Supply of and demand for labor; market wage determination; application of analysis to issues such as minimum wage laws, discrimination, unemployment, inflation, collective bargaining, income distribution and human resource policy. Prereq: 2520.

3420 Principles of Labor Economics II (3) American labor history, structure of collective bargaining agreements; unions, nature of collective bargaining, and dispute settlement.

4000 Special Topics (3) Student-generated course offered at convenience of department upon student initiative, Subject matter and contents determined by students and instructor with approval of department. Prereq determined by department each time course is offered. Numerical grade is given to law students. May be repeated for credit.

4110 Managerial Economics (3) Application of economic theory to business decision making; emphasis on profit objectives, measurement and forecasting demand and costs, and capital budgeting. Prereq: 2520 and consent of instructor.

4130 Business Cycles (3) Fluctuations in income, employment, prices and other economic variables; topics discussed are: historical facts concerning booms and depression, statistical methods for analyzing economic fluctuations, theoretical explanations of cycles, and policies that have been proposed to combat them. Prereq: 3120 or consent of instructor.

4150 History of Economic Thought (3) Development of economic thought, tools of analysis, and economics as a science. Review of classical and modern economics with an analysis of socio-economic conditions which influenced this development. Period covered: 1776 through 1936. Prereq: 2510-20 or consent of instructor.
4170-80 Introduction to Mathematical Economics (3, 3) Application of mathematical methods in theoreti-
cal and empirical economics. Emphasis on microeconomics and macroeconomic phenomena. Designed for undergraduate students who have limited training in analytic geometry and calculus. Must be taken in sequence. Prereq: Economics 3110 and Mathematics 1840-50, or equivalent.

4230 Problems in International Trade and Econom-
ic Development (3) Problems or problem areas of current economic international trade, finance, and economics and economic development. Prereq: 3210 or 3220.

4231 The Political Economy of Latin America (3) Description, analysis, and comparison of major eco-
nomic problems and policies of various Latin American countries. (Same as Latin American Studies 4231.)

4232 The Political Economy of Asian Development (3) Description, analysis, and comparison of major economic problems and policies of India, China, and Southeast Asian countries.

4233 The Political Economy of the Soviet Union and Eastern Europe (3) Analysis of the major eco-
nomist policies, and problems of the Soviet Union and Eastern Europe.

4260 Economics of Resources and Environmental Policy (3) Economic analysis of environmental policy and its effects on costs and development of natural resources and impacts of growth on environment. Prereq: 2510.

4350 Industrial Organization Analysis (3) Monopoly and oligopoly; imperfect competition; market structure, business behavior, and economic performance and their interrelationships. Prereq: 2510.

4420 Economics of Human Resources (3) Analysis of current problems in human resource development and examination of policies aimed at their solution. Problems discussed may include unemployment, edu-
cation, poverty and income redistribution, discrimination based on sex or ethnicity, or others. Prereq: 2520.

4430 Labor Legislation (3) Economic background and effects of governmental regulation of labor rela-
tions, with emphasis on detailed examination of Na-
ional Labor Relations Act as amended. Prereq: 3420.

4440 Social Security (3) Economic analysis of social security programs. Examines determinants of tax-
ation and training, poverty and income redistribution, and their effects on land value. Emphasis placed on dis-
cussing difficulties involved in obtaining efficient and equable solutions to these problems. Credit not given for both 4830 and Real Estate 4120. Prereq: Consent of instruc-
tor.

4490 Special Topics in Finance (1-3) Subject matter and content determined by the instructor with depart-
ment approval. May be repeated. Maximum 6 hrs.

GRADUATE See page 82 for information on graduate programs. Consult the Graduate Catalog for listing of graduate level courses.

Finance

Associate Professors: A. L. Auxier, Ph.D. Iowa; T. P. Boehm, Ph.D. Washington; W. C. Goolsby, Ph.D. Wisconsin; J. M. Winkler, Ph.D. Illinois (Urbana); C.P.A.

Assistant Professors: D. Cho, Ph.D. Pennsylvania State; P. J. Elmer, M.A. University of Akron; J. P. Ogden, Ph.D. Purdue; R. A. Weir, Ph.D. North Carolina.

"Wm. Veight Professor of Insurance.

"E. Blount National Service Professor.

"G. H. Butcher, Jr. Professor of Banking and Finance.

"Pawn Professor of Business.

Prerequisites: Accounting 2110-20-30 (or 3210 for 2130). Courses 2510-20, and Statistics 2100 for all courses offered in the finance department.

Finance (349)

3120-33 Business Finance (3, 3) Principles of finan-
cial management. Analysis of the investment, financ-
ing, and asset management functions of firm. Prereq: 3120 for 3130.

3510 The U. S. Financial System (3) Examines U. S. 
financial system environment which affects busi-
ness and financial decisions. Coverage includes: over-
all functions of money and credit, banking system, 
other financial intermediaries, interest rate theory, 
and capital markets. Federal Reserve System, 
role of monetary policy, and international banking and 
financial markets.

4110 Investment Analysis (3) Regulations and func-
tions of security markets; mechanics of security 
trading; roles of investment bankers, dealers, and 
brokers; and evaluation of marketability securities such as common stock and corporate bonds. Prereq: 3130 and Statistics 3220 or 4310 or 3110.

4120 Portfolio Analysis and Management (3) Princi-
plies underlying construction and management of 
investment portfolios. Topics include: measures of in-
vestment risk; evaluation of portfolio performance; 
portfolio revision; and international diversification. 
Prereq: 4110.

4310 International Financial Management (3) Rigor-
ous analysis of international finance aspects of finan-
cial management of a multi-national firm. Integrates 
the relevant topics from corporate finance, interna-
tional financial management, and foreign exchange 
management. Credit not given for both 4820 and 
Real Estate 4120. Prereq: Consent of instruc-
tor.

4515 Financial Markets and Institutions (3) Inten-
dive analysis of financial institutions and markets 
where they transact. Analysis of money and bond markets; determinants of the level of interest rates; analysis of differences in rates on different securities; mathemat-
ics of bond prices; international financial markets. Prereq: 3510 and 3120.

4520 Commercial Banking (3) Analyzes key role of 
banks in economy and management issues involved in 
running profitable bank in rapidly changing economic, 
competitive, and regulatory environment. Analysis is 
made of asset, liability, and capital management deci-
sions, bank revenues, cost and profitability, impact of 
EFTS on costs and profits, current regulatory changes 
and international banking issues. Prereq: 3120 and 
3510.

4650 Theory of Financial Management (3) Analyzes 
important decision-making topics in financial manage-
ment. These include valuation, capital budgeting under 
uncertainty, cost of capital, capital structure theory, 

4660 Problems in Financial Management (3) Appli-
cation of decision-making procedures to realistic prob-
lems in financial management. Case study and class dis-
Ecussion. Topics covered include financial analysis, short-
term sources of funds, long-term capital structure, and 
capital budgeting. Prereq: 4650.

4700 Business and Public Risk Management (3) 
Identification and measurement of pure risks facing 
business or governmental unit associated with proper-
ity, liability, and personnel exposures. Emphasis is on implementation of economic principles of risk 
management with risks at lowest cost consistent with good financial management. Credit not given for both 4700 and Insurance 4720.

4710 Insurance and Estate Planning (3) Analysis of 
methods of accumulation, conservation, and distribu-
tion of estate assets. Includes study of how invest-
ment, insurance, and tax planning relate to estate 
planning goals. Credit not given for both 4710 and 
Insurance 4710.

4720 Employee Benefit Financing (3) Analyzes obli-
gations, objectives, and financial impact of employee 
benefits to business enterprise. Includes methods of 
providing security from economic and financial prob-
lems associated with death, disability, and old age. 
Credit not given for both 4720 and Insurance 4720.

4810 Real Estate Finance (3) Study of four funda-
mentals areas of real estate finance: 1) legal environ-
ment of real estate lending; 2) sources of real estate 
credit—primary and secondary mortgage market; 3) 
financing owner occupied housing; and 4) financing 
income producing properties. Credit not given for both 4810 and Real Estate 3630. Prereq: Consent of 

4820 Real Estate Appraisal (3) Theory and practices of 

4830 Problems of Urban Development (3) Study of the 
role of economic and social factors in dealing with 
problems of urban growth on environment. Prereq placed on dis-
cussing difficulties involved in obtaining efficient and 
equitable solutions to these problems. Credit not given for both 4830 and Real Estate 4120. Prereq: Consent of instruc-
tor.

4840 Real Estate Investment (3) Principles of invest-
ment in real property. Utilizes discounted cash flow model in ratio analysis. Current federal tax law applicable to real property. Limited partnerships and 
other joint ventures. Credit not given for both 4840 and 
Real Estate 4640. Prereq: 3130.

4990 Special Topics in Finance (1-3) Subject matter 
and content determined by the instructor with depart-
ment approval. May be repeated. Maximum 6 hrs.

Graduate See page 82 for information on graduate programs. Consult the Graduate Catalog for listing of graduate level courses.

Management
Professors: H. D. Dewhurst (Head), Ph.D. Texas; R. W. Boling, Ph.D. Texas; M. C. O. S. Fowler, Ph.D. Florida (Boca Raton); A. L. Healy (Emeritus), M.B.A. Pennsylvania; M. J. Larsen, Jr., Ph.D. Purdue; S. K. Reed, Ph.D. Berkeley; E. S. Vance (Emeritus), Ph.D. Pennsylvania; G. H. Whitlock (Emeritus), Ph.D. Tennessee; M. S. Wortman, Ph.D. Minnesota.

Associate Professors: C. S. Fowler, Ph.D. Georgia; R. C. Maddox, Ph.D. Texas; C. W. Neel (Emeritus), Ph.D. Alabama; C. G. Rush, Ph.D. Akron.

Assistant Professors: K. C. Gilbert, Ph.D. Tennessee; R. T. Ladd, Ph.D. Georgia; G. B. Roberts, Ph.D. Georgia State.

Alumni Distinguished Service Professor.

Management (625)

Junior standing is prerequisite to all management courses.

3010 Principles of Management (3) Analysis of basic management functions of planning, organization, and controlling. E.

3110 Production Management (3) Analysis of produ-
tion function. Prereq: Statistics 2100 or 3450. Not
available for management majors with concentrations in operations or personnel. E.

3111 Operations Management (3) Analysis and synthesis of concepts and techniques for decision making in the operations function. Integration of the operations function with other business functions. Prereq: Management Science 2110-20. Cannot be taken for credit by students who have credit for Management 3460. (Same as Psychology 4460.) F, W.

4470 Job Analysis and Evaluation (3) Job evaluation as basis for control of wages and salaries. Prereq: 4460. F, W, S.

4520 Evaluation of Personnel Programs (3) Methodologies for criterion development analyzed in areas of selection, training, job evaluation, safety, and labor relations; performance evaluation emphasized. Prereq: 4460-70; Statistics 3110.

530 Personnel Problems Seminar (3) Case problems in personnel analyzed, applying experimental method and conclusions from personnel research as reported in professional journals. Prereq: 4460-70; Statistics 3110.

4620-20 Management Science (3, 3) Applications of mathematical and statistical techniques to problems of production management. Prereq: 30 hrs. of mathematics and statistics, and consent of instructor.

710 Enterprise Planning and Control (3) Concepts and cases on managerial functions of planning and control in business firm or not-for-profit organization. Emphasis on formal long-range strategic planning in changing environment. Team project to develop long-range plan for hypothetical enterprise.

4801-02-03 Readings and Research in Personnel Management (1, 2, 3) Prereq: 4460; Statistics 4310 and consent of instructor. 4803-E.

GRADUATE See page 82 for information on graduate programs. Consult the Graduate Catalog for listing of graduate level courses.

Management Science Programs


Management Science (627)

2110-20 Decision Models (3, 3) Introduction to the use of quantitative techniques in the decision-making process. Prerequisites: Management 3210 and Computer Science 1410 or Office Administration 2750.

GRADUATE See p. 82 for information on graduate programs. Consult the Graduate Catalog for listing of graduate level courses.

Marketing and Transportation


Assistant Professor: L. R. Duffus, Ph.D. Purdue.

Marketing (632)

Economics 2510-20 or the equivalent are prerequisite to all courses in Marketing. Marketing 3110-20 or the equivalent are prerequisite to all other 3000 or 4000-level marketing courses.


120 Marketing Management (3) Analysis of marketing management. Identifying market opportunities, planning marketing programs, and implementing competitive strategies. Prereq: 3110. E.

1310 Marketing Channels (3) Macromarketing systems approach from viewpoint of decision maker: Examination of inputs, outputs, organizations, and goals of marketing systems. Consideration of comparative marketing systems. Prereq: 3110. Coreq: 3110-20.

410 Buyer Behavior (3) Industrial and ultimate consumer purchasing behavior. Theories underlying buying decision processes. Marketing management and pivotal concepts in behavioral sciences. E.

350 Marketing Research (3) Planning and obtaining information for marketing decision making. Information needs, data collection process, methods of analysis, and interpretation procedures are integrated to serve the decision maker. Prereq: 3110-20.

140 Sales Force Management (3) Examination of firm's personal communications function. Managing sales force, including personal selling concepts. Personnel and role of sales organization in marketing program. F, W, S.

150 Advertising Management (3) Mass communications theories and concepts. Advertising and its relationship to marketing program of firm. E.

2430 International Marketing (3) Management of international marketing activities of the firm. Marketing strategies in international business. Prereq or coreq: Business Administration 3110 or consent of instructor. F, W, S.

4610 Market Opportunity Analysis (4) Developing understanding of various approaches available for evaluating opportunity that may exist within a market. Emphasis on relationship between analysis of markets and marketing decision making. Topics covered will include basic consumer behavior concepts, alternative marketing strategies, information analysis techniques, interpretation of marketing information, and forecasting. Prereq: 3610. F, W, S.

4710 Marketing Decisions and Strategies (4) Pragmatic orientation to application of advanced analytical concepts and skills within marketing environment. Emphasis on integration of knowledge from the component areas of marketing into cohesive, well-organized marketing program. Prereq: 24 hrs. of marketing including 3410, 3510 and 4610 or consent of instructor. Course should be taken as close to graduation as possible. E.

4808 Honors: Executive-in-Residence Seminar (3) Student interaction with top-level marketing executives is used as a primary vehicle to show how conceptual marketing knowledge is applied in the business world in a major marketing subject area (e.g., promotion, consumer behavior, marketing strategy, etc.) Prereq: Marketing 3210, 4210, 4510, and consent of instructor. 4650 is a recommended but not required prerequisite. S.

4818-28 Honors: Marketing (3, 3) Marketing trends and developments. Advanced marketing theory and application. Can be substituted by eligible students for courses in marketing of same level. Prereq: Consent of department. E.

GRADUATE See page 82 for information on graduate programs. Consult the Graduate Catalog for listing of graduate level courses.
Statistics (962)

Professors: D. L. Sylwestor (Chairperson) Ph.D. Stanford; R. A. McClain, Ph.D. Washington State; J. W. Philips, Ph.D. Virginia Polytechnic; C. C. Thigpen, Ph.D. Virginia Polytechnic.

Associate Professors: H. A. Lasater, Ph.D. Rutgers; R. G. O'Brien, Ph.D. Harvard; J. L. North Carolina (Chapel Hill); G. B. Ranney, Ph.D. North Carolina State (Raleigh); R. D. Sanders, Ph.D. Texas; M. S. Younger, Ph.D. Virginia Polytechnic.

Assistant Professors: S. W. Ward, Ph.D. Virginia Polytechnic.

Undergraduate courses numbered 4000 and above presuppose familiarity with the basic principles of statistics and with the general concepts of statistical estimation and hypothesis testing. Students intending to take 2100 and one additional undergraduate course are advised to select the latter from among 3000-level courses.

2100 Probability and Statistics (3) Elementary theory of probability; frequency and density functions; expected values and variances; fundamental concepts of statistical inference. Cannot be taken for credit by students who have credit for 3450. Prereq: Mathematicians 1560 or 1850. E.


3220 Analysis of Time Series (3) Some statistical methods applicable to analysis of trends and time series. Graphical presentation and analysis, index numbers, curve fitting, correlation, trends, analysis seasonal and cyclical variation. Prereq: 2100 or 3450. E.

3310 Industrial Statistics (3) Shewhart Control Charts for means and variation measures, proportion non-conforming, acceptability charts, per unit; process capability analysis. Special applications. Prereq: 2100 or 3450. F, W, S.

3320 Industrial Statistics II (3) Acceptance sampling for attributes and variables inspection. Introduction to cost of quality. Elements of life testing and reliability. Prereq: 3310. S.


4310 Regression Analysis (3) Linear regression and correlation, multiple regression, stepwise methods, polynomial regression, use of dummy variables. Use of standard regression computer programs. Elementary theory and applications. F, W, S.

4415 Sampling Techniques and Theory (3) Procedures used in probability sampling for a variety of arrangements of statistical universes and development of estimators and standard errors associated with sampling schemes. Some properties of estimators. Determination of sample size. Not available for credit to students with credit for 3410. E.

4500 Statistical Inference (3) Properties and inferential applications of the common probability distributions in statistics. Goodness-of-fit tests; non-parametric statistics including ranking methods for two independent samples. Elementary theory with applications. Prereq: 3450 or equivalent. W.

4600 Analysis of Variance and Experimental Design (3) Analysis of variance and experimental designs including split plot experiments. Prereq: 3450 or equivalent.

GRADUATE

See p. 82 for information concerning the graduate programs. Consult the Graduate Catalog for listing of graduate level courses.

Interdepartmental Unit

Business Administration (205)

2750 Electronic Data Processing (3) Development of skill in Fortran programming with special emphasis on business applications. Prereq: Math 1560 or 1850 or equivalent. May not be taken for credit if Comp. Science 1410 or Office Admin. 2750 has been completed.

3110 Introduction to International Business (3) A survey of the strategic implications of conducting business operations in an international context. Emphasis on analysis of the influence of national environments including cultural, political, economic and legal characteristics. Prereq: Economics 2520 or consent of instructor.

3700 Essentials of Financial Planning (3) Introduction to individual financial planning. Through study of basic tools, money management, decision making, services of financial institutions, asset protection, insurance applications, and financial planning goals.

3800 Introduction to Real Estate (3) Survey of five fundamental areas of concern to real estate industry and real estate analysts: 1) economics of real estate market; 2) legal environment of real estate; 3) real estate finance and financial institutions; 4) appraisal; and 5) real estate investment. Credit not given for both 3800 and Real Estate 3810.

4310 Business Letter Writing (3) Principles, practices, and mechanics of effective business letters and memoranda; principles applied by solving communication cases; emphasis placed on letters and memos as initial sources of ideas in communications systems of the business firm. May not be taken for credit by students who have completed Office Admin. 4310. F, W, S.

4320 Business Communications: Reports (3) Concepts of business communication and reports. Process of collecting/analyzing pertinent business information and the appropriate presentation of business notions as a basis for executive decision making. Computer technology utilized. Prereq: Junior standing. May not be taken for credit by students who have completed Office Admin. 4320. E.

4430 Business Policy (3) Analysis of business problems and managerial decision making through case studies and written reports. Prereq: Core requirements except Business Law (see page 78) and senior standing. Open only to students who have been admitted to the Upper-division programs of the College of Business Administration.

4598 Honors: Corporate Executive-In-Residence Seminar (3) Interact with top executive corporate executives from a wide spectrum of business disciplines, (Accounting, Finance, Management, Marketing, Transportation, etc.). Discussion of domestic and international strategic planning as it is applied in major U.S. corporations. Focus on the use of written presentations and small group discussion will be on the role of the goods and services in consumer and industrial settings. Prereq: Senior Standing; Finance 3120-30, Mgmt. 3010, 3110, Marketing 3110-20, and consent of instructor.

4610 Seminar in Small Business Assistance (3) Application of classroom learning to problems of small business in the community. Student is given opportunity to apply business management and marketing skills. Upon completion of selected reading relevant to small or minority enterprise, students are assigned a
project on basis of interest, ability, and experience. Students work in teams under supervision of a participating professor within the College of Business Administration. Approval for enrollment must be secured from instructor. May be repeated. Maximum credit 9 hours.

4810-20-30 Problems in Office Administration (1-3, 1-3, 1-3) Subject and title vary each quarter. May be repeated. Maximum 3 hrs. each course. May not be taken for credit by students who have completed Office Admin. 4810-20-30.

GRADUATE
See page 82 for information on graduate programs. Consult the Graduate Catalog for listing of graduate level courses.

Center for Business and Economic Research

STAFF
D. A. Hake (Director), Research Associate Professor, Ph.D. Tennessee
J. J. Kirchenstein, Assistant Director, M.S. Tennessee

D. R. Ploch, Research Professor, Ph.D. North Carolina
K. E. Quindry (Emeritus), Research Professor, Ph.D. Kentucky
W. F. Fox, Research Associate Professor, Ph.D. Ohio State
S. E. Bolt, Research Assistant Professor, B.S. Nebraska (Lincoln)
R. A. Holler, Research Assistant Professor, Ph.D. North Carolina
J. W. Mayo, Research Assistant Professor, Ph.D. Washington University (St. Louis)
B. B. Vickers, Research Assistant Professor, B.A. Mary Washington
P. A. Price, Research Associate, B.S. Tennessee
The College of Communications offers programs designed to acquaint students with the nature of communication and to prepare them for professional work in a variety of communications fields. The college is composed of the School of Journalism and Mass Communications and the Broadcast Department. The curricula of these three academic divisions have a common base of courses beyond which choices will permit the student to develop special interests.

The American Council on Education for Journalism and Mass Communications and the Broadcast Departments of Advertising and Public Relations and Professional Master’s programs. The college is a member of the Association of Schools of Journalism and Mass Communications and the Broadcast Education Association.

**Association and Progression Requirements**

Association with the College of Communications may take place at any time. At least 45 quarter hours in residence in the college is required for a degree. Those interested in this college should obtain a copy of the Program Planning Guidebook of the College of Communications.

Freshmen associated with the College of Communications are temporarily classified as pre-majors. They may apply to a major degree program after they pass typing and spelling proficiency tests and attain a score of 70 percent or better on a College Grammar Test.

Transfer students may apply for association with the College of Communications after they have completed all the premajor requirements including the core courses and attained at least a 2.0 average in all work attempted.

**Curriculum**

The college curriculum offers academic majors in advertising, broadcasting, journalism, and public relations. Through core introductory courses, students receive a basic view of the nature of communications.

The freedom of electives provided within the programs permits students to develop specialized interests in a variety of fields. In consultation with an advisor, they may plan individual programs leading to newspaper, magazine, radio, television, public relations, or advertising work. They may prepare for careers in agricultural or industrial journalism.

They may select related courses to develop a specialty in writing news of science, government, and business. Others may elect courses to prepare themselves as writers on foods, fashions, and home interests, or they may combine training in communications with work in secretarial science.

Students in other divisions of the University may take certain courses for training in effective communication or for an understanding of the social role of the mass media. Students who have completed the basic courses in the college may earn practicum credit for professional work in the field. Approval of the advisor and the department head must be obtained before such work is begun.

**Upper-Division**

Consent of instructor is prerequisite for all 3000 and 4000-level courses, with the exception of Advertising 3000, in the College of Communications.

**Satisfactory/No Credit Option**

The purpose of this option is to encourage students to venture beyond those courses in which they usually do well and, motivated by their own intellectual curiosity, to explore subject matter in which performance may be somewhat less outstanding than work in preferred subject fields.

This option applies only to general elective courses. No course that is a part of the specific requirements of the College of Communications or the student’s major department can be taken under this option. For example, social science, humanities, and speech electives required by the various departments cannot be taken under this option.

Courses earning a “satisfactory” grade will count as hours for graduation but not for calculating the grade point average. A student who wishes to take a S/NC course must indicate this at the time of registration. Under
College of Communications

no circumstances may the student change from S/NC to regular credit or from regular credit to S/NC after the deadline for adding courses.

Course Load
The maximum number of hours an undergraduate can take without special permission is 17 hours. Permission to take 18 or more hours must be obtained from either the dean or the assistant dean for undergraduate studies with the recommendation of the student's advisor and department chairman or school director.

Cooperative Program
The college, in cooperation with the University Undergraduate Cooperative Education Program, has developed a cooperative program with the media, advertising and public relations agencies, and the communications departments of business organizations where interested students might combine their education with a productive work experience. At present, only a limited number of such opportunities are available. Although other arrangements can be made, a student will enter the program only after completing one or two quarters at the University. A student will alternate with another student, with one working full-time for the employer for one quarter while the other person is in school, etc. The typical program is arranged for a five-year period, with the student spending the final three quarters of the senior year on campus.

The Cooperative Program gives the student an opportunity to gain practical experience. It also helps to develop a sense of responsibility and cooperation, creates greater interest and incentive in academic studies and provides part of the student's expenses. It may also lead to permanent employment after graduation. Interested students should contact the Dean's office during their first quarter on campus.

The Edward J. Meeman Distinguished Professorship
As a result of a $200,000 grant to the School of Journalism in 1970 by the Edward J. Meeman Foundation, outstanding journalists and journalism educators are brought to the campus as distinguished professors. The professorship is named for the late editor of The Memphis Press-Scimitar and founding editor of The Knoxville News, which later became the News-Sentinel. Kelly Leiter, former columnist, feature writer and assistant city editor of The Chicago Daily News and the Indianapolis News, is the first permanent full-time faculty member to hold the position.

Turner Catledge, former executive editor of The New York Times, John Hohenberg, longtime administrator of the Pulitzer Prizes and outstanding dean of the Columbia University Graduate School of Journalism, and Martin Ochs, former editor of the Chattanooga Times, have held this professorship.

Equipment and Facilities
The Communications and Extension Building provides extensive facilities for communications instruction. The college has laboratories with special equipment for instruction in writing, editing, photography, advertising, and broadcasting. In addition, advanced students gain experience through summer internships or through the University's general program of publishing and broadcasting. The Office of Public Relations, campus publications such as the Daily Beacon, and the college radio station WUTK provide practice for communications majors. The Tennessee Press Association and Tennessee High School Press Association, centered at the University, present opportunities for special work and study.

Requirements for Graduation
The Bachelor of Science in Communications is awarded to majors who complete a program of 194 hours prescribed under departmental requirements listed below. At least 140 of these hours must be taken in courses other than the major and related communications fields. At least 27 of the hours in the major must be taken at The University of Tennessee, Knoxville. Normally, no more than 22 transfer credits in the major will be applied to the 194 hours. Journalism 2210 is the only course in the college that may be taken by correspondence.

AMERICAN HISTORY
Students lacking a high school credit of American history must take nine quarter hours of American history in addition to History 1510-20. Those hours may be applied to the general electives requirement.

FOREIGN LANGUAGES
One year of foreign language on the college level is required.

NATURAL SCIENCE
Students must take 12 hours of the following in any combination: Astronomy 2110-20-30; Biology 1210-20-30; Botany 1110-20; Chemistry 1510-20-30; Geology 1410-20-30; or Physics 1410-20-30 or 1210-20-30.

ENGLISH
This requirement is fulfilled by English 1010 or 1011, 1020 or 1032 or appropriate honors courses. The eight hours of literature may be selected from English 2510-20-30-40 and 2760-70-80 (and Comparative Literature 210 for journalism majors). Upper-division literature courses may be substituted by students with a B+ average in freshman English at UT.

PROFESSIONAL COURSES
The advertising major requires certain professional courses which may be selected from the following: Accounting 2110-20; Advertising 3740, 4510-20-30, 5310, 5350; Art 2515, 3515; Broadcasting 2750, 3360, 4020-30, 4670-80; Educational Curriculum and Instruction 4750; English 1033, Journalism 3120, 3410, 3710-20, 4710, 3810, 3910, 3990, 4410-20, 4950; Marketing 4140, 4230, 4310, 4440, 4510-20, 4710; Office Administration 2750, 4360, 4510-20; Psychology 3120, 4640; Speech 3011; Statistics 3410.

SOCIAL SCIENCE AND HUMANITIES
Social science electives may be selected from geography, economics, political science, psychology, history, sociology, anthropology, classics (except grammar and composition courses), and upper-division philosophy and religious studies courses. Journalism majors may also take some black studies and women's studies courses as social science electives with consent of their advisor.

Humanities electives may be selected from Earth and theatre (not performance courses), music (except applied music), art (except applied art), classics (except grammar and composition), language culture courses (not grammar and composition), and upper-division philosophy and religious studies.

GENERAL ELECTIVES
All electives are subject to the advisor's consent. Students are advised to consult the University's degree requirements as stated in the front section of this catalog as well as the requirements for the college or department.

Undergraduate Curriculum

Advertising

<table>
<thead>
<tr>
<th>Course</th>
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TOTAL: 194 hours

See Requirements for Graduation.

Broadcasting

LOWER-DIVISION CURRICULUM (Required of all broadcasting majors)

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<tr>
<th>Course</th>
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<tr>
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Sophomore

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NEWS AND PUBLIC AFFAIRS SEQUENCE

Junior

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Junior

Communications electives 9
Journalism 4410 3
Broadcasting 4010, 4610, 4670 9

General electives 12

Senior

Broadcasting 4010, 4610, 4670 9
Journalism 4410 3
Communications electives 9
Speech electives 8
Social science and/or natural science electives 12

General electives 16

TOTAL: 194 hours

MANAGEMENT SEQUENCE

Junior

Broadcasting 3650, 3660 6
Broadcasting 3670 3
Broadcasting 4020 or 4021, 4030 6
Journalism 3110, 3410 6
Advertising 4360 3
Marketing 3110-20 6
Management 3010 3
Accounting 2110 3

General electives 12

Senior

Broadcasting 4670, 4680 6
Journalism 4410 3
Business Law 4110 3
Communications electives 12
Speech electives 8
Upper-division social science and/or business electives 14

TOTAL: 194 hours

PRODUCTION/PERFORMANCE SEQUENCE

Junior

Broadcasting 3650, 3670 6
Broadcasting 4020, 4021 6
Journalism 3110, 3410 6
Music 1210 3
Theatre 2111 4
Theatre 2221 4

Social science and/or speech/theatre electives 12

General electives 6

Senior

Broadcasting 4010, 4040 6
Broadcasting 4021, 4670 6
Journalism 3810, 4410 6
Communications electives 9
Speech and Theatre 2031 and 3651 or 3661 or 3671 or 4650 7

Upper-division social science and/or humanities electives 8

General electives 5

TOTAL: 194 hours

* See Requirements for Graduation.

**NEWS-EDITORIAL SEQUENCE**

Freshman

English 1010 or 1011; 1020; 1032 9
History 1510-20 8
Nature science electives 12
Foreign language 5 9
Sociology 1510 4
Communications 1110 or 1118 3

Sophomore

English literature electives 8
Foreign language, mathematics, or natural science electives 4
Philosophy 1810 or Math 1540 or Math 3500 4
Economics 2510-20 8
Psychology 2500 4
Political Science 2590 or 3710 or 3720 or 3750 or 3760 8
Speech 2511 4

Journalism 2215-20-30 11

Advertising 3000 3

Journalism 3110 9
Journalism 3120 9
Journalism 3210 3
Journalism 3220 3
Journalism 3410 3
Journalism 3810 3
Journalism 3900 3
Broadcasting 3610 3
Humanities electives 11
Liberal arts electives 11

Senior

Journalism 4310 3
Journalism 4410 3
Journalism 4620 3
Journalism 4510 3

Liberal arts electives 7
Social science and/or natural science electives 10

General electives 14

TOTAL: 194 hours

**PUBLIC RELATIONS SEQUENCE**

Freshman

*English 1010 or 1011; 1020; 1032 9
*History 1510-20 8
*Nature science electives 12
*Foreign language 1510-20 8

Communications 1110 or 1118 3

Sophomore

*English literature electives 8
Economics 2510-20 8
Political science electives 8
Speech 2361 4

Journalism 2215-20-30 11
Accounting 2110 3

Junior

Journalism 2710, 3720, 3810 9

Journalism 3120 and 3310 6

Journalism 3900 3

Advertising 3000 3

Sociology 3130 or 3010. 4

Psychology 2500 3

Marketing 3110 3

Speech 3011 3

* Courses from specialization area 10

General electives 6

Senior

Journalism 4510 3

Journalism 3410, 4410 4

Political Science 4535-36 8
Marketing 3120 3

Broadcasting 3650 and 3670 or Journalism 3910 6

Journalism 4710 3

* Courses from specialization area 6

General electives 10

TOTAL: 194 hours

* Specialization Area Options:

(a) Governmental Public Relations. Required: Sociology 3030, Economics 3220. Electives: Sociology 3420, 4530, 4930; Political Science 3565, 3566, 4610; Geography 3000, 3610.

(b) Corporate Public Relations. Required: Management 3010; Economics 3240, Marketing 4210. Electives: Speech 2251, 3921; Business Law 4110, 4210; Economics 3220; Geography 3000, 3610.

(c) Other Areas. For students interested in designing their own area of specialization. Advisers will assist students in the following areas: agriculture, recreation, cultural affairs, consumer affairs, international affairs, religion, education, or others.

* See Requirements for Graduation.

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**Departments of Instruction**

**Communications (259)**

Professors:

J. A. Crook, Ph.D. Iowa State; G. A. Everett, Ph.D. Iowa; A. D. Fletcher, Ph.D. Illinois; J. B. Haskins, Ph.D. Minnesota; D. G. Hileman, Ph.D. Illinois; D. W. Holt, Ph.D. Northwestern; H. H. Howard, Ph.D. Ohio; B. K. Leiter, Ph.D. Southern Illinois; D. D. Nimmo, Ph.D. Vanderbilt.

Associate Professors:


**1110 Introduction to Communications (3)** Nature, functions, responsibilities of mass communications media and agencies. Survey of newspapers, magazines, radio, television, film, advertising, public relations, press associations, and specialized publications. Open to majors who have had no communications courses and to non-majors below junior level.

**1118 Honors: Introduction to Communications (3)** Nature, functions and responsibilities of mass communications media and agencies, with in-depth study of special problems. Open only to those majors selected on the basis of placement scores and high school record.

**GRADUATE**

Consult the Graduate Catalog for listing of graduate level courses.

**Advertising (012)**

Professors:

A. D. Fletcher, Ph.D. Illinois; J. B. Haskins, Ph.D. Minnesota; D. G. Hileman, Ph.D. Illinois; R. Joel, M.A. Wisconsin

Associate Professors:

J. B. Dunlap, Ed.D. Akron; D. Jackson, M.S. Tennessee; R. E. Taylor (Head), Ph.D. Illinois.

Instructor:

A. L. Landini, M.S. Murray State University.

**3000 Advertising Principles (3)** Advertising in business and society. Types and functions of advertising. Fundamentals of broadcast and publications advertising. Stress on communications aspects of advertising. Prereq: Sophomore standing or higher. Prereq: Communications 1110 or 1118 for communications majors only.

**3630 Advertising Copy and Layout (4)** Ideas and their translation into persuasive words and pictures. Principles and techniques of copy and layout. Lecture and lab. Prereq: 3000 with grade of C or better or consent of instructor.

**3650 Basic Advertising Research (3)** Use of research in solving media, creative, and managerial problems in advertising. Introduction to secondary information sources and primary research methodology. Prereq: 3000 with grade of C or better or consent of instructor.

**3740 Retail Advertising and Promotion (3)** Planning of retail advertising and promotion, practice in retail copy and layout, selecting media. Research. Prereq: 3650 or Marketing 4150.

**4000 Advanced Advertising Copy and Layout (4)** Creative strategy and execution of advertisements for mass media. Problems in idea creation for advertisers. Lecture and labs. Prereq: 3650 with grade of C or better or consent of instructor.

**4360 Advertising Media (3)** Media markets and audiences. Evaluation of media in relationship to communication needs of advertisers. Prereq 3000 with grade of C or better or consent of instructor.

**4460 Cases and Problems (3)** Case approach to study of advertising problems. Analysis of campaigns
and trends. Prereq: 3630, 3650, and 4360 with grades of C or better, or consent of instructor.

4470 Advertising Campaigns (4) Application of theory in planning and execution of campaigns. Market and consumer research; development and allocation of budgets. Choice of appeals and approaches; media selection; preparation of advertisements. Prereq: 3650, 4000 and 4360 with grades of C or better, or consent of instructor.

4510-20-30 Practicum (1, 1, 1) Prereq: 3000. May be repeated. Maximum credit 6 hrs. S/NC.

4970 Independent Study (3) May be repeated. Maximum credit 6 hrs.

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

Broadcasting (202)

Professors:
D. W. Holt (Head), Ph.D. Northwestern; H. H. Howard, Ph.D. Ohio.

Associate Professors:
P. S. Ashdown, Ph.D. Bowling Green; I. G. Simpson, M.S. Syracuse; M. W. Singletary, Ph.D. Southern Illinois.

Assistant Professors:
P. A. Moore, Ph.D. Ohio; R. A. Shirley, M.A. Tennessee.

Communication Specialist:
J. H. Carr, M.S. Tennessee.

2750 Introduction to Broadcasting (3) Theory, history, regulation and economics as they affect the broadcasting industry and its functions in society. Prereq: Communications 1110 or 1118 for communications majors only.

3360 Television and Radio Advertising (3) Principles of successful radio-television advertising; emphasis on media research, rate structure, programming, creativity, television commercials.

3610 Radio-Television News (3) Theory and technique of writing news and features for broadcast media. Editing and rewriting press association dispatches, gathering local news, recording interviews, and preparing newscasts and feature programs. 2 hrs. and 1 lab. Prereq: Journalism 2220 or consent of instructor.

3650 Radio-Television Writing (3) Theory and technique of writing broadcasting scripts except news and dramatics. Special events, interviews, musical scripts, radio talks, documentaries, and promotion material.

3760 Television News (3) Theory and techniques of producing and editing tape and film for television. Ethical considerations and editing techniques. Emphasis on news and information programs. 2 hrs. and 1 lab.

4010 Speech for Broadcasting (3) Fundamental broadcast conditions affecting the announcer; pronunciation and oral interpretation of general American speech. Prereq: Speech 2311.

4020 Radio Production (3) Study of radio production, past and present. Familiarization with production tools and techniques. Group and individual production activities. Prereq: 2750 or consent of instructor.

4021 Advanced Radio Production (3) Application of the theories, techniques, and tools of radio production to create programs of a professional level of sophistication and quality. Prereq: 4020 or consent of instructor.

4030 Television Production (3) Overview of elements of television production: cameras, sound, lighting, film, videocassette recording, optics, and studio control centers. Presented with the inexperienced and professional broadcast student in mind. Prereq: 4020 or consent of instructor.

4040 Advanced Television Production (3) A semi-independent course in program origination, producing, directing, and performing with orientation to the professional broadcast student. Prereq: 4030 or consent of instructor.

4510-20-30 Practicum (1, 1, 1) Prereq: Consent of instructor. S/NC.

4610 Broadcast News Operation (3) Theory and practice in covering local news and public affairs events for radio and television. Gathering and production of news broadcasts, using tools of broadcast newsgathering. 2 hrs. and 1 lab. Prereq: 3610 and 3670 or consent of instructor.

4670 Radio-Television Management (3) Business policies and practices of networks and stations. Departmental functions, cost and income figures, sales techniques, promotion, advertising agencies, and government regulations. Lectures by commercial broadcasters. Prereq: 2750 or consent of instructor.

4680 Broadcast Sales Management (3) Problems and practices of television and radio sales, case studies in sales development, pricing, promotion, and other areas of sales management. Prereq: 2750 or consent of instructor.

4970 Independent Study (3) May be repeated. Maximum credit 6 hrs.

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

School of Journalism (594)

Professors:
J. A. Crook (Director), Ph.D. Iowa; G. A. Everett, Ph.D. Iowa; J. B. Haskins, Ph.D. Minnesota; B. K. Leiter (Meeman Distinguished Professor), Ph.D. Southern Illinois; D. D. Nimmo, Ph.D. Vanderbilt.

Associate Professors:

Assistant Professors:
M. L. Kern, Ph.D. Wisconsin; D. L. Smith, M.A. San Francisco State.

Instructors:

On leave.

2210 Writing for Mass Media (3) Principles and practice of writing for major types of mass communications media. Prereq: Consent of College of Communications. Prereq: English 1010 or 1011; 1020; 1031 or 1032 or 1033. F, W, S.

2215 Basic News Writing (4) Information gathering and writing under deadline. Observation, interviewing, speech reporting for print and broadcast media. Grammar workshop. Prereq: English 1032, Communications 1110 or 1118 and typing proficiency of 30 wpm. E.

2220 Reporting (4) Methods of gathering and writing news for mass media. Emphasis on news and news features. Prereq: 2210 or 2215. F, W, S.

2230 Editing for Mass Media (3) Methods and practice in judging news, editing copy, and writing headlines. Introduction to video display terminals. Emphasis on precise word use. Prereq: 2220. F, W, S.

2710 Public Relations (3) Principles and theories of mass communications. Emphasis on public relations as a management tool for business, government, institutions, and organizations. Prereq: 2210 or 2215. E.

3110 Communications History (3) Development of newspapers, magazines, broadcasting, photography, film, and book publishing in America and their relationship to society. F, W, S.

3120 Writing Feature Articles (3) Selection of topics and practice in writing feature articles for newspapers, magazines, and company publications. Prereq: 2220 or consent of instructor. E.

3210 Advanced Reporting (3) Gathering and writing news in depth on current issues and concerns under deadline. Special emphasis on business news. Use of video display terminals. Prereq: 2230. F, S.

3220 News Editing and Display (3) Principles and practice in making up newspapers and magazines. Advanced work in copyreading, rewriting, and headline setting. Picture editing. 1 hr. and 2 labs. Prereq: 2230, F, S.

3310 Graphic Arts in Journalism (3) Survey of printing processes and associated technologies. Emphasis on production design, offset techniques, and computer technology. E.

3410 Communications Law (3) Statutory law and judicial precedents affecting mass communications media. Legal, contempt of court, invasion of privacy, copyright, broadcasting, advertising, and postal regulations. E.

3510 Practicum in Journalism (1-3) Supervised experience in news writing and editing. May be repeated for credit. Prereq: 2230. Maximum 3 hours. E.

3720 Advanced Public Relations (3) Preparation of communications materials to gain support from various publics; planning public relations programs. Prereq: 2710. F, W, S.

3810 Specialized Publications (3) Editorial and design considerations for company publications and small magazines. Prereq: 2230 and 3310 or consent of instructor. W, S.

3910 Basic News Photography (3) Principles of photojournalism including aesthetic and technical considerations and special techniques. Medium and small format reflex cameras used. Darkroom techniques for black-and-white photography. Prereq: Consent of instructor. E.

3990 Journalism Research Methods (3) Use of sociological research methods in journalism with emphasis on survey techniques. Interpretation and communication of research findings to public. W, S.

4130 Editorial Writing (3) Analysis of editorial policies, practices, pages. Writing of editorials and columns, with emphasis on study and use of rhetorical devices and logic. S.

4150 Issues in Journalism (3) Topics vary. May be repeated. Maximum credit 6 hrs.

4310 Reporting Public Affairs (3) Reporting news of courts, politics, and government. State, county, and local coverage. Prereq: 2230 and senior standing, W, S.

4410 Mass Media and Society (3) Roles and responsibilities of mass media in society. Critique of mass media performance. Media codes and controls on the media. E.

4420 Newspaper Management (3) Daily and weekly business operations. Developments in newspaper management. S.

4510 Practicum in Journalism, (1-3) Supervised experience in news reporting and editing. May be repeated for credit. Prereq: Senior standing or consent of instructor. Maximum 3 hours. E.

4560 Investigative Reporting (3) Investigative and interpretive reporting of complex or specialized subjects. Emphasis on case studies and analysis. Prereq: 2212 and basic course in law and journalism. Prereq: Consent of instructor. Maximum 2 credits. E.

4710 Public Relations Cases (3) Case studies and application of public relations principles to problems in business and industry, government, institutions, trades, and professions; solving problems in public relations situations. Prereq: 3720. F, S.

4810 Journalism in the High School (3) Functions and methods of public relations. Staff organization, writing, and editorial techniques, editorial problems, and business management. S.

4910 News and Feature Photography (3) Advanced photojournalism and methods in black-and-white photography. Emphasis on news and feature photographs and picture stories. Prereq: 3910 or consent of instructor.

4950 International Communications (3) Communication of news and opinion among nations and under
varying types of political and economic systems; world news organizations; the press as a factor in international affairs; barriers to the flow of information; comparison of world press systems.

4970 Independent Study (3) May be repeated. Maximum credit 6 hrs.

GRADUATE
Consult the Graduate Catalog for listing of graduate level courses.
The Division of Continuing Education, Knoxville, the administrative unit of UTK that extends academic courses, educational services, and other programs to the non-traditional student. While most people who participate in the programs are adults, persons of all ages and academic levels can be counted among the people who enroll in the credit and non-credit offerings of the Division. 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, relicensure, or mid-career changes. The Division provides these educational opportunities through program coordination and development of the two departments: Conferences and Non-Credit Programs, and the University Evening School. Specific programs and services of each department are described on the following pages.

Conferences and Non-Credit Programs

Director:
W. L. Whelan, Ed.D., Pacific States.
Director, English Language Institute:
D. A. Myers, Ph.D., Florida.

Assistant Director for Program Development:
G. D. Cooper, Ed.D., Tennessee.
Assistant Director for Administration:
Staff Assistant:
M.A. Barry
Administrative Assistant:
I. P. Keith

Coordinators:

It has become evident that learning can take place for an extended period of time in a variety of modes, settings, and circumstances other than in the traditional classroom. To bring this fact to reality, The University of Tennessee, Knoxville, continuing education program has been designed and staffed to bring together under University auspices groups of participants and qualified resource persons to share new learning and ideas; to develop new insights; to address current problems; or to impart new skills and techniques. The program embraces virtually all disciplines, professions, vocations, and avocations.

The Department of Conferences and Non-Credit Programs is staffed and equipped to advise, assist, and provide administrative support in the delivery of successful conferences, seminars, and non-credit courses. In these roles, the Department can consult on program content; develop a working budget; secure appropriate classroom and/or meeting sites; devise an attractive format; arrange for auxiliary services, such as lodging, meals and banquet events, extra excursions and tours, and handle complete registration procedures. In addition, the Department designs, prints, and mails conference brochures and non-credit catalogs. The Department is equipped to handle computerized registrations and to process all monies as required.

Non-credit courses administered by the Department are tailored to meet the personal and professional needs of individuals and groups in the area. These courses are offered in cooperation with other academic units of the University and/or non-University agencies and cover a wide range of interests. One program, the Smoky Mountain Field School, generates considerable interest by emphasizing outdoor learning experiences in the Great Smoky Mountains National Park.

One phase of the Department which has experienced increased interest and growth is the English Language Institute. This program is of special interest to non-English speaking people and is structured to help foreign students obtain a sufficient mastery of the English language so as to pursue their educations in the United States.

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

Recent statewide legislation gives Tennessee citizens who are 60 years of age or older or those who are totally disabled the opportunity to audit courses at UTK free of charge, according to available space. Legal verification of either of these conditions is required for enrollment. Additional information may be obtained by calling (615) 974-5261 or 974-6688.

University Evening School

Director:

Directors, Off-Campus Graduate Engineering Program:
Kingsport-M. K. Goodman, M.S., Tennessee; Oak Ridge and Nashville-J. D. Westbrook, Ph.D., V.P.I.; Assistant Director, Oak Ridge-V. Maya, M.S., Tennessee.

Coordinator:
M. K. Warden, M.S., Tennessee.

Administrative Assistant:
G. H. Beeler.

Assistant Professors:

Instructor:
A. J. MacCabe, M.S., SUNY at Albany.

The University Evening School, in conjunction with academic colleges and departments, administers credit programs for those students attending classes on-and-off campus in a variety of non-traditional formats. Support services are provided to assist students in their educational pursuits.
On-Campus Evening Program. Classes are offered during late afternoon and evening hours for those students who work or have other commitments during the day. The following undergraduate degrees are available:

- College of Business Administration - Bachelor of Science in Business with majors in Accounting, General Business, Economics, or Management (General concentration);
- College of Liberal Arts - Bachelor of Arts with majors in Anthropology, Art, Biology, Computer Science, Economics, Mathematics, Psychology, or Sociology.

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

Mini-Term. The University Evening School offers two Mini-Terms a year — one during September and one in December. Students may enroll in one concentrated credit course during the ten-day Mini-Term period.

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

Off-Campus Programs. The Evening School conducts undergraduate and graduate courses in many locations away from the Knoxville campus. The courses are scheduled in response to requests and identifiable needs of adult part-time students who live some distance from the UTK campus and who take part or all of their courses at off-campus locations.

All course offerings and instructors are approved by the appropriate academic department head, and the credit awarded is resident credit. The majority of colleges cooperate in off-campus programming.

Some off-campus locations offer course work leading to specialized graduate degrees. Graduate students in the College of Education may acquire sufficient course work at Cleveland State Community College to complete the Masters degree in Curriculum and Instruction with a major in Curriculum.

The Evening School administers off-campus centers at Kingsport, Nashville, and Oak Ridge where courses leading to advanced degrees in science, engineering, and business are offered. The Kingsport Center offers course work leading to Masters and Doctoral degrees in Chemical, Electrical, and Industrial Engineering (Management options available). At Oak Ridge, graduate study programs lead to an MBA with concentrations in Management or Statistics, as well as Masters and Doctoral degrees in Engineering, Mathematics, and Physical Sciences.

Graduate programs leading to the Masters in Industrial Engineering are available at the Nashville location.

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

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

Nursing Education Program. The Nursing Education Program is conducted under a contractual agreement with three Knoxville area hospitals. The University Evening School provides academic foundation courses for the independent Schools of Nursing of each hospital. Evening School also provides academic courses for Radiologic Technology students enrolled through two area hospitals.

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

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

ADVISING
An advising counseling program is available for the benefit of all evening students who need assistance with academic and/or personal matters. The program can accommodate students during regular daytime hours (8:30-5:30) and in the evenings by appointment, as well as at various centralized office locations. During evening advance registration days, advisors from the various colleges are on hand for academic consultation. The Colleges of Liberal Arts and Business Administration also cooperate with the Evening School by providing extended hours several times a week to advise students. A veterans advisor assists in academic planning for Evening School students who receive educational benefits under the G.I. Bill.

FINANCIAL AID
Evening School students who encounter difficulty in pursuing academic goals because of financial restrictions may be eligible for assistance through the Evening School Scholarship Fund. Interested students may also obtain applications for the Pell Grant (formerly Basic Educational Opportunity Grant) in the Evening School Office.

Elderly and Disabled Persons
Recent legislation gives Tennessee citizens who are 60 years of age or older, or those who are totally disabled, the opportunity to attend courses at the University at no charge on an audit, space available basis. Legal verification of either of these conditions is required for enrollment. Students who are 65 or over, or who are totally disabled, and who desire to receive UT credit for their courses, may pay a reduced charge of $5 per credit hour up to a maximum of $50 for a full-time load. Registration for day and evening classes is handled by the Evening School.

The University Evening School office is located at 451 Communications & University Extension Building on the UTK campus and may be reached by calling (615) 974-5361. All inquiries concerning these programs are welcome.
preparation of specific teaching fields. Knowledge and skills, and thorough cultural background in the arts and sciences requirements are of basic importance: A broad cooperation of all appropriate units. Certain utilization of University-wide resources and services; and (3) to promote and conduct educational opportunities, programs, and the evaluation and improvement of combined academic and direct experiences, the prospective teacher acquires a depth and breadth of knowledge and understanding superior to that of the typical college graduate—superior in cultural and citizenship appreciation as well as in professional and scholarly accomplishment.

The Claxton Education Building contains many modern and functional facilities for the professional training of teachers. Classrooms, laboratories, seminar rooms, faculty and administrative offices, the instructional materials center, the Bureau of Educational Research and Service, the School Planning Laboratory, and facilities for special activities such as observation and experimentation are located in this air-conditioned building.

**Teacher Placement Service**

The College of Education, cooperating with the University Placement Service, assists qualified students and alumni in securing positions. School and college administrators are cordially invited to make full use of these services in their efforts to employ competent personnel.

**General Information**

**Association with the College**

Application for association with the College of Education may be made at any time.

**Course Load**—Permission for more than 19 hours in a quarter must be obtained from the Assistant Dean for Support Services. A normal course load in the college is 16-19 hours. Applicants for association with the College of Education are classified accordingly:

1. Full Association. Minimum 2.5 high school grade point average (4 point scale) and a minimum of 17 ACT composite or 765 SAT combined score.
2. Provisional Association. Students ineligible for Full Association are granted Provisional Association (i.e., University Student: Educational Interest). Provisional students may earn Full Association upon attaining a minimum 2.5 grade point average (4 point scale) in at least 45 quarter hours of academic work. In addition, Provisional students with less than 17 ACT composite scores or 765 SAT/CEEB total scores will be required to pass the basic skills tests prior to gaining Full Association. (Passing scores on the basic skills tests are required of only those Provisional students whose academic majors require admission to Teacher Education.)

Provisional students (i.e., University Students: Educational Interest) will be required to meet quarterly with their advisors until such time that they gain Full Status.

Transfer students, from within and external to The University of Tennessee, Knoxville, must meet the same Association requirements described above. Post-secondary work completed and grade point averages earned at other institutions will be used in the determination of Full Status for transfer students who have not earned the minimum high school grade point average and standardized test scores.

**Admission to Teacher Education**

Students desiring certification to teach must gain admittance into Teacher Education before enrolling in various required upper-division education courses. Applicants are encouraged to (1) begin the multiphase admission process during their first quarter of full-time attendance and (2) complete the process by approximately the sixtieth quarter hour.

Applicants must complete the following requirements (recommended sequence for completion):

1. **Basic Skills Tests.** The State Board of Education requires all applicants to pass tests of reading comprehension, mathematics computation, and language. Applicants with a minimum ACT composite score of 17 are exempted from this requirement. (Transfer students having a minimum ACT composite score of 17 or a total score of 765 (Verbal/Quantitative) on the SAT or CEEB must supply the assistant dean’s office with an official record of their score(s).)

Students, except for junior-senior transfer students, are encouraged to take the basic skills tests during their second quarter of full-time attendance, using time during their first
quarter of attendance for test preparation. (Details on preparation are available through the assistant deans's office.)

2. Socio-Emotional Evaluation. Applicants are required to undergo a socio-emotional (personality) evaluation. Students whose scores on selected scales represent extreme variations from established norms will be required to undergo further evaluation.

Students, except for junior-senior transfer students, should take the personality test during their third quarter of full-time attendance.

3. Field Experience. Applicants to Teacher Education must present evidence of having successfully completed a field experience in a public school setting. (Refer to program area curriculum for specific required experiences.) Students, except for junior-senior transfer students, should substitute other courses for those experience requirement during their fourth quarter of full-time attendance.

4. Speech and Hearing Evaluations. Applicants are required to undergo speech and hearing evaluations.

Students, except for junior-senior transfer students, should undergo the speech and hearing evaluations during their fourth quarter of full-time attendance.

Applicants to Teacher Education are required to have a minimum of 2.5 UTK grade point average. Furthermore, transfer students must also, have a minimum of 2.5 cumulative grade point average. (No applicant's grade point average will be considered until the completion of at least 60 quarter hours.)

A program area recommendation may be required of some applicants. Applicants to Teacher Education will be reviewed by the Office of Student Conduct. Any applicant who has established a record of misconduct will be reviewed by the college's Admissions and Retention Committee.

Graduate students, except for those previously admitted to the College's Teacher Education Program, must gain admittance to Teacher Education before receiving the College's recommendation for certification. Students interested in complete details on admission to Teacher Education should contact the Assistant Dean for Support Services, 221 Claxton Education Building.

Admission to Student Teaching

Application for all student teaching programs must be filed no later than January 1 of the academic year preceding the actual experience. For example, if a student plans to student teach during the 1983-84 academic year, application must be made by January 1, 1983. Applications for student teaching may be completed on approximately four occasions each quarter. A schedule of the application deadlines is available in the Office of the Director of Student Teaching, 117 Claxton Education Building.

Making application for student teaching is not contingent upon admission to the Teacher Education Program. Students should apply for student teaching at the appropriate time regardless of their status in the process of admission to the Teacher Education Program. Following are the general prerequisites for student teaching. Student teaching prerequisites for specific program areas (art, elementary, P.E., etc.) are available in the student teaching office or from the academic advisor.

(1) Full admission to the Teacher Education Program no later than the quarter preceding student teaching.

(2) Completion of the professional core courses (Education 3920, 3930, and Educational Psychology 2430 or 3810).

(3) Completion of field experiences required in the program curriculum.

(4) Completion of special methods courses at The University of Tennessee.

(5) Completion of at least nine quarter hours of prescribed course work in Professional Education at The University of Tennessee at Knoxville.

(6) Senior standing and a minimum grade point average of 2.5 on work completed at The University of Tennessee, and a cumulative grade point average of 2.5. In addition, any record established by the student in the Office of Student Conduct will be reviewed by the Admissions and Retention Committee.

The 15-quarter hour student teaching experience is evaluated on a satisfactory-no credit basis and the hours are included in the University policy requiring a 2.0 in the last 25 hours worked.

The most important criterion in placing student teachers in the public schools is the value of the experience for preparing for teaching. The University cannot guarantee the geographic locale desired by the student though effort will be made to follow the student's wishes. Student teaching centers are maintained in East Tennessee, communities, some of which are at a considerable distance from Knoxville. Married students will be placed as near their homes as possible in order to preserve family life.

Substitutions

It is sometimes necessary and advisable for students to substitute other courses for those required in a particular curriculum. This is particularly true of students who transfer to The University of Tennessee College of Education from another college or university. The general test of whether a substitution would be appropriate is whether the course the student wishes to substitute meets the spirit of the course requirement. That is, is the content similar or perhaps more appropriate to that individual's needs?

To initiate a substitution request the student should visit with the advisor first. If they agree that the substitution is an appropriate one, the substitution request form should be forwarded to the Office of the Assistant Dean for Support Services, 221 Claxton Education Building. Approved petitions are forwarded to the Dean of Admissions for further approval and for filing in the Records Office.

Professional Education courses taken at junior or community colleges may be substituted for lower division (1000/2000 level) courses or may be used as electives. These courses may not be substituted for upper division (3000/4000 level) Professional Education courses.

Recommendation for Certification

The application for a professional teacher's certificate should be completed early in the final quarter before graduation. Application forms may be obtained in the Registrar's Office, 215 Student Services Building, and in the Office of the Assistant Dean for Support Services, 221 Claxton Education Building.

Tennessee state regulations stipulate that the applicant for a professional certificate must be recommended by the teacher-training institution. The dean of the College of Education is the official designated to recommend University of Tennessee graduates for teacher certification. To receive this recommendation, the applicant must have fulfilled the following requirements:

(1) A minimum grade point average of 2.0 (i.e., the University's minimum for graduation).

(2) Satisfactory performance of the student teaching experience.

(3) A minimum grade point average of 2.0 in the teaching field(s).

(4) Completion of a methods course in each area of endorsement.

(5) Fulfillment of all special recommendations of the Admissions and Retention Committee.

(6) Successful completion of at least one three-quarter-hour course dealing with the learning and behavioral characteristics of handicapped students.

(7) Effective January 15, 1981, the Tennessee State Board of Education requires all persons seeking Tennessee teaching certification to pass the National Teacher Examinations. Students may obtain further information in the Advising Center, 221 Claxton Education Building.

Graduate Programs

The College of Education, through the Graduate School, offers programs leading to the Master of Science degree, the Master of Education degree, the Master of Arts in College Teaching degree, the Master of Public Health degree, the Specialist in Education (advanced graduate) degree, the Doctor of Education, and the Doctor of Philosophy degrees. For further information, see the Graduate Catalog.

Undergraduate Curricula

The college offers courses of study leading to the Bachelor of Science degree in Education and to eligibility for teacher certification in Tennessee and in those states which grant reciprocity privileges to graduates of institutions accredited by the National Council for Accreditation of Teacher Education (NCATE).

A core of studies provides the foundation for specialization in all teacher education curricula. In addition, approved concentrations must be completed in subject fields specifically related to the public school curriculum. A choice is to be made among programs leading to recommendation for certification at one of three levels: elementary, (kindergarten-9), secondary (grades 7-12), or special subjects in grades 1-12.

Courses in library science are available to students who are interested in beginning positions in any library or in preparation for further graduate study in professional librarianship. The minimum requirements for full-time librarianship in any size school in Tennessee can be met through completion of the basic library service courses (2510, 3520, 3530, 4140, 4150, 4270, 4330, 4750). Endorsement as a librarian requires 27 quarter hours in library science. At the undergraduate level, only a minor in library science is available. Students in the college will select...
an appropriate curriculum from those outlined under the (undergraduate curriculum) section. Students interested in this program should consult with a member of the faculty of the Graduate School of Library and Information Science.

Students should work closely with faculty advisors in planning programs of study. The chosen curriculum must be followed as outlined to assure graduation and certification, and any proposed substitution for a required course should be filed for approval before the end of the junior year.

**Satisfactory/No Credit Courses**

For the curricula listed under roman numerals I, II, and III only, a student may include a maximum of 30 hours in non-directed electives taken on a Satisfactory/No Credit basis in the total hours required for graduation. S/NC may not be used in required courses or controlled electives, except where specific courses or controlled electives are required. NOTE: Students are advised to consult the University’s degree requirements as stated in the front section of this catalog as well as the requirements for the college or department.

I. Curricula for Elementary Teachers

A. Grade 1 through Grade 8 (certification for grades 1-8)

**GENERAL EDUCATION**.....................81 hours

- **Communications** (13 hours):
  - English 1010 or 1011; 1020; 1031 or 1032 or 1033 (English 1019 may be required for some students); Speech 2021 or 2311.

- **Mathematics** (9 hours):
  - Mathematics 2110, 2120, 2130.

- **Natural Sciences** (16 hours):
  - 8 hours in biological science.
  - Recommended series are Biology 1210, 1220 (1230) or Botany 1110, 1120; 8 hours in physical science. Recommended series are Physics 1410, 1420 (1430); or Geology 1410, 1420; or Astronomy 2110, 2120 (2130); or Chemistry 1110, 1120 (1130).

- **Social Studies** (16 hours):
  - U.S. History (8 hours—it is recommended that the history course be taken at the sophomore level). Social Institutions (4 hours). Geography (4 hours).

**CORE PROFESSIONAL COURSES**.....9 hours


**ELEMENTARY EDUCATION COURSES**....49 hours


**SPECIALIZED COURSES**..............33 hours

| Educational Psychology 3430; Educational Psychology 3100; Art Ed. 3100, 3150; Music Ed. 2100, 3100; Educ. C & I 3510; Special Ed. 3333; C&I 4303; C&I 4240; C&I 4750. |

**ELECTIVES**.................................18 hours

**TOTAL MINIMUM REQUIRED**............191 hours

B. Kindergarten through Grade 8

(Certification for Kindergarten - Grade 8)

**GENERAL EDUCATION**.....................81 hours

**Communications** (13 hours):

- English 1010 or 1011; 1020; 1031 or 1032 or 1033 (English 1019 may be required for some students); Speech 2021 or 2311.

**Health and Physical Education** (15 hours):

- P.E. 3450, School Health 3610 (3), P.E. activities (4), P.E. electives (2-3 hours) and Health elective (3) from Public Health 1110, 3000, 3210, School Health 3410, 3510.

**Humanities** (12 hours):

- Literature 6 hours; Art Education 3500 or Music Education 3500 (4 hours).

**Mathematics** (9 hours):

- Mathematics 2110, 2120, 2130.

**Natural Sciences** (16 hours):

- 8 hours in biological science.
- Recommended series are Biology 1210, 1220 (1230) or Botany 1110, 1120; 8 hours in physical science. Recommended series are Physics 1410, 1420 (1430); or Geology 1410, 1420; or Astronomy 2110, 2120 (2130); or Chemistry 1110, 1120 (1130).

**Social Studies** (16 hours):

- U.S. History (8 hours—it is recommended that the history course be taken at the sophomore level). Social Institutions (4 hours). Geography (4 hours).

**CORE PROFESSIONAL COURSES**.....9 hours


**ELEMENTARY EDUCATION COURSES**....49 hours


**SPECIALIZED COURSES**..............33 hours

| Educational Psychology 3430; Educ. Psych. 3100; Art Ed. 3100, 3150; Music Ed. 2100, 3110; Ed. C & I 3510; Special Ed. 3333; C&I 4300; C&I 4240; C&I 4750. |

**EARLY CHILDHOOD EDUCATION**.......12 hours

- Educ. C & I 14400, C&I 4451, CFS 3210 or Ed. Psych. 3350. Select one of the following: C&I 4452, CFS 3360; CFS 4420, CFS 4610; Sp. Ed. 4520.

**ELECTIVES**.................................6 hours

**TOTAL MINIMUM REQUIRED**............191 hours

C. Nursery School through Grade 3

(Certification for Kindergarten - Grade 3)

**GENERAL EDUCATION**.....................83 hours

**Communications** (12 hours):

- English 1010 or 1011; 1020; 1031 or 1032 or 1033; Speech 2021 or 2311.

**HUMANITIES** (12 hours):

- Literature 4; Music 1210 or 1220 or Art 1815 or 1825; philosophy or religious studies 4.

**NATURAL SCIENCE** (16 hours):

- Biological science (in series or combination) 6; physical science (in series or combination) 6.

**MATHEMATICS** (9 hours):


**SOCIAL SCIENCES** (18 hours):

- History 4; Child and Family Studies 4610; Economics 2510; Anthropology 2530 or 3410 or Human Services 4320 or 4510; Electives from anthropology, economics, geography, human services, political science, sociology.

**INTERDISCIPLINARY STUDIES IN HOME ECONOMICS** (16 hours)

H.E. 1510, 1520, 2510, 3510.

**SPECIALIZED COURSES**..............34 hours

- P. E. 3450, 3660; Pub. Health 3210; health electives; Art Ed. 2100, 2110; Music Ed. 2100, 3110; Educ. C & I 4303; CFS 3120; C & I 3510.

**FOUNDATIONS COURSES**..............15 hours

- CFS 1500, 3210: Select one: CFS 3220, 4230 or 4350; Select two: Educ. C & I 3010*, 3020*, 3030*.

**TEACHING AND THEORY COURSES**....54 hours


**ELECTIVES**.................................6 hours

**TOTAL MINIMUM REQUIRED**............192 hours

II. Joint Elementary-Mathematics Education Certification

**Mathematics** (9 hours):

- Mathematics 2110, 2120, 2130. Students with at least 3 years high school mathematics (e.g. Algebra I, Geometry, and Algebra II) and ACT Mathematics score of at least 22 may replace the 9 hours of Mathematics 2110-20-30 with the following six hours of mathematics courses: 3 hours credit in courses selected from Mathematics 3310, 3320, 3330; 3 hours credit in courses selected from Mathematics 3100, 3110, 3720.

**GENERAL EDUCATION**.....................90 hours

**Communications** (12 hours):

- English 1010-20 and 1031 or 1032 or 1033 (English 1019 may be required of some students); Speech 2021 or 2311.

**HUMANITIES** (12 hours):

- Eight hours of literature and four elective hours.

**Health and Physical Education** (19 hours):

- Psychology 2500, Educ. Psychology 2430; Physical Education 3455; physical education electives (3 hours); School Health 3610. Select one of the following as a prerequisite to School Health 3610: Public Health 1110, School Health 3000, 3210, 3410, 3510.

**NATURAL SCIENCES** (20 hours):

- Recommended series or combinations:
  - Biological science (8-12 hours) Biology 1210-20-30 or Botany 1110-20

*Requires admission to Teacher Education program.
Total three hours required.
B. Physical Science (8-12 hours) Physics 1410-20-30 or Geology 1510-20 or Astronomy 2110-20-30 or Chemistry 1110-20-30

Mathematics (9 hours)
Math 2110-20-30 taken in sequence.

Sociology (18 hours)
Four hours in history; 14 hours electives from a minimum of three areas of social science other than history.

CORE PROFESSIONAL EDUCATION............53 hours
A. Education Curriculum & Instruction (9 hours)* Educ. C&I 3010*, 3020*, 3030*

SPECIALIZED COURSES........................15 hours

AREA OF CONCENTRATION...........36 hours
1. Maximum of 24 hours of lower-division mathematics courses including at least one year of calculus or analytic geometry and calculus.
2. Minimum of 12 hours of mathematics courses numbered 3050 or above including at least one course in algebra and one in geometry.

ELECTIVE .......................................6 hours

TOTAL MINIMUM REQUIRED...........201 hours

III. Curricula for Secondary Education (7-12)

GENERAL EDUCATION..............70 hours

Communications (13 hours)
English 1010 or 1011; 1020; 1031 or 1032 or 1033 (English 1019 may be required of some students); and Speech 2311.

Health and Physical Education (9 hours)
Including at least 3 hours of school health or public health or nutrition (P.E. must be represented.)

Humanities (16 hours)
Any 4 hours from English 2510-20-30-40-50-60-70-80-90, plus 12 hours of electives from anthropology, art, English literature, Library and Information Science 3510-20-30, foreign language (beyond introductory level), history (upper-division), music, philosophy, or religious studies. (NOTE: At least three fields must be represented.)

Mathematics (4 hours)*

Natural Science (12 hours)
A biological science, a physical science, or a combination of the two.

Psychology (4 hours)
Psychology 2500.

Social Studies (12 hours)
Two fields should be represented from anthropology, economics, geography, history, human services, political science, and sociology.

CORE PROFESSIONAL EDUCATION........9 hours
Educ. C&I 3010*, 3020*, 3030*

SPECIALIZED PROFESSIONAL EDUCATION........39 hours
Special Ed 3333, Educational Psychology 3810, 6 hours of appropriate methods courses; Educ. C&I 3521-22-23, 4100, 4710-20*, Ed. 4300 or Ed. 4304, and 6 hours of electives selected from the College of Education.

NOTE: An appropriate special methods course must be taken in each subject and/or area in which endorsement is sought, and admission to Teacher Education Program is required for each.

English
Educ. C & I 3657* and 3658*

Foreign Language
Educ. C & I 3652* and 3653*

Mathematics
Educ. C & I 3751* and 3752*

Science
Educ. C & I 3654* and 4654*

Social Studies
Educ. C & I 3653* and 3853*

TEACHING SUBJECT AREAS AND ELECTIVES..............................72 hours
See outline of the programs below.

TOTAL MINIMUM REQUIRED...........190 hours

PROGRAMS AVAILABLE
Program majors leading to graduation and certification for high school teaching range from the broad fields, comprehensive major, to the subject major and minor combination programs.

A. English Education
1. English with a Minor
   a. 45 quarter hours in English, including three in English language (3330, 3340, 4480, 4490, 4440, 4450). Nine of the 45 hours may be in speech provided the student is not minoring in speech.
   b. 27 hours in Speech, Theatre and Broadcasting. At least three courses must be taken in each of two of these areas.
   c. Students enrolled in this program must take two English methods courses: Education C&I 3657* and 3658*.

B. Foreign Language Education
1. Foreign Language Area
   a. 36 quarter hours in one language with no less than 18 quarter hours of upper-division courses.
   b. 27 quarter hours in another language with no less than 18 quarter hours of upper-division courses.
   c. 9 hours of general and applied linguistics.
2. Foreign Language Major and Minor
   a. 45 quarter hours (9 less quarter hours if based upon 2 entrance credits from high school) and one language with no less than 27 quarter hours of upper-division courses.
   b. 27 quarter hours in another subject.

C. Mathematics Education
1. Area Majors in Mathematics
   a. Mathematics and Physical Sciences (75 hours)
      (1) Mathematics (36 hours)—must include at least one-year sequence in calculus or analytic geometry and calculus and at least 12 hours in courses numbered 3050 or above with at least one course in algebra and one in geometry.
      (2) Physical Sciences—12 hours in each of the following: Chemistry, geology, physics.
      (3) Electives—12 additional hours in physical sciences and/or mathematics.
   b. Mathematics and Related Sciences (72 hours)
      (1) Mathematics (36 hours)—must include at least one-year sequence in calculus or analytic geometry and calculus and at least 12 hours in courses numbered 3050 or above with at least one course in algebra and one in geometry.
      (2) Related Sciences—12 hours in physics and 12 hours in each of two of the following subjects: astronomy, biology, botany, chemistry, geology, microbiology, zoology.
      Endorsements: Mathematics, General Science.
   c. Mathematics and Computer Sciences (72 hours)
      (1) Mathematics (36 hours)—must include at least one-year sequence in calculus or analytic geometry and calculus and at least 12 hours in courses numbered 3050 or above with at least one course in algebra and one in geometry.
      (2) Computer Science and Physics—24 hours in computer science and 12 hours in physics.
      Endorsement: Mathematics.
   2. Mathematics major with a minor (72 hours)
      a. Mathematics (45 hours)—must include at least one-year sequence in calculus or analytic geometry and calculus and at least 12 hours in courses numbered 3050 or above with at least one course in algebra and one in geometry.
      b. 27 hours in another subject used as a minor.
      Endorsement: Mathematics.

D. Psychology Education
1. A concentration and endorsement in psychology shall require a minimum of 30 quarter hours—12 hours upper division distributed as follows:

<table>
<thead>
<tr>
<th>Core</th>
<th>16 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology 2500</td>
<td>4</td>
</tr>
<tr>
<td>Psychology 2510</td>
<td>4</td>
</tr>
<tr>
<td>Psychology 3150</td>
<td>4</td>
</tr>
<tr>
<td>Psychology 3210</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>14 hours selected from: Psychology 2520, 2530, 2540, 3120, 3210, 3220, 3310, 3430, 3550, 3560, 4230, 4510, 4520, 4610, 4900; Psychology or Ed. Psych. 4640; Ed. Psych. 3110, 4110, 4390, 4890, 4880, 4890.</td>
</tr>
</tbody>
</table>

*Requires admission to Teacher Education Program.
*Required for Student Teaching.
*Required for Admission to Teacher Education Program.
*Plant and animal science courses required.

2. Excluding Physics 1410, 1420, 1430.
3. Includes history, economics, geography, sociology, political science, psychology.
4. At least one must be taken concurrently with a special methods course.
5. Requires admission to Teacher Education Program.
2. Two minors (18-27 hours for a total of 45 quarter hours) each with minimum of 6 hours upper division.

Note: At least one of the two minor areas must meet Tennessee minimum endorsement requirements for the subject area.

E. Science Education

1. Area Majors in Science

a. Biological science (72 hours minimum)

1. Area Majors in Science

E. Science Education

2. Two minors (18-27 hours for a total of 45 hours minimum)

Endorsements: Biology (Life Science) and General Science 2

b. Earth and Environmental Sciences (72 hours minimum)

Includes 12 hours biological science required, and 14 hours science electives selected from astronomy, chemistry (excluding 1410 series), geology, and physics.

Endorsements: Earth Science, General Science 2, and Physical Science

c. Natural Science (72 hours minimum) Basic requirement of 12 hours in each of four of the following subjects:

1. Biology 1210-20-30 or Botany 1110-20-40

Chemistry series (excluding 1410 series). Geology series (excluding Geology 1000).

Physics (excluding 1410 series) Mathematics (excluding 1003, 2020 and 2110-20-30). Credit for only 12 math hours accepted in the program.

Approved science electives—24 hours minimum, including a total of six quarters of course work in one subject area other than math.

Biology is considered as one subject for high school endorsement.

Endorsements: General Science 2, Possible endorsements: Biology, Chemistry, and Physics.

2. Subject Majors in Science

The only single subject majors in science leading to teacher certification are chemistry and physics. Majors 45 quarter hours; minors 27 quarter hours. 3

Endorsements: Major Subject

F. Social Science Education

Program I

Broad fields Social Studies (Major 72 hours)

Certification includes economics, geography, history, political science and sociology.

a. 28 quarter hours in history, including 1510-20 and 2510-20, and 12 hours in World and/or American history.

b. 8 quarter hours in each of the following: geography, political science, and sociology.

c. 4 quarter hours in anthropology.

d. 8 quarter hours in economics including 2510-20 and an elective.

e. 7-8 additional quarter hours in the above-listed or related fields.

Program II

Specific subject major (45 hours plus 27 hours for a minor).

Minors. A minor is defined as 27 quarter hours in a single subject area, i.e., biology, history, French, psychology, speech, etc. A minor does not meet certification requirements in all cases.

IV. Art and Music Education

A. Art Education

GENERAL EDUCATION..................68-70 hours

Communications (12-13 hours) English 1010 or 1011; 1031 or 1032; and 3-4 hours in speech.

Health and Physical Education (9 hours) Activities courses in physical education plus School Health 3510.

Humanities (15-16 hours) Art History 1815 and 1825, one literature course, and one elective from anthropology, philosophy, foreign language above 101 level, history, library service, religious studies or music.

Mathematics (4 hours) Any twelve hours from the biological and/or physical sciences.

Psychology (4 hours) Psychology 2500.

Social Studies (12 hours) Any twelve hours from at least two areas.

CORE PROFESSIONAL EDUCATION..9 hours Ed. C & I 3010*, 3020*, 3030*

SPECIALIZED PROFESSIONAL EDUCATION..................22 hours Student teaching: Ed. C & I 4710*, 4720*; Ed. Psych. 2430 or 3810; Special Educ. 3333; Art Ed. 4110.

TEACHING AREAS AND ELECTIVES........84 hours

A. Major (60 hours)

Art Educ. 3100, 3120, 3220, 3320, 4110, 4200, 4300, 4400.

Art 1115, 1125, 1135. Plus twelve quarter hours in a single studio area and twelve additional hours distributed over three other studio areas.

B. Minor (24 hours)

May be taken in any department.

TOTAL MINIMUM REQUIRED........183 hours

B. Music Education

GENERAL EDUCATION..................66-68 hours

Communications (12-13 hours) English 1010-20 and 1031 or 1032 or 1033; and 3-4 hours in speech.

Health and Physical Education (9 hours) Activities courses in physical education plus School Health 3510.

Humanities (14 hours) Music 2230-30, literature course, and one elective from art, anthropology, literature, foreign language beyond introductory level, history, philosophy, or religious studies.

Mathematics (4 hours)

Natural Science (11-12 hours)

Three courses from the biological and/or physical sciences, to include Physics 1810.

Psychology (4 hours) Psychology 2500.

Social Studies (12 hours) Any 12 hours, to include at least two areas.

CORE PROFESSIONAL EDUCATION...9 hours Ed. C & I 3010*, 3020*, 3030*

SPECIALIZED PROFESSIONAL EDUCATION 22 hours Student teaching: Educ. C & I 4710*, 4720*; Educ. Psych. 2430 or 3810; Music Ed. 4100, and Special Ed. 3335.

TEACHING AREAS AND ELECTIVES...65-110 hours

Concentration in Vocal Music (Voice Principal)

a. 25 quarter hours in Music Education: 1010-20; 2110; 2411; 2421; 2431; 2433; 3100; 3150; 4420; 4510.

b. 60 hours in music: 1111-21-31; 1113-23-33; 2111-21-31; 2113-23-33; 2340; piano 22 hours; required ensemble 11 hours plus piano proficiency 22 hours.

Concentration in Vocal Music (Piano or Organ Principal)

a. 25 quarter hours in Music Education: 1010-20; 2110; 2411; 2421; 2431; 2433; 3100; 3150; 4420; 4510.

b. 66 hours in music: 1111-21-31; 1113-23-33; 2111-21-31; 2113-23-33; 2340; piano or organ 22 hours; voice 6 hours; required ensemble 11 hours.

Concentration in Elementary Music Education (Voice Principal)

a. 31 quarter hours in Music Education: 1010-20; 2110; 2411; 2421; 2431; 3144-42; 3150; 4420; 4441-42-43; 4450.

b. 60 hours in music: 1111-21-31; 1113-23-33; 2111-21-31; 2113-23-33; 2340; piano or organ 22 hours; voice 6 hours; required ensemble 11 hours.

Concentration in Elementary Music Education (Piano or Organ Principal)

a. 31 quarter hours of Music Education: 1010-20; 2110; 2411; 2421; 2431; 3144-42; 3150; 4420; 4441-42-43; 4450.

b. 66 hours in music: 1111-21-31; 1113-23-33; 2111-21-31; 2113-23-33; 2340; piano or organ 22 hours; voice 6 hours; required ensemble 11 hours.

Concentration in Instrumental Music Education

a. 35 quarter hours in Music Education: 1010-20; 2411-12-13; 2421-22-23; 2431-32-33; 3130; 3150; 3410; 3420; 4430.

b. 72 hours in music: 1111-21-31; 1113-23-33; 2111-21-31; 2113-23-33; 2340; 3112; 3122 or 4124; principal instrument 22 hours; secondary instrument 6 hours; piano proficiency; required ensemble 11 hours.

c. Music Education 4460 is required for all students whose principal instrument is wind or percussion.

TOTAL MINIMUM REQUIRED...182-209 hours

GENERAL REGULATIONS FOR ALL MUSIC EDUCATION STUDENTS

A. Required participation, with credit or as a registered auditor, in a major instrumental

B. Required admission to Teacher Education Program.

*Requires admission to Teacher Education Program.
or vocal organization each quarter in residence (on-campus) as a music education major, as approved by the student's advisor and the directors of the organizations concerned. Students preparing to be band directors are expected to enroll in marching band unless officially excused.

**Instrumental Major.** Concert Band; University Marching Band; or University Orchestra.

**Vocal Major.** Concert Choir; University Chorus; Chamber Singers.

**Elementary Music Education Major.**

Same as Vocal Major.

B. Transfer students must take proficiency examinations in applied music, music theory, sight-singing and dictation prior to registration in music education curricula.

### V. Health, Physical Education, Recreation, and Safety

#### A. Major in Physical Education

##### a. Elementary Physical Education (K-8)

**GENERAL EDUCATION**

- 8 to 9 hours
- English 1010; 1020 and 1031 or 1032; Speech 2311 or 2331; Humanities electives (minimum of four courses in three areas, 12 to 16 hours) selected from the following: anthropology, art, music, philosophy, religious studies, English literature, foreign languages (2000-level or above), and history (3000 and 4000-level only); Social Science electives (minimum of four courses and three areas, 12 to 16 hours) selected from the following: anthropology, economics, geography, history, political science, and sociology; Chemistry 1110-20 or 1510-20; Zoology 2920, 2930 and 4940; Physics 1450; Math 1540 or 1841 or any math course other than 1020 and 2012; Psychology 2500; School Health 3210; Physical Education 1042, 1052, 2022, and 2062 or 2072; Physical Educ. 2500, 2920 and 4940; Math 1540 or 1841 or any math course other than 1020 and 2012; Psychology 2500; School Health 3210; Physical Educ. 1032, 1042, 1052, and 1062.

**PHYSICAL EDUCATION CORE**

- 22 hours
- Physical Educ. 1000, 2600, 3210, 3320, 3550, 3720, 4170, and 4220.

**PROFESSIONAL EDUCATION**

- 7 hours
- Educ. C&I 3020* and 3030*; Physical Educ. 4100.

**PROFESSIONAL PHYSICAL EDUCATION**

- 13 hours
- Physical Educ. 1500, 3600, 4110, 4140 and 4200.

**SPECIALIZED PROFESSIONAL EDUCATION**

- 18 hours

**SPECIALIZED PROFESSIONAL PHYSICAL EDUCATION**

- 34 hours
- Physical Educ. 2012, 2022, 2042, 2052, and any two of the following: Physical Educ. 1020, 2022, 2062 or 2072; Physical Educ. 2500, 3500, 4300, 4365, 4370 or 4375, 4380 or 4385, 4390 or 4395; and any of the following not already taken: 4370, 4375, 4380, 4385, 4390, 4395; Physical Educ. 4230 and 4420.

**GENERAL ELECTIVES**

- 17 to 25 hours
- Maximum of 6 hours in 1000 and 2000-level Physical Educ. Major activity courses and/or Physical Educ. 2700-level courses (which must be different from Physical Educ. Major activity courses); also excluded are Physical Educ. 2730, 2734, 2735, 2756, 2757, 2759, 2782, 2792, and 2794.

**TOTAL MINIMUM REQUIRED**

- 200 hours

* Requires admission to Teacher Education Program.