611 Internship in Technological and Adult Education (3) Field experience in relevant organizations. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs. E

613 Special Topics in Technological and Adult Education (3) Prereq: Consent of instructor. May be repeated. Maximum 6 hrs. E

615 Advanced Microcomputer Software Application (3) Advanced programming and applications of intelligent or program-generating software. Progression of commercial relational data-base management programming environments. Concepts and applications of communications and networking. Hands-on environment. Prereq: 516 or equivalent. Sp/Su

618 Work Force Planning (3) Methods and procedures involved in planning, conducting, and analyzing data from national, regional and community surveys. International manpower policies compared to U.S. policies. Application to particular fields of occupational education. Prereq: Advanced statistics and 602. F

620 Seminar in Adult Education (3) Issues in adult education theories and concepts, philosophical positions, research trends and methodologies. Prereq: 510 or equivalent. F/Su

621 Advanced Seminar in Program Planning (3) Concepts, principles, and theories related to program planning in adult education. Prereq: 521 or equivalent. Sp

622 Advanced Seminar in Adult Development (3) Adult development research and designing research for studies of life cycle. Prereq: 522 or equivalent. Sp/Su

626 Adult Problem Solving and Learning (3) Contemporary research and theories in adult problem solving and learning. Prereq: 522 or equivalent. F/Su


631 Higher Education in Business and Marketing Education (3)

Textiles, Merchandising and Design

(151)

Textiles, Merchandising and Design

College of Human Ecology

MAJORS

DEGREES

Interior Design .............................................. M.S.
Textiles and Apparel ....................................... M.S.
Human Ecology ............................................. Ph.D.

Jacquelyn O. DeLonge, Head

Professors:

Associate Professors:

Assistant Professors:
F. Calogero, Ph.D. North Carolina State; J. L. Crouse, Ph.D. North Carolina State;

S. J. Dillard, M.S. Florida State; J. B. Havaey, Ph.D. Ohio State; T. L. Houser, M.S. Tennessee.

Interior Design

The Department of Textiles, Merchandising and Design offers a Master's degree in Interior Design. To enter the program, students are expected to have a good foundation in this area. The program of study will prepare students for careers with interior design or architectural firms, public and private agencies, and educational institutions. Interested students should contact the department head for more information.

Prospective graduate students pursuing a degree in advanced interior design should submit a portfolio of their undergraduate studio work to the department. This portfolio may include slides or original work.

ACADEMIC STANDARDS

1. Evaluation of student progress will normally occur prior to enrollment for one hour and during the second semester of full time enrollment in interior design. The review of the student will be undertaken by the interior design faculty with consideration given to factors such as: GPA (minimum 3.0), portfolio evaluation, and demonstrated research capability.

2. If progress or performance is deemed insufficient, the faculty may recommend probation with specified goals set for a specified time or termination.

THE MASTER'S PROGRAM

Major (Required courses: 510, 552, 562, 590) 18-21 hours
Cognate Area 9 hours
Research Methods 3 hours
Thesis 6 hours

TOTAL 36 hours

A comprehensive oral examination, administered by the thesis committee, will occur upon completion of thesis research. A non-thesis option is not available.

410 Environment as Code (3) Advanced theoretical issues in considering environment as medium of human communication. Prereq: 200, 400 or consent of instructor. Sp/A

475 History of American Interior Architecture (3) Major styles of interior architecture, decoration, and decorative arts within cultural context; colonial era through nineteenth century. European influences. Prereq: 370 or consent of instructor. Sp

500 Thesis (1-18) P/NP only. E

502 Registration for Use of Facilities (3-18) Required for the student not otherwise registered during any semester when student uses University facilities and/or facility time before degree is completed. May not be used toward degree requirements. May be repeated. S/NC only. E

510 Problem Solving in Interior Design (3) Use of systematic design methodology and design research methods as part of design problem-solving experience. Lecture and studio. May be repeated. Maximum 6 hrs. Prereq: Admission to graduate program. F

520 Integrative Interior Design Studio (3) Identification, integration and synthesis of multidisciplinary data input. Advanced programming techniques and design evaluation. Lecture and studio. Prereq: 510, 564, or consent of instructor. Sp

530 Practicum in Interior Design (1-12) Field experience in selected agencies or firms that focus on solutions to problems in interior design. Prereq: 9 hrs graduate level interior design or consent of instructor. E

531 Research Methods in Historic Preservation (3) Methodology for historic preservation problems in interior design. Prereq: Architecture 403 or consent of instructor. Sp

542 Special Topics: History of American Interior Design (3) Philosophical and stylistic movements, America of seventeenth, eighteenth, or nineteenth centuries. Topics vary. Prereq: 475 or consent of instructor. May be repeated. Maximum 9 hrs. F

552 Seminar in Interior Design (3) Twentieth-century design concepts, persons, motivation, and creative components leading to visual innovation. Prereq: 479 or consent of instructor. F

562 Research Methods in Interior Design (3) Methodological approaches appropriate to interior design. Prereq: 9 hrs of graduate level interior design or consent of instructor. May be repeated. Maximum 9 hrs. E

564 Environmental Factors in Interior Design (3) Human factors and associated research techniques and design methodologies related to interior architectural environments. Design requirements from anatomy, physiology, anthropology and social and behavioral sciences. Prereq: 6 hrs behavioral science and 6 hrs natural science, or consent of instructor. Sp

574 Environmental Design Analysis (3) Integrative problem-solving/studio from multidisciplinary perspective. Systems approaches. Available to students from design disciplines and social and behavioral sciences. Prereq: 564 or consent of instructor. May be repeated. Maximum 6 hrs. F/A

580 Directed Study in Interior Design (1-3) Independent advanced research in selected areas from field of interior design. Prereq: Consent of instructor. May be repeated. Maximum 9 hrs. E

581 Directed Study in Historic Preservation (1-3) Independent advanced research in historic preservation relevant for interior design. Prereq: Consent of instructor. May be repeated. Maximum 9 hrs. E

582 Directed Study in Historic Design (1-3) Independent advanced research in area of historic stylistic movements in interior design. Prereq: Consent of instructor. May be repeated. Maximum 9 hrs. E

583 Directed Study in Furniture Design (1-3) Independent advanced research in furniture design. Prereq: Consent of instructor. May be repeated. Maximum 9 hrs. E

584 Directed Study in Environmental Design (1-3) Independent advanced research in environmental design. Prereq: 574 or consent of instructor. May be repeated. Maximum 9 hrs. E

590 Research Seminar (1-2) S/NC only. E

Textiles and Apparel

The Department of Textiles, Merchandising and Design offers the Master's degree. Students are expected to have a good foundation in one or more areas to enter the program. The program of study will prepare students for careers in industry, business, public and private agencies, and educational institutions. Interested students should contact the department head for more information.

ACADEMIC STANDARDS

1. Each graduate student will be evaluated at the end of the second semester (or after completing a minimum of 18 graduate hours).

2. If the student's GPA is below 3.0, the faculty may recommend probation with
specific goals set for a specified time or termination.

THE MASTER'S PROGRAM
Major (Required courses: 540, 550/552*, 580, 590) 19 hours
Cognate Area 6 hours
Statistics 3 hours
Thesis 6 hours
TOTAL 34 hours

*Students with textile science background must take 550; students without must take 522.

A comprehensive oral examination, administered by the thesis committee, will be given upon completion of the thesis research.

A non-thesis option is not available.

THE PH.D. CONCENTRATION
Students enrolled in the Ph.D. program in Human Ecology with a concentration in textiles and apparel take one common course which provides a foundation for the integration of textiles and apparel in the context of the near environment. A required departmental research seminar exposes students to research being conducted in all areas of study in the department. Textiles and apparel concentration requirements include:

1. Nineteen hours in required textiles and apparel courses: 550, 552, 540, 590, 641, 685, and 695;
2. College Professional Seminar, Human Ecology 610;
3. Research Seminar, 590. Attendance at seminar is required for all full-time students;
4. Nine credit hours in research methods including 6 hours of 500-level statistics;
5. Nine hours in a cognate area;
6. Textiles and apparel courses in area of specialization (15-20 hours); and
7. Dissertation (24 hours).

500 Thesis (1-15) P/NP only. E
502 Registration for Use of Facilities (3-15) Required for the student not otherwise registered during any semester during which the student uses University facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/NC only. E
510 International Retail Systems (3) Acquisition and management of information for retail decision; analytical decision making skills. International differences in system planning and design strategies in retail areas. Prereq: 410 or equivalent. Sp
520 Textile Microscopy and Physical Testing (3) Optical and electronic microscopy techniques for textile fibers, yarns and fabrics. Methods and equipment used in physical testing following approved textile standards. Prereq: 320 or equivalent. Sp
525 Fiber Chemistry (4) Chemistry of textile fibers; structure, preparation and reactions; dyeing and finishing of fabrics. Introduction to color science. Prereq: Organic chemistry, 2 hrs and 4 labs. Sp
530 Advanced Textile Dyeing and Finishing (4) Chemistry, processing and fastness of chemical finishes and various classes of dyes on different fibers. Prereq: 522 or consent of instructor. 2 hrs and 4 labs. Sp
535 Physical Properties and Processing of Textiles (3) Methods and mechanics of processing staple and continuous filament yarns; mechanics of deformation of fibers, yarns and fabrics; physical behavior and textile structure. Prereq: Engineering Science and Mechanics 321, Mathematics 142, or equivalent. F.A
530 New Technology in the Textile/Apparel Industry (3) Innovations in equipment which affect textile and apparel industries; computer-aided design and computer applications; improvements which give U.S. industry competitive edge. Field trips. Prereq: Computer literacy. F
540 Sociology-Psychological Aspects of Apparel (3) Apparel and human behavior in social situations. Prereq: 6 hrs or equivalent from sociology and psychology. F
546 Fashion Development in Historic Perspective (3) Style in relation to contemporary conditions (cultural determinants): commerce, economics and social phenomena. Sp
548 International Textiles (2) Development of traditional fabric industries; influence of culture, economics and commerce. Prereq: 3 hrs textiles. Sp.A
550 Consumer Economics and Market Choices (3) Economic framework for evaluating consumer behavior and consumer choice within market system. Theory of consumer preferences and decision making; consumption and demand models for individuals and households. International consumer economics, issues and policies. Prereq: 350 or consent of instructor. F
552 Textiles Economics and Technology (3) New developments in processing textile fibers, yarns and fabrics. Economic development and analysis of textile complex; economic and functional performance and consumer issues; U.S. and international focus. F
558 Research Methods in Textiles, Apparel and Design (3) Fundamentals of scientific research methods; issues of applied research in textiles, apparel and interior design. Sp
559 Research Seminar (1) Research topics in textiles and apparel. S/NC only. FSp
593 Directed Study (1-3) Individual problems in textiles, merchandising or apparel. Prereq: 9 hrs textiles/apparel graduate coursework. May be repeated. Maximum 9 hrs.
595 Advanced Topics in Textiles and Apparel (1-3) Lecture, group discussion on specialized topics: apparel production management, functional design, handicapped/elderly, historic costume, historic textiles, international trade, non-wovens, thermal properties. Prereq: 9 hrs textiles/apparel graduate coursework. May be repeated. Maximum 9 hrs. Su
600 Dissertation (3-15) P/NP only. E
625 Physical Chemistry of Fibers (3) Physical chemistry of fibers and fiber forming polymers; surface chemistry and thermal properties. Prereq: 522, Mathematics 231, or equivalent. Sp.A
626 Physics of Fiber Structures (3) Morphology of polymeric structures; thermal and processing history on mechanical, electrical and chemical properties of fibers. Prereq: 522, Physics 231 and Mathematics 231 or equivalent. F.A
641 Social and Psychological Theories of Apparel Consumption (3) Theories and concepts from social science, fashion, consumer behavior in relation to apparel. Prereq: 540 and 6 hrs of sociology and/or psychology, or consent of instructor. Sp.A
651 The Consumer and Public Policy (3) Economic, social, legal and political framework for policy decisions; economic evaluation of policies that affect consumers. Economic implications for societal groups, disadvantaged. Prereq: 550 or 562, or consent of instructor. Sp
655 Integrative Design: Development and Marketing (3) Systems-oriented approach to strategies involved in product development; methods for identifying critical factors central to decision making and techniques for synthesizing information. Prereq: 24 hrs graduate coursework. F
695 Advanced Topics in Textiles and Apparel (3) Lecture, group discussion, individual research on advanced topics and research areas of current significance: future direction, professional issues, theoretical approaches. Prereq: 9 hrs textiles/apparel graduate coursework. May be repeated. Maximum 9 hrs.

DEGREE
Theatre (College of Liberal Arts)
MAJOR DEGREE
Theatre--------------------M.F.A.

Professors:
R. M. Cothran; R. C. Field, M. A. Miami (Ohio);
J. F. Fields (Emeritus), M.A. Ohio State; P.
Garvie, M. A. Cambridge, A. J. Harris, Ed.D
Tennessee; H. W. Henshaw, Ph.D. Pittsburgh;
R. R. Mashburn, Ph.D. Florida State; P. L. Soper (Emeritus), Ph.D. Cornell.
Associate Professor:
M. Custer, M.F.A. Wisconsin.
Assistant Professors:
L. J. DeCuir, M.F.A. Tulane; L. Harman,
M.F.A. Wisconsin; P. Schmitt, Ph.D.
Wisconsin.
Instructor:
W. Black, M.F.A. Illinois.

The Department of Theatre offers the Master of Fine Arts in Theatre with area concentrations in acting/directing, playwriting/dramaturgy, and design/technical production. Applicants must have completed undergraduate degrees approximately equivalent in requirements to those specified for degrees conferred by The University of Tennessee, Knoxville.

The Graduate Record Examination is required of all applicants as well as a written comprehensive exam, usually administered in the second year of residence. All M.F.A. applicants must submit three letters of recommendation. Interviews with appropriate faculty are required of all applicants. Applicants for admission to M.F.A. design/technical theatre and playwriting/dramaturgy programs must submit samples of their work.

For detailed information about the graduate program, contact the Director of Graduate Studies, Department of Theatre.

MASTERS OF FINE ARTS PROGRAM
At least 60 semester hours, 40 of which must be at the 500 level or above are required for the degree of Master of Fine Arts with a major in Theatre, which is normally to be completed in three consecutive years of full-time residence. Theatre 501 is required the first semester of residence. Also required are Theatre 401, 310-11, and at least 6 hours in advanced theatre history and dramatic theory or criticism, including at least one course from each of the two areas.

In addition to the core requirements listed above, each area of concentration has specific requirements:

Design/Technical Production
Required courses are at least 12 hours of 580 Design and Technical Production Seminar, and at least 3 hours in the projects courses. Theatre 401 Principles of Design is
430 Principles of Play Directing (4) Problems in composition, picturization, rhythm, movement. Prereq: 220, 221, and consent of instructor.


445 Advanced Costume Construction (3) Advanced studies in construction technique, tailoring, vacuum forming, plastics in costume, and cobbling. Prereq: 345 or consent of instructor.

446 Costume Patternmaking (3) Draping patterns for period costumes. Consistency and study of historical patterns 1500-1900. Prereq: 345 or consent of instructor.

450 Advanced Scenery Technology I (3) Study and practice of theatre woodworking; production participation required. Prereq: 250. Graduate credit to theatre M.F.A. students only.

451 Advanced Scenery Technology II (3) Study and practice of metalworking and plastics for theatrical productions; production participation required. Prereq: 250. Graduate credit to theatre M.F.A. students only.

452 Advanced Scenery Technology III (3) Study and practice of stage rigging for theatrical productions; production participation required. Prereq: 250. Graduate credit to theatre M.F.A. students only.

454 Scenery Painting (2) Introduction to materials, techniques, and principles of craft. Gaining a sense of understanding through studio experience. Prereq: Consent of instructor.


461 Special Effects in Lighting and Sound (4) Projects in special effects, creative application of technology. Problem solving, drafting, and execution of effects for production. Production participation required. Prereq: 260 or consent of instructor.

462 Advanced Lighting Design (3) Advanced problems in lighting design and theory. Lighting musical theatre, opera, and dance. Prereq: 362 or consent of instructor.

463 Sound Design (3) Sound design for performing arts. Review of equipment and acoustical factors that affect sound production. Sound design plots from selected plays. Final projects mixed, edited, and cued for production.

465 Introduction to Lighting Design for Non-Designers (3) Theory and practice of stage lighting design, relationship between designers and non-design practitioners: directors, actors, choreographers, architects. Not open for specialization in lighting design.

470-71 Playwriting (3,3) Advanced instruction in writing of plays. Prereq: Consent of instructor.

491 Foreign Study (1-15) See page 31.

492 Off-Campus Study (1-15) See page 31.


500 Thesis (1-15) P/NP only: E

501 Introduction to Graduate Research in Theatre (3) Research tools and methods for theatre artist and scholar.

502 Registration for Use of Facilities (1-15) Required for the student not otherwise registered during any semester when student uses University facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. SN/C only. E

510 Studies in Theatre History (3) Intensive study of selected topics in theatre history. May be repeated. Maximum 9 hrs.

520-21-22-24-25 Master Classes in Acting (4,4,4,4,4) Master classes in acting technique, voice, and movement. Theatre M.F.A. students only.

536 Projects in Play Directing (3) Practical work in play direction involving various lengths and kinds of scripts. May be repeated. Maximum 9 hrs.

539 Play Production in the Secondary Schools (3) Principles and methods for directing high school dramatic programs.

542 The Social History of Costume (3) Study and analysis of costume as related to society's manners and mores, architecture and furniture.


545 Millinery for the Stage (2) Pattern making and construction techniques for hats from antiquity to present. Prereq: Consent of instructor.

546 Advanced Costume Patternmaking (3) Advanced studies in patterning period costume. Development of historic patterns through flat pattern method. Prereq: 446.

549 Projects in Costume Technology (1-3) Individualized studies in costume technology in theatre production. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs.


553 Projects in Scenic Design (1-3) Conception and completion of major work in scenic design, both theoretical and actual, in scene design. May be repeated. Maximum 9 hrs.

554 Studies in Scenic Design (3) Advanced scenic design techniques and approaches to design for complex dramas and varied dramatic forms. May be repeated. Maximum 6 hrs.

560 Projects in Lighting Design (1-3) Conception and completion of major projects, both hypothetical and actual, in lighting design. Prereq: Consent of instructor. May be repeated. Maximum 9 hrs.

562 Special Problems in Lighting Design (3) Advanced problems in lighting design and theory, problems in Broadway production and touring. Prereq: 462 or consent of instructor.

563 Projects in Sound Design (1-6) Production assignment as sound designer on approved play and/or relevant projects in field of sound design/history/methodology. Prereq: Consent of approval of instructor. May be repeated. Maximum 9 hrs.

570 Dramaturgy: Theory and Practice (3) Methods and materials. Prereq: Consent of instructor.

571 Seminar & Projects in Dramaturgy (3) Directed study and experience. Prereq: Consent of instructor. May be repeated. Maximum 18 hrs.

573 Seminar in Playwriting (3) Exercises and projects tailored for advanced students in playwriting. Prereq: Consent of instructor. May be repeated. Maximum 18 hrs.

575-76 Studies in Dramatic Theory and Criticism (3,3) Broad-based study of major ideas about drama.

580 Design and Technical Production Seminar (1-6) Selected aspects of scenic design and technical production. Prereq: Consent of instructor. May be repeated. Maximum 18 hrs.

585 Production Workshops (1-6) Directed experience in production collaborations. Prereq: Consent of instructor. May be repeated. Maximum 12 hrs.


Transportation
See Marketing, Logistics and Transportation

Urban Practice
(College of Veterinary Medicine)

MAJOR
Veterinary Medicine

DEGREE
D.V.M.

D. J. Krahwinkel, Head

Professors:
J. Braze, D.V.M. California (Davis);

Associate Professors:
R. E. Gompf, D.V.M. Ohio State;
W. F. руков, D.V.M. Missouri;
R. R. Selcer, D.V.M. Texas A & M;
M. A. Walker, D.V.M. Texas A & M;
T. L. Walker, D.V.M. Texas A & M;
J. P. Wiegel, D.V.M. Colorado State.

Assistant Professors:
J. M. Bright, D.V.M. Purdue; D. E. Brooks, D.V.M. Illinois, Ph.D. Florida;
R. C. Doneno, Jr., D.V.M. Illinois;

Residents:
L. Blackford, D.V.M. Texas A & M;

See Veterinary Medicine for program description.

PROFESSIONAL COURSES

881 Clinical Rotations in Urban Practice I (4) Clinical training in medicine, surgery and specialty disciplines for companion animals. Direct responsibility for diagnosis, patient care, and treatment of clinical patients.

882 Clinical Rotations in Urban Practice II (4) Clinical training in medicine, surgery and specialty disciplines for companion animals. Direct responsibility for diagnosis, patient care, and treatment of clinical patients.

883 Clinical Rotations in Urban Practice III (4) Clinical training in medicine, surgery and specialty disciplines for companion animals. Direct responsibility for diagnosis, patient care, and treatment of clinical patients.

884 Clinical Rotations in Urban Practice IV (4) Clinical training in medicine, surgery and specialty disciplines for companion animals. Direct responsibility for diagnosis, patient care, and treatment of clinical patients.

885 Clinical Rotation in Radiology I (2) Clinical training in radiographic techniques and interpretation of radiographs as part of diagnostic process.

887 Special Problems in Urban Practice I (1-8) Extra- mural and specially designed study for students interested in select topics in medicine, surgery, anesthesiology, radiology and medical specialties of small companion animals.

GRADUATE COURSES

500 Thesis (1-15) P/NP only. E

501 Special Topics in Small Animal Medicine and Surgery (1-4) May be repeated. Maximum 6 hrs. E

502 Registration for Use of Facilities (3-15) Required for the student not otherwise registered during any semester when student uses University facilities and/or faculty time before thesis is completed. May not be used toward degree requirements. May be repeated. S/NC only. E

600 Doctoral Research and Dissertation (3-15) P/NP only. E

Veterinary Medicine
(College of Veterinary Medicine)

MAJOR
Veterinary Medicine

DEGREE
D.V.M.

PROFESSIONAL CURRICULUM

The curriculum of the College of Veterinary Medicine is a nine-semester, four-year program. Each class begins in August and graduates four years later in May. The first three years follow the traditional fall and spring semesters with the summer break following each year. The final year of the professional curriculum begins immediately following semester six and is a continuous clinical training schedule extending over one calendar year.

The first year consists mostly of preclinical subjects such as anatomy, physiology, histology, and microbiology. Included in this first year also are subjects such as physical diagnosis and anesthesiology. Considerable integration of subject matter is incorporated during this time. The second and third years include the study of diseases, their causes, diagnoses, treatment and prevention and are taught on a body system-oriented basis. The final year (three semesters) is devoted to intensive training in the solving of animal disease problems, including extensive clinical experience in the Teaching Hospital. The final year consists of a series of clinical blocks through which each student will rotate.

An innovative feature of this curriculum is the designation of semester six as one in which the individual student may select his or her courses of study. This format allows select students with an interest in advanced or dual-degree programs to enroll in all, some, or none of the regularly scheduled courses during that semester. Students will be required to complete at least 16 credit hours and these hours will be credited toward the D.V.M. The semester of elective study offers a unique educational alternative for select students in the CVM which is intended to enhance professional growth, specialization and additional career choices.

In addition to education in the sciences and art of veterinary medicine, students receive instruction in paramedical subjects such as animal behavior, medical communications, professional ethics, jurisprudence, economics, and practice management.

The curriculum requires successful completion of 154 semester credits.

GRADUATE PROGRAM

The College also administers a graduate program involving all departments and leading to the Master of Science and the Doctor of Philosophy. Because of the interdisciplinary departmental administration of the College of Veterinary Medicine, the faculty have opportunities in the graduate programs of other instructional units, including Animal Science and Experimental Medicine, Microbiology (bacteriology, virology and immunology), Ecology (environmental toxicology), Public Health, and Comparative and Experimental Medicine (see page 64). This program provides a wide spectrum of interdisciplinary training that prepares graduates to assume positions in biomedical environments and in teaching or research capacities involving humans or animals.

PROFESSIONAL COURSES

830 Art of Veterinary Medicine (11) Paramedical subjects important to veterinary practice: managerial, interpersonal and communications, jurisprudence, ethics, careers, animal behavior and veterinary history. May be repeated. S/NC only.

831 Physical Diagnosis (1) Basic care, feeding, restraint, and handling domestic animals. Introduction to physical examination and diagnostic techniques used by veterinarian.

832 Anesthesiology (2) Principles of anesthesiology: pharmacology of anesthetic agents, and introduction to anesthetic techniques in veterinary medicine.

833 Epidemiology/Public Health (4) Principles of epidemiology and public health. Host-agent relationships, public health aspects of veterinary medicine, and role of veterinarian in ecology and food hygiene.

834 Hematopoietic System (3) Pathophysiology, clinical pathology, and clinical management of diseases of the hematopoietic and lymphoid organs and tissues. Principles, methods of laboratory evaluation of diseases from other organ systems.

835 Medical Interaction (2) Multidisciplinary laboratory sections: basic principles of pharmacology and surgical concepts. Applied techniques in animal handling to facilitate anesthesia, surgery, post-surgical recovery and wound handling. Demonstration of physiologic processes and drug effects.

836 Toxicology (2) Principles of toxicology: molecular mechanisms, pathologic processes and clinical features of animal diseases caused by common toxic agents.

840 Integumentary System (3) Pathophysiology, special pathology, medicine and surgery of integumentary system of all species of animals. Laboratory examination, pathology, diagnosis and treatment.

841 Reproductive System (4) Pathophysiology, special pathology, medicine and surgery of male and female reproductive systems and mammary gland of all species of animals.

842 Alimentary System (5) Pathophysiology, special pathology, medicine and surgery of alimentary systems of all species of animals.

843 Musculoskeletal System I (3) Pathophysiology, special pathology, medicine and surgery of musculoskeletal systems of all species of animals. Basic principles, pathologic changes and radiographic interpretation.

844 Musculoskeletal System II (3) Pathophysiology, special pathology, medicine and surgery of musculoskeletal systems of all species of animals. Advanced principles of radiographic interpretation and surgical procedures.
and pathologic principles underlying mechanisms of disease. Selected examples of human and animal diseases; recent scientific advances in biomedical science. Prereq: Consent of instructor. Sp.

Zoology

(Article of Veterinary Medicine)

MAJOR

DEGREES

Zoology

M.S., Ph.D.

Arthur C. Echternacht, Head

Professors:

R. M. Bagby, Ph.D. Illinois; D. L. Bunting, Ph.D. Oklahoma State; J. G. Carlson (Alumni Distinguished Service Professor) (Emeritus), Ph.D. Pennsylvania; A. C. Echternacht, Ph.D. Kansas; D. A. Etter, Ph.D. Minnesota; B. Hochman, Ph.D. California (Berkeley); E. T. Howley, Ph.D. Wisconsin; K. W. Jeon, Ph.D. London (England); J. R. Kennedy, Ph.D. Iowa; J. T. Tanner, Ph.D. State; J. A. MoCabe, Ph.D. California (Davis); S. E. Riechert, Ph.D. Wisconsin; L. E. Roth, Ph.D. Chicago; C. A. Shivers, Ph.D. Michigan State; J. T. Tanner (Emeritus), Ph.D. Cornell; H. G. Welch, Ph.D. Florida; G. L. Whiston, Ph.D. Iowa.

Associate Professors:


Research Associate Professor:

T. Ashley, Ph.D. Florida State.

Assistant Professors:

J. A. Drake, Ph.D. Purdue; R. Granguly, Ph.D. Nebraska; L. C. Rome, Ph.D. Harvard.

Research Assistant Professor:


The Department of Zoology offers the Master of Science and Doctor of Philosophy with concentrations in aquatic biology, ecology, cell and molecular biology, physiology, genetics, and reproductive and developmental biology.

REQUIREMENTS FOR ADMISSION

Applicants for graduate study are expected to have a background no less extensive than that required of undergraduate majors in this department. This includes a knowledge of the basic principles of cell biology, genetics, and ecology. Other requirements for admission are:

1. one year of general zoology or biology;
2. 18 semester hours of upper division zoology or biology;
3. two years of chemistry including one year of general inorganic chemistry;
4. one year of mathematics including calculus;
5. one year of physics;
6. Graduate Record Examination scores (general and biology); and
7. a grade point average of 3.0 out of 4.0. Otherwise superior students, deficient in one or more of the above requirements, may be admitted at the discretion of the department's Graduate Affairs Committee.

PREPARATION FOR THESIS OR DISSERTATION

During the first year the qualifying examination and a special research problem in each of two faculty members' laboratories will determine the student's preparation for thesis or dissertation study.

A course in biostatistics is required of all candidates for an advanced degree in Zoology.

All aspirants for advanced degrees in Zoology must exhibit competency in 3 (for M.S.) or 4 (for Ph.D.) areas of zoology as determined by a qualifying examination. Students must take this examination during the spring semester of the first year and may repeat the examination the following spring semester if unsatisfactory scores are received. Competency must be exhibited within this two-year period for a student to continue in the program.

THE MASTER'S PROGRAM

Special requirements in Zoology are as follows: (1) completion of course requirements as determined by the candidate's faculty committee; (2) achievement of a 3.0 or better GPA in all courses taken for graduate credit; (3) completion of a thesis.

THE DOCTORAL PROGRAM

Special requirements in Zoology are as follows:

1. courses as determined by the candidate's faculty committee;
2. an oral and comprehensive written examination in zoology and allied fields in which the candidate has had training;
3. a reading knowledge of at least one foreign language in which there exists a sizeable amount of literature relevant to the major field of study. The student has the option of demonstrating a reading knowledge of this foreign language by (a) passing the official reading examination given by the language department or (b) earning a grade of at least a B in the second semester of a special language reading course for graduate students. This foreign language requirement must be fulfilled before a student can take the comprehensive examination.

403 General Genetics Laboratory (2) Experiments designed to illustrate basic principles of heredity, including primary organisms—Drosophila. Prereq: Biology 220. 2 labs.

404 Cytological Technique (2) Practical experience with a variety of techniques: microscopy, embedding and sectioning, chromosome preparations, autoradiography, in situ hybridization, histochemistry, and immunofluorescence. Prereq: Biology 210. 2 labs.

405-06 Minicourse in Zoology (1,1) Select advanced topics in zoology, selected topics in time and subject matter. Consult departmental listing for topics offered. Prereq: As announced. May be repeated. Maximum 3 hrs. May apply to major.

410 Advanced Cell Biology (3) Molecular and supramolecular structure and functions of eukaryotic cells: regulatory mechanisms, physiology, behavior and cellular interactions. Prereq: Biology 210, 220. 2 hrs and 1 lab.
415 Parasitology (3) Parasitic relationships: physiological, ecological, evolutionary and economic aspects. Prereq: Biology 230 or consent of instructor. 2 hrs and 1 lab.

420 Cell and Tissue Structure and Function (4) Study of animal cells and tissues at light and electron microscope levels. Prereq: Biology 210. 2 hrs and 2 labs.

430 Immunology (2) (Same as Microbiology 430.)

439 Immunology Laboratory (1) (Same as Microbiology 439.)


449 Laboratory in Physiology (2) Prereq or coreq: 440 or 445.

450 Comparative Animal Behavior (3) Principles and methods of ethology: ecological, developmental, physiological and evolutionary aspects. Coreq: 459. (Same as Psychology 450.)

455 Comparative Animal Behavior Laboratory (3) Introduction to observational and experimental research in ethology. Coreq. 450. (Same as Psychology 450.)

460 Evolution (3) Modern concepts of animal evolution. Prereq: Biology 220.

465 Human Genetics (3) Genetic and molecular principles and problems of human inheritance. Prereq: Biology 220.

470 Aquatic Ecology (3) Introduction to physiological and chemical nature of inland waters with description of biotic communities and their interrelationships. Prereq: Chemistry 125-30 and Biology 230. 2 hrs and 1 lab.

472 Arachnology (3) Biology of spiders, mites, scorpions and relatives. Prereq: 360 or 380, 2 hrs and 1 lab.

473 Herpetology (3) Biology of amphibians and reptiles, ecology and adaptive radiation. Prereq: Biology 230. 2 hrs and 1 lab.

474 Ichthyology (3) Evolution, classification, collection and identification, distribution and biology of fishes, freshwater fauna of Eastern North American. Prereq: Biology 230 or consent of instructor. 2 hrs and 1 lab.

475 Ornithology (3) Behavior, ecology, populations, evolution and field identification of birds. Prereq: Biology 230. 2 hrs and 1 lab.

476 Mammalogy (3) Evolution, classification, biogeography, ecology, behavior and functional anatomy of mammals. Prereq: Biology 230 or equivalent. 2 hrs and 1 lab.

480 Physiology of Exercise (3) Functions of body in muscular work: physiological aspects of fatigue, training and adaptation to environment. Prereq: 230 or 440. 2 hrs and 1 lab.

490 Comparative Endocrinology (3) Comparative analysis of physiology and morphology of endocrine glands in vertebrates and invertebrates, their role and interaction in maintenance of organism and species. Prereq: 440 or equivalent.

500 Thesis (1-15) P/NP only. E

501 Graduate Research Participation (3) Advanced research techniques studied under supervision of staff research director. Open to all graduate students in good standing. Prereq: Consent of department and research director. S/NC only.

502 Registration for Use of Facilities (3-15) Required for the first- and second-year graduate students. May be repeated. Maximum 6 hrs. S/NC only.

503 Zoology Seminar (1) Advanced topics in zoology. Senior zoology majors encouraged. Required of all first- and second-year graduate students. May be repeated. Maximum 8 hrs. S/NC only.

504 Special Topics (1-3) Selected directed readings or special course in topics of current interest. Consult departmental listing for offerings. May be repeated with consent of instructor. Maximum 6 hrs. S/NC only.

506 Research Methods (1-3) Instruction in methods and techniques of research. Consult departmental listing for offerings. May be repeated with consent of instructor. Maximum 9 hrs.

507 Animal Cell Culture (2) Techniques for culture of animal cells, tissues and organs. 1 hr and 1 lab.

508 Methods of Taxonomy (2) Speciation, taxonomic decisions, approaches to systematic and rules of nomenclature. Prereq: Consent of instructor.

513 Advanced Developmental Biology (3) Molecular and genetic aspects of differentiation and morphogenesis; current literature. Recommended prereq: Life Sciences 511-12.

516 Colloquium in Ethology (1) (Same as Psychology 516.)

520 Advanced Mammalian Physiology (5) Cellular and organ systems physiology. Prereq: Undergraduate general anatomy and physiology and Biochemistry 410 or equivalent or consent of instructor.

521 Experimental Physiology (2) Laboratory principles and techniques in modern physiology; principles of physiological recording. Prereq: 520 or consent of instructor. 2 labs.

522 Advanced Muscle Physiology (3) Cellular and molecular aspects of muscle contraction and nerve control of contraction, and their relationship to locomotor adaptations in whole animal. Prereq: 440 or 445.

523 Physiology of Hormones (3) Cellular and organismal action of hormones in invertebrate and vertebrate animals. Prereq: 490 or consent of instructor. Recommended prereq: Biochemistry 410. 2 hrs and 1 lab.

524 Physiological Ecology of Animals (3) Adaptive physiological response of animals to natural changes in or extremes of physical and biotic environment. Terrestrial vertebrates. Prereq: Undergraduate courses in animal physiology and ecology. 440 and Biology 230 or equivalent.

525 Physiological Ethology (3) Behavioral endocrinology and neurology from ethological perspective; reciprocal relationships of physiology and behavior in natural context. Term paper, review of assigned topic, creative development of special aspect. Prereq: 450 or undergraduate physiology, or consent of instructor.

526 General Vertebrate Neuroanatomy (3) (Same as Psychology 526.)

540 Insect Taxonomy I: Major Orders (3) Survey of classification of major orders of insects, with practical experience in identification of insects at family level. Prereq: Consent of instructor. 4 hrs combined lecture and lab.

541 Insect Taxonomy II: Minor Orders (3) Survey of classification of minor orders of insects, with practical experience in identification of insects at family level. Prereq: 540 or consent of instructor. 4 hrs combined lecture and lab.

542 Insect Structure and Function (3) Integrated study of morphology and physiology at tissue and cellular level of insects. Prereq: Consent of instructor.

543 Aquatic Insects (3) Taxonomy and biology of aquatic insects; immature forms. Prereq: Consent of instructor. 2 hrs and 1 lab.

544 Fresh Water Invertebrate Zoology (3) Ecology and taxonomy of fresh water invertebrates exclusive of insects. Prereq: 360. 3 hrs lab and field study.

555 Seminar in Quaternary Studies (3) (Same as Geology 555 and Botany 555.)

560 Biometry (3) Statistical methods in analysis of quantitative biological data. Prereq: Statistics course or consent of instructor.

573 Population Biology (3) Genetics and ecology of natural populations of plants and animals and aspects of behavior in determining population structure. Prereq: Introductory courses in ecology and genetics. (Same as Botany 573 and Ecology 573.)

583 Zoogeography (3) Processes determining geographic distribution of animals and distribution and composition of animal communities. Prereq: Ecology course or consent of instructor.

591 Foreign Study (1-15) See page 31.

592 Off-Campus Study (1-15) See page 31.

593 Independent Study (1-15) See page 31.

600 Doctoral Research and Dissertation (3-15) P/NP only. E

601 Advanced Topics (1-3) Readings and discussion of recent advances. Consult the departmental listing for offerings. May be repeated with consent of department. Maximum 9 hrs.

602 Seminar in Cell and Molecular Biology (1) Readings and discussion based on current literature. May be repeated. Maximum 12 hrs.

603 Seminar in Genetics (1) Readings and discussion based on current literature. May be repeated. Maximum 12 hrs.

604 Seminar in Developmental Biology (1) Readings and discussion based on current literature. May be repeated. Maximum 12 hrs.

605 Seminar in Physiology (1) Readings and discussion based on current literature. May be repeated. Maximum 12 hrs.

606 Seminar in Aquatic Biology (1) Readings and discussion based on current literature. May be repeated. Maximum 12 hrs.

607 Seminar in Ecology (1) Readings and discussion based on current literature. May be repeated. Maximum 12 hrs.

608 Seminar in Ethology (1) Readings and discussion based on current literature. May be repeated. Maximum 12 hrs.
FACILITIES FOR RESEARCH AND SERVICE
Facilities for Research and Service

Bureau of Educational Research and Service

Four major types of activities—research, development, educational services, and publications—are channeled through the Bureau of Educational Research and Service (BERS), located in 212 CEB. The research activities relate to the development of research proposals, conducting and/or assisting in research, and assisting others in development of research proposals in the College of Education. Developmental activities relate to change efforts in curricular content and instrumental methodology. Educational services include a wide list of activities such as in-service educational programs, consultant services, and technical assistance and administrative training programs. Official publications of the College of Education are developed through the Bureau. A limited number of graduate assistantships are available.

Center for Business and Economic Research

David A. Hake, Director

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 various kinds of economic and socioeconomic information; supports the faculty of the College in seeking funding for research projects; and, through its Computer Resources Group, provides support for integration of technology in the College of Business Administration. Staff members conduct research in regional economics, public finance, and areas related to socioeconomic problems in the region. The Center publishes the results of research in monograph form so that significant developments in the various business disciplines and economics can achieve widespread exposure. In addition, the Center staff does contract research on business and economic problems for governmental organizations, and private industry. The Center publishes the Tennessee Statistical Abstract and the Survey of Business. The Center is a member of the Association for University Business and Economic Research.

Center for Computer Integrated Engineering and Manufacturing

The Center for Computer Integrated Engineering and Manufacturing (CCIEM) was established in 1985 and is an interdisciplinary organization within the College of Engineering. The Center provides education, research, and service to American industry in the integration of engineering design, manufacturing, and management. CCIEM state-of-the-art computer hardware and software enables faculty and staff to undertake a design and manufacturing agenda crucial to industry. The goals of the Center are to: (1) utilize state-of-the-art CAD/CAM and CIM technologies in engineering research, education, and practice; (2) perform research in communication technologies between heterogeneous computers and control devices; (3) develop computer-based education courseware; and (4) work with industry in the automation of manufacturing processes and office functions. CCIEM is supported by U.S. corporations through an industrial participation agreement with The University of Tennessee. CCIEM, in turn, supports industry, as well as the academic needs of the College of Engineering faculty, through research and access to necessary computer hardware and software.

Center for International Education

David Larsen, Director

The Center for International Education (CIE), 201 Alumni Hall, telephone 974-3177, promotes and supports all aspects of international education and international exchange at UTK, both for American students and faculty and for students and faculty from other countries. The administration of official linkage agreements between UTK and institutions of higher education in other countries is coordinated by CIE.

American students: CIE provides information and advice about study-abroad options open to UTK students, including the exchange programs it administers between UTK and universities in thirty countries on six continents. CIE coordinates campus administration of such international grants and scholarships as the Fulbright, Rhodes, and Marshall programs, and provides information about other sources of funding for overseas study and research, including the Rotary Foundation, St. Andrews, and German Academic Exchange Service (DAAD) grants. Within its library on study, work and travel abroad, CIE has information about student summer job programs in six countries.

International students and scholars: CIE provides information and assistance in matters relating to United States visa regulations, to UTK requirements for international students, and to UTK academic policies and registration procedures. It publishes The Link, a monthly newsletter for UTK’s international community, and administers the insurance policy required of all international students at the University. International student advisors are available to discuss academic and personal concerns. Orientation programs conducted at the beginning of each term facilitate adjustment to the campus and community, as does the international student orientation camp prior to the fall term.

The International House, 1515 Cumberland Avenue, is CIE’s on-campus social, recreational, and programming center that serves as a meeting place for international and U.S. students, faculty and staff.
International students seeking admission to UTK should write directly to the Office of Graduate Admissions and Records.

Center for Measurement and Control Engineering

E. C. (Bud) Muly, Director
The Measurement and Control Engineering Center is a University/Industry Cooperative Research Center sponsored by the College of Engineering of The University of Tennessee, the Instrumentation and the Control Division of Oak Ridge National Laboratory, and the National Science Foundation. The Center's program combines education, research, and technology transfer. Interested graduate students apply for affiliation with the Center and are required to take graduate-level courses in measurement science and control theory. Graduate assistantships are provided for qualified students by the Center. The research is funded by major U.S. industrial companies and focuses on theoretical and practical developments in measurement science and control theory. Graduate assistantships are provided for qualified students by the Center. The research is funded by major industrial companies and focuses on theoretical and practical developments in measurement science and control theory. Graduate assistantships are provided for qualified students by the Center.

Centers of Excellence

The Centers of Excellence grew out of Tennessee's Better Schools Program, an initiative to upgrade state-aided education at all levels. State officials and legislators wanted to give a few outstanding academic programs in state-aided colleges and universities a special push toward prominence, well beyond regular annual increases for all programs.

In 1984, the General Assembly appropriated and the governor approved $10 million for the first Centers of Excellence throughout the state. The public colleges and universities submitted their proposals for Centers of Excellence to the Tennessee Higher Education Commission, which made the final determinations. Funding has been extended each successive year, and now seven of the University's twelve Centers of Excellence are sponsored by UT, Knoxville.

Concurrently, the University has received state funding, which it must match dollar for dollar, for Chairs of Excellence. These Chairs are $1 million endowed professorships in areas of significance to the University and to the individual, foundation, or corporation providing the matching gift money.

The combination of the Centers of Excellence and Chairs of Excellence adds a dimension to The University of Tennessee that is not easily equalled by other institutions. UT's reputation as the premiere university in the state and as a regional and national leader in instruction, research, and public service is enhanced as a result of the infusion of these special funds. For information concerning the individual centers sponsored by UTK, contact Center for Laser Applications

Dr. Dennis Keefer, Director
UT Space Institute
Tullahoma, TN 37388

Center for Livestock Diseases and Human Health

Dr. Hyram Kitchen, Director
108 Morgan Hall
UT Knoxville
Knoxville, TN 37996
(615) 974-7262

Center for Materials Processing

Dr. Joseph Spruiell, Director
435 Dougherty Engineering Building
UT Knoxville
Knoxville, TN 37996
(615) 974-5336

Center for Theatre Excellence

Dr. Robert Mashburn
206 McClung Tower
UT Knoxville
Knoxville, TN 37996
(615) 974-6011

Center of Excellence in New Venture Analysis and Entrepreneurship

Dr. Roger Jenkins
327 Stokely Management Center
UT Knoxville
Knoxville, TN 37996
(615) 974-5033

Science Alliance

Dr. Lee Riedinger
611 Physics Building
UT Knoxville
Knoxville, TN 37996
(615) 974-7805, 974-6765

Waste Management Research and Education Institute

Dr. William Colglazier
327 South Stadium Hall
UT Knoxville
Knoxville, TN 37996
(615) 974-4251

Communications Research Center

The communications Research Center is an adjunct to the communications graduate program. Objectives of the Center are: (1) to conduct original research in mass and public communication; (2) to disseminate research-generated information; and (3) to provide research services to faculty and students, professional communicators, and others interested in improving the quality of human communications.

Computing Center

Gordon Sherman, Director
The University of Tennessee Computing Center (UTCC) provides computing facilities and services for the University's teaching, research, public service, and administrative activities.

UTCC maintains 20 user work areas on the Knoxville campus, including locations in five residence halls, for interactive computing and submission to batch processing. Seven of the areas provide high-speed printing. Computing services to the other UT campuses are supplied through remote job entry facilities.
four-processor Cray X-MP/48 with scalar and vector processor capability and two attached VAX computers.

A graphics center, located in Ferris Hall on the Knoxville campus, has storage and refresh graphics terminals, digitizing tablets, graphics workstations with integrated tables and digitizing tablets. Additional graphics equipment, including terminals and a large digitizing tablet, is located in the user work area in the Art and Architecture Building. Many of the terminals and microcomputer work areas are capable of being used for graphics.

A CalComp 1051 vector plotter is used to produce graphics output from jobs run on the IBM and the VAXcluster computers. An IBM 6670 and an Imagen laser printer are used to produce high quality printed output. The Imagen printer can also produce graphics at 300 dots per inch.

Data entry services are provided with two Nixdorf 600/55 key-to-disks systems located in Andy Holt Tower.

Noncredit short courses, one to five hours in length, are taught throughout the year on topics including programming languages, job control language, the use of graphics, and the statistical and matrix support programs available at UTCC. During each term break, UTCC consultants conduct a four-day seminar on the use of either the IBM or VAXcluster computers for faculty, staff, and graduate students. Many courses are available on videotape in Audiovisual Services in the John C. Hodges Library. Short courses are announced in the UTCC Newsletter, the "Campus Capsule" section of the UT Daily Beacon, and Context.

UTCC maintains more than 100 online and printed documents describing the availability and use of system hardware and software. The IBM User's Guide, the VAXcluster User's Guide, and the Graphics User's Guide are available at the UT Book & Supply Store. A monthly UTCC Newsletter announces systems, equipment, and procedural changes and contains other items of interest to users.

UTCC facilities are assigned a consultant who is available to answer questions about UTCC resources and to assist in accessing the UTCC library of computer programs. Forms to request computing services are available at the receptionist, 200 Stokely Management Center. UTCC offices and principal computing facilities are located on the first two floors of Stokely Management Center, on the second floor of Dunford Hall, and on the P2 level and first floor of Andy Holt Tower.

Energy, Environment, and Resources Center
E. William Colglazier, Jr., Director

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

Current research includes hazardous and radioactive waste management, information systems, industrial fuel use trends, energy conservation in buildings and industry, electric utility development, and environmental policy needs, energy education and information, probabilistic risk assessment, and ethical and value issues in technology policy.

Institute of Agriculture
D. M. (Pete) Gossett, Vice President
Bobby 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 by the U.S. Congress, The University was established within the Institute. The college is a land-grant research and teaching institution for dissemination of such knowledge to the agriculture of Tennessee. The Agricultural Experiment Station was one of the first five institutions in the United States to establish a research institute administratively as one of four units of the Institute. The educational program is carried on through offices in each of the 95 counties of the state. Educational emphasis includes work in four major program areas: agricultural, and natural resource development, resource development, and education of young people through 4-H Clubs. County Extension staff members working directly with local people are supported in the various units by a specialist staff, members of which are stationed either in Knoxville, Nashville, or Jackson.

The Agricultural Extension Service operates administratively as one of four units of the Institute of Agriculture. For administration, the state is divided into five districts with supervisors located in their respective districts. District headquarters are maintained in Knoxville, Chattanooga, Cookeville, Nashville, and Jackson. The Agricultural Extension Service operates as a three-way partnership among county, state, and federal governments. The University of Tennessee represents state and federal government and a County Agricultural Extension Committee represents county government in this partnership.

Agricultural Experiment Station
John I. Sewell, Associate Dean
Thomas H. Klinkt, Assistant Dean

The Agricultural Experiment Station was established by the University Act on June 8, 1882, five years before the passage of the Hatch Experiment Station Act by the U.S. Congress. The University Board of Trustees was one of the first five institutions in the U.S. to establish an Agricultural Experiment Station. Since its beginning, the Station has given first attention to investigations of concern to the agriculture of Tennessee. The investigations of the Station follow a systematic method of gaining and applying knowledge efficiently to the biological, physical, and economic phases of producing, processing, and distributing farm and forest products; to the social and economic aspects of rural living; and to consumer health and nutrition. Both farm and urban populations gain from the accomplishments of the Agricultural Experiment Station. Examples of some of these accomplishments are new and improved varieties of crops, new and better methods of controlling crop and livestock pests, more efficient production of crops and pasture through improved fertilization and mechanization, and more efficient feeding and management of livestock.

The program is designed and administered through sixteen subject matter departments located at Knoxville. A number of the staff have teaching responsibilities in addition to their research. To assist in the research programs, the Station supports a large number of graduate students. To serve Tennessee's diverse agriculture, branch stations are operated at Jackson, Milan, Grand Junction, Spring Hill, Signal Mountain, Crossville, Knoxville, and a forestry branch station at Oak Ridge. Professional and technical staff are in residence at these locations.

Agricultural Extension Service
M. Lloyd Downen, Dean
Troy W. Hinton, Associate Dean
Mildred F. Clarke, Associate Dean
Billy G. Hicks, Associate Dean

The Agricultural Extension Service was established in 1914. Its purpose is to extend through various educational means agricultural and home economics information to farm families and others in the state who do not have the opportunity to enroll in resident courses of instruction at colleges.

The educational program is carried on through offices in each of the 95 counties of the state. Educational emphasis includes work in four major program areas: agricultural and natural resource development, resource development, and education of young people through 4-H Clubs. County Extension staff members working directly with local people are supported in the various units by a specialist staff, members of which are stationed either in Knoxville, Nashville, or Jackson.

The Agricultural Extension Service operates as a three-way partnership among county, state, and federal governments. The University of Tennessee represents state and federal government and a County Agricultural Extension Committee represents county government in this partnership.

Library, The University of Tennessee, Knoxville
Donald Hunt, Director

The University of Tennessee, Knoxville Library owns approximately 1,600,000 volumes, more than 3,000,000 manuscripts, 70,000 microfilm reels, and 1,600,000 items of other microtext, plus recordings, tapes, United States and United Nations documents, and more than 17,000 periodicals and other serial titles, which are received annually. The library's membership in the Association of Research Libraries reflects the University's emphasis on graduate instruction and research and the support of large, comprehensive collections of library materials on a permanent basis.

Library holdings in Knoxville are housed in the greatly expanded John C. Hodges Library, located in the University's administration building. The Special Collections section in the James D. Hoskins Library is a repository of regional and local materials, Tennesseeana, and University of Tennessee legislative papers and mementoes of many Tennessee
Off-campus Graduate Centers

Kingsport University Center: UTK offers at Kingsport resident graduate programs in science and engineering at both the Master's and doctoral levels. The program is operated within the policies formulated by the Graduate Council of UTK and is coordinated with the graduate and undergraduate offerings of East Tennessee State University.

Students who enroll in this program must be admitted to The Graduate School of UTK. Information and application forms may be obtained from Marvin K. Goodman, Director, Kingsport University Center, The University of Tennessee, University Boulevard, Kingsport, Tennessee 37660.

Nashville Graduate Engineering Program: UTK offers graduate study programs at Oak Ridge leading to Master's degrees in Business Administration with a concentration in management, and in Statistics. The Master's and doctoral programs are viable in engineering, mathematics, and physical sciences. Courses are given in late afternoons and evenings with research facilities provided by and used in cooperation with the Oak Ridge Associated Universities (ORAU).

This program is supported under a sub-contract with ORAU with principal support coming from the Martin Marietta Corporation. UT is one of the forty-three colleges and universities which sponsor ORAU, a nonprofit education and research management corporation.

Information and applications to The Graduate School may be obtained by writing to Director, UT Oak Ridge Graduate School, Post Office Box 117, Oak Ridge, Tennessee 37830.

Chattanooga Graduate Education Program: UTK offers graduate education leading to the Master of Science in Industrial Engineering and other disciplines, as the need and resources permit, are offered by UTK.

Students who enroll in these programs must be admitted to The Graduate School of UTK. Information and appropriate forms may be obtained from Jerry Westbrook, Director, Nashville Graduate Engineering Program, Tenth and Charlotte, Nashville, Tennessee 37203.

The Psychological Clinic supports graduate training in clinical psychology. Psychological diagnosis and psychotherapy are offered on an outpatient basis, with medical consultants, to the general public as well as to University students, upon referral by a physician.

Transportation Center

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

The Center is a University-level organization administratively positioned with the Office of the Vice Provost for Research at UTK. The Center's staff is organized into four research divisions and one support division. The five division managers provide the overall management needed to conduct transportation research, service, and training activities efficiently and effectively.

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

The University of Tennessee Space Institute

Kenneth E. Harwell, Dean
Richard M. Robertson, Associate Dean

The Space Institute is a graduate education and research institution established in 1964 on a 355 acre lakeshore campus in Middle Tennessee. UTsI has evolved into an internationally recognized institution for graduate study and research in engineering, physics, mathematics, and computer science. The accredited academic programs and educational policies of the Space Institute are the result of their origins in appropriate departments of The University of Tennessee, Knoxville. The more than 40 faculty members of the Institute carry out these accredited academic programs through classroom teaching, informal seminars, active research,
and directing the research of their students in an environment of creative work and advanced study. Programs are available to students devoting full-time effort toward M.S. and Ph.D. degrees, those interested in continuing education for updating and broadening knowledge, and those who wish to pursue post-doctoral research.

Graduate degree programs are available with majors in Aerospace Engineering, Aviation Systems, Computer Science, Electrical Engineering, Engineering Science, Industrial Engineering (engineering management concentration), Mathematics, Mechanical Engineering, and Physics. In addition to the fundamental studies characteristic of each discipline, research opportunities are available in many areas including aerodynamics, atmospheric science, fluid mechanics, computer graphics, knowledge engineering, energy conversion processes, thermal sciences, space systems, remote sensing, propulsion, computational fluid dynamics, and other aspects of atmospheric and space flight.

The Institute has an established Center of Excellence in Laser Applications and offers graduate studies and research opportunities in laser diagnostics, laser materials interactions, pico-second processes, and coherent and non-linear optics.

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

Water Resources Research Center

E. William Colglazier, Director

The Water Resources Research Center is a federally designated institute for the conduct of water research for the state. The purposes of the Center are: (1) to assist and support all the academic institutions of the state, public and private, in pursuing water resources research which addresses a wide range of problems of interest to the state, region, and nation; (2) to provide for 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.
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