426 Introduction to Aerospace Design (2) Design process, techniques, synthesis, testing, reliability, subjective, project oriented. Emphasis on military and space flight. Prereq: 351, 370, 383, Ceow. Mechanical Engineering 344 F, S.

429 Aerospace System Design (4) Synthesis and development of aerospace projects as they apply to technical aspects. Participation in team design effort, formal applications and design report. Prereq: 425, 426, 425 S.

449 Aerospace Engineering Laboratory (2) Design, constructing, and recording results of experiments necessary for the experimental design and testing phases of the design process. Analysis of data and formulation of conclusions. Prereq: 445 Aerospace Engineering I and Measurement. 351 Compressible Flow, 425 3.5 hrs.

500 Thesis (1-15) F, S only, E

903 Registration for Use of Facilities (3-15) Required for student not otherwise registered during any semester when student uses laboratory facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. SNC only, E

111 Invited Film (3) Kinematics and dynamics of idealized fluids; potential flow about body, confirmation mapping. Prereq: 422 or 541, Mathematics 425 3 hrs.

512 Viscous Flow (3) Derivation of fundamental equations of compressible viscous flow, boundary layer theory, application of boundary layer and potential flow solutions for Newtonian viscous flow (Navier-Stokes) equations for special cases; similarity solutions. Thermal boundary layers, stability of boundary layers, flow transitions to turbulence. 2-6 turbulent boundary layer equations, incompressible-turbulent mean flow, and compressible boundary layer flow. Prereq: Consent of instructor.

531 Experimental Methods in Fluid Mechanics (5) Experimental techniques with laboratory experiments; representation of experimental data; boundary layer experiments; turbulence measurements, flow visualization, wind tunnel tests, water table experiments, supersonic flow experiments, boundary layer measurements, laser velocimetry measurements. Prereq: 425 Viscous Flow 5-4 hrs.

515-16 Air Vehicle Aerodynamics and Performance (3, 3) surprised. Prereq: 512 Mechanical Engineering 517-520.

535 Mechanical Vibrations (3) (Same as Mechanical Engineering 535 and Engineering Science 534-35.)

541 Fluid Mechanics I (3) (Same as Mechanical Engineering 541 and Engineering Science 541-52). Prereq: 535 Mechanical Vibrations 3 hrs.

542 Fluid Mechanics II (3) (Same as Mechanical Engineering 542 and Engineering Science 542.)


551 Aerospace Mechanics (3) (Principles of mechanics applicable to aerospace vehicles, equations of motion, multibody problems and trajectory analysis. Prereq: Mathematics 471.

553 Advanced Strength of Materials (3,3) (Same as Mechanical Engineering 553-54 and Engineering Science 553.)


555 Vertical or Short Take Off and Landing Aircraft (3) Performance, stability, control of rotary wing lift, wing forward velocity, and vertical lift and jet type aircraft. Vertical and transition flight modes. High lift aircraft. Aerodynamic and mechanical stability. Prereq: Consent of instructor.


557 Aerospace Vehicle Flutter and Vibration (3) (Principles of the design, development, and testing of aircraft structures using the classical flutter vibration theory. Prereq: 425, 551.

558 Spacetime Attitude Dynamics and Control (3) (Principles of altitude dynamics of space vehicles. Gyroscopic instruments, passive and active attitude control devices. Prereq: 512, 551.)


559 Fundamentals of Aerodynamics (3) (Generation, propagation, and absorption of sound in static and moving media. Prereq: Consent of instructor.

560 Spacecraft Attitude Dynamics and Control (3) (Principles of dynamic systems, spacecraft, and environmental factors. Prereq: 512, 551.)

561 Flight Dynamics (3) (Same as Engineering Science 561-52 and Mechanical Engineering 561-52.)

562 Advanced Aerodynamics (3) (Principles of hypersonic, supersonic, and subsonic aerodynamics. Prereq: 522. Recommended prereq: 551.)

563 Fluid Dynamics (3) (Principles of hypersonic, supersonic, and subsonic aerodynamics. Prereq: 522. Recommended prereq: 551.)

564 Advanced Topics in Computational Fluid Dynamics (3) (Same as Engineering Science 651-652 and Mechanical Engineering 651-652.)


566 Turbulence Measurements, Flow Visualization, Wind Tunnel Tests, Water Table Experiments. Prereq: Consent of instructor. Prereq: 565 Introduction to Turbulence and/or faculty time before degree is completed. May be repeated. S/NC only. E

570 Research for Use of Facilities (3-15) Prereq: 541 and/or faculty time before degree is completed. May be repeated. Maximum 9 hrs.

580 Doctoral Research and Dissertation (3-5) P/NC only. E


612 Magnetohydrodynamics (3) (Magnetohydrodynamics. kinetic and shock wave phenomena for magnetohydrodynamic flow, dimensional and analog models of boundary layers, applications of magnetic field in the design of devices. Prereq: Mathematics 425 and Engineering Science 533.)

613 Aerodynamics (3) (Principles of aerodynamics. Prerequisites: 403 and Engineering Science 533.)

614 Physical Gas Dynamics (3) (Principles of gas dynamics, flow through nozzle and diffuser, flow through duct, preliminary design of channels flow, engineering applications of magnetohydrodynamics, propulsion and power generation. Prereq: 531 and Mathematics 425.

615 General Physical Gas Dynamics (3) (High speed, high temperature gas flow from molecular point of view. Kinetic theory, statistical mechanics, molecular flow, vibrational and chemical, rate processes, equilibrium and nonequilibrium transport phenomena. Prereq: 531, 525, Mechanical Engineering 653-654.)

616 Advanced Fluid Dynamics (3) (Turbulence, Navier-Stokes, momentum, and energy equations treated in general form. Prereq: 531, 525, Mechanical Engineering 653-654.)

634 Advanced Topics in Computational Fluid Mechanics (3,3) (Same as Engineering Science 653-54 and Mechanical Engineering 653-654.)


637 Advanced Topics in Biomedical Engineering (3) (Principles of the design, development, and testing of devices. Prereq: 425 and/or faculty time before degree is completed. May be repeated. Maximum 9 hrs.)

Biomedical Engineering

Graduate Courses


430 Biomedical Engineering Laboratory (1) (Experiential study of processes necessary for the development of efficient and cost-effective testing and monitoring equipment and systems for use in the field. Prereq: 505 Engineering Physiology, 310 Biomechanics, Biology 140 Organization and Function of Cells.

445 Advanced Protocols for Biomechanics (2) (Application of biomechanics to industrial and clinical areas. Emphasis on the development of efficient and cost-effective testing and monitoring equipment and systems for use in the field. Prereq: 505 Engineering Physiology, 310 Biomechanics, Biology 140 Organization and Function of Cells.

571 Finite Elements for Engineering Applications (3) (Introduction to the finite element method for engineering applications. Prereq: 541.)

572 Computational Solid Mechanics (3) (Same as Engineering Science 553 and Mechanical Engineering 556.)

573 Computational Fluid Dynamics (3) (Same as Engineering Science 555 and Mechanical Engineering 556.)

574 Space Engineering: Satellite Technology (3) (Satellite orbits and rendezvous, launch vehicles and launching, spacecraft structures, space systems, attitude control system, electronic/communications control system, radiation effects, reliability, and application of satellites (communication, weather, Earth observation, and Earth resources). Prereq: 425, Mathematics 471, 404.

578 Selected Engineering Problems (4,3) (Enrollment limited to students who are not enrolled in the Doctoral Research and Dissertation Program). May be repeated. Maximum 4 hrs. SNC only.

578 Seminar (1-4) (Orals on aerospace engineering, reports on current literature and approved topics of research. Prereq: 541.) May be repeated with SNC only.

579 Topics in Aerospace Engineering (1-4) May be repeated with SNC only.
Engineering Science

GRADUATE COURSES

423 Fracture-Safe Design (3) Critical review of variables controlling fracture toughness: part and flaw geometry, temperature, loading rate, section size, material: effects of environment toughness by stress intensity factors, strain energy release, COD integral, CCOD data, transition temperature tests; use of fracture mechanics to design. Prereq: 321 and Materials Science and Engineering 291. (Same as Materials Science and Engineering 475) 3 hrs or 2 hrs and 1 lab.

426 Fundamental Principles of Composite Material (3) (Same as Materials Science 472.)

429 Introduction to Ceramic Matrix Composites (3) (Same as Materials Science and Engineering 472.)


465 Dynamic Data Acquisition (3) Use and calibration of instrumentation for measuring acoustic, mechanical and electrical events; Fourier analysis, transfer function analysis, digital signal processing, transduction, experimental parameter estimation with applications to modal vibration, structural dynamics, electronic circuits and electro-mechanical components. Mechanical Vibration. 2 hrs and 1 lab.

475 Design of Artificial Internal Organs (3) Design, development and evaluation of artificial internal organs, analysis of transport processes in prosthetic devices for design optimization; review of currently available devices; federal regulation and ethical considerations. Prereq: 341, Mathematics 231.

494-95 Special Engineering Science Topics (1-3, 1-3) Problems related to recent developments and practice. Open to juniors or seniors. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs.

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 and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/NC only. E

521-22 Advanced Strength of Materials (3,3) (Same as Mechanical Engineering 535-36 and Aerospace Engineering Engineering 552-53.)


528 Ceramic Matrix Composites: Material and Mechanics (3) Micromechanics and microstructural design, fabrication of ceramic matrix composites; interface characterization of mechanics, electron microscopy examination; nondestructive evaluation; fracture; fatigue; applications. Prereq: Consent of instructor. (Same as Materials Science and Engineering 528.)

529 Fatigue of Engineering Materials (3) Fatigue life prediction, crack initiation, crack propagation. Variable amplitude loading, effects of environment, fatigue, creep fatigue, metallurgical and microstructural variables, fractography, non-metals. Prereq: Consent of instructor. (Same as Materials Science and Engineering 529.)

533 Dynamics (3) (Same as Mechanical Engineering 533 and Aerospace Engineering 533.)

534 Mechanical Vibrations (3) (Same as Mechanical Engineering 534 and Aerospace Engineering 534.)

536 Advanced Engineering Acoustics (3) Introduction to theory and application of acoustic analysis; vibration of continuous systems, plane and spherical waves, transmission phenomenon, reflection and scattering. Resonators, filters, absorption mechanisms, microphones, ultrasonics, sonar transducers. Prereq: 435 or undergraduate vibrations course.

539 Continuum Mechanics (3) Cartesian tensors, transformation laws, deformations, constitutive concepts; stress, strain, deformation, constitutive equations. Conservation laws for mass, momentum, energy. Applications in classical mechanics. (Same as Aerospace Engineering 539 and Mechanical Engineering 539.)

541 Fluid Mechanics I (3) (Same as Mechanical Engineering 541 and Aerospace Engineering 541.)

542 Fluid Mechanics II (3) (Same as Mechanical Engineering 542 and Aerospace Engineering 542.)

551 Finite Elements for Engineering Applications (3) Computational procedures for differential equation statements in engineering and science. Approximation, boundary conditions, error extrapolation/estimation, finite element implementations; comparison to traditional methods. Applications in 1, 2, and 3 dimensions, non-linearity, unstable problems, coupled equation systems. Examples from diverse technical fields: fluid mechanics, heat transfer, elasticity, electromagnetics, acoustics, systems. Computer programs. Prereq: Bachelor's degree in engineering or natural science. (Same as Aerospace Engineering 561 and Mechanical Engineering 571.)


553 Computational Solid Mechanics (3) Finite element techniques in structural mechanics and linear elasticity. Two and three-dimensional formulations; isoparametric elements, numerical quadrature. Equation solving, matrix iteration techniques. Applications in beams, plates and shells; use of representative computer programs in PC and networked Unix-CAD-solids models. Prereq: 321 Mechanics of Materials I or equivalent. (Same as Aerospace Engineering 563 and Mechanical Engineering 573.)


556 Optical Engineering I (4) Wave optics; scalar diffraction theory, thin lens, paraxial ray, geometric optics, lens, mirror, gratings, paraxial design methods, introduction to aberrations.

558 Optical Engineering II (4) Statistical optics: spontaneous and induced emission: black and gray body radiation, incoupler, partial and totally coherent radiation; mutual coherence function; detectors; radiometry. Prereq: 556.

571 Biomechanics of Hard and Soft Tissue (3) Introduction to terminology, physiology, and analytical methods for mechanics of living tissue. Continuum mechanics analysis of hard and soft tissue, biological fluid flows. Flow properties of blood, rheology of blood in micro vesseles; viscoelasticity of fluids and solids, mechanical properties of solid vessels; skeletal, heart and smooth muscle; bone and cartilage. Research paper.


576 Expert Systems in Engineering (3) (Same as Nuclear Engineering 576 and Mechanical Engineering 576.)

577 Neural Networks in Engineering (3) (Same as Nuclear Engineering 577 and Mechanical Engineering 577.)

578 Fuzzy Systems in Engineering (3) (Same as Nuclear Engineering 578.)

581 Special Topics in Engineering Mechanics (3) Mechanics topics related to recent developments. Prereq: Consent of instructor. May be repeated with consent of department.

585 Industrial Pollution Prevention (3) (Same as Chemical Engineering 581 and Environmental Engineering 581.)

590 Selected Engineering Problems (2-6) Enrollment limited to students in problems program. Prereq: Consent of advisor. May be repeated. Maximum 6 hrs. S/NC only.

595 Seminar (1) All phases of engineering science, reports on current research at UTK and UTSI. May be repeated. S/NC only.

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

624 Viscoelasticity (3) Viscoelastic constitutive relations; isothermal boundary value problems; wave propagation in viscoelastic materials; stability problems; determination of viscoelastic properties. Prereq: 523, and 539 or Materials Science and Engineering 541.


641 Advanced Topics in Fluid Mechanics and Convective Heat Transfer (1,2) Recent developments in turbulent, heat and mass transfer; boundary layer analysis, stability, transition, turbulence, closure models; Navier-Stokes equations, closure procedures: time- and en gineering; linear, large amplitude, unspecified flow, reacting, nonreacting, excitation, ionization. Applications in propulsion, lasers, aerodynamics. Prereq: 541.

645 Theory of Turbulence (3) Mathematical descriptions of turbulence: isotropic turbulence, energy
Mechanical Engineering

NOTE: Not all the courses listed below are available at both the UT and UTSI campuses.

GRADUATE COURSES


455 Introduction to Design (2) Engineering economy, optimization, design for automation, reliability, patents and product liability; design of mechanical engineering systems. Participation in team design effort; design report. Prereq: Dynamics and Vibrations of Machines.

456 Introduction to Thermal Design (2) Engineering economy, optimization, design for automation, reliability, patents and product liability; design of mechanical engineering systems. Participation in team design effort; design report. Prereq: 332, 344. F.


471 Refrigeration and Air Conditioning (3) Vapor compression and absorption cycles; heat pump systems; psychrometric processes; air washers; cooling towers; solar radiation; building heat transmission. Prereq: 332, 344.

475 Thermal Engineering (3) Thermal systems, turbomachinery, heat exchangers, combustion and system analysis and design, second law and economic analysis. Prereq: 332, 344. F, Spring.


484 Introduction to Maintenance Engineering (2) (Same as Aerospace Engineering 484, Industrial Engineering 484, and Materials Science and Engineering 484.)


506 Product Selection and Evaluation (2) Development of operational requirements and features for new product having potential for business venture. Market potential, design feasibility and manufacturing requirements. Design alternatives created and evaluated against set of performance determined from market analysis. Preferred product concept selected by end of semester. Prereq: 504. (Same as Industrial Engineering 506.)


508 Integrated Product, Process and Manufacturing System Design (3) (Same as Industrial Engineering 508.)

509 Project Management (1) (Same as Industrial Engineering 509.)

510 Prototype Development and Evaluation (3) Prototypes of selected project made and tested against required operating conditions. Design changes implemented to meet customer's needs. Fabrication drawings and manufacturing plans finalized for introduction of prototype. Select team responsible for complete development managed using project management plan. Prereq: 555.


514 Phase Change Heat Transfer (3) Mechanisms and modeling of nucleate, transition and film boiling processes; critical heat flux; forced convection boiling and post dry-out heat transfer; condensation processes; heterogeneous nucleation; dropletwise and filmwise condensation; flow condensation; liquid-solid phase change; moving phase fronts; mathematical modeling. Prereq: 344, 511.


521-22 Thermodynamics I and II (3, 3) Macroscopic thermodynamics, including First and Second Law analyses, availability, phase and chemical equilibrium criteria, heat, work, gas mixtures, and property relations; determination of thermodynamic properties from molecular structure, spectroscopic data, kinetic theory, statistical mechanics, quantum physics, Schrödinger equation. Prereq: 332.

523 Special Topics in Thermodynamics (3) Application of thermodynamics to topics of current interest in mechanical engineering. Prereq: Consent of instructor.

525 Combustion and Chemically Reacting Flows (3) Fundamentals: thermal, kinetic, entropic and conservation equations; phenomenological approach to laminar flames; diffusion and premixed flow theory; single droplet combustion; deflagration and detonation theory; numerical simulation of combustion waves in laminar streams; flammability limits of premixed laminar flames; introduction to turbulent flames. Prereq: 522, 541, or consent of instructor.

526 Combustion and Chemically Reacting Flows II (3) Advanced topics: phenomenological approaches to turbulent flames; fundamentals of turbulent flow; application of probability density functions to turbulent flow; two-way coupling of convection and non-premixed reacting; spray combustion models; fluidized bed combustion; chemically reacting boundaries and interfaces; combustion in diesel engines; flames; introduction to supersonic combustion and hypersonic flows. Prereq: 525.


535-36 Advanced Strength of Materials (3, 3) Three-dimensional transformations for stress and strain, elementary theory of elasticity, unsymmetrical bending, beams on elastic foundation, energy methods, shear center, beam-columns, thick-walled pressure vessels, elementary theory of plates. Prereq: Mechanics of Materials II or Mechanical Engineering 466. Prereq: Mathematics 431 or Engineering Analysis. (Same as Aerospace Engineering 552-53 and Engineering Science 521-22.)

539 Continuum Mechanics (3) (Same as Engineering Science 539 and Aerospace Engineering 539.)

541 Fluid Mechanics I (3) Derivation of equations governing flow of inviscid and viscous fluids (conservation of mass, Newton's second law, conservation of energy). Equations of state and constitutive relations. Euler and Navier-Stokes forms and non-dimensionalization. Exact solutions and introduction to potential and boundary layer theories. Prereq: Fluid Mechanics. (Same as Aerospace Engineering 541 and Engineering Science 541.)

Microbiology

(M.S. Ph.D. Veterinary Medicine D.V.M.)

Robert Moore, Head

Professors:
Beck, Raymond W. (Emeritus), Ph.D. Wisconsin
Becker, Jeffrey M., Ph.D. Cincinnati
Brian, D.A., Ph.D., D.V.M. Michigan State
Montile, T.C. (Emeritus), Ph.D. Maryland
Moore, R.N., Ph.D. Texas
Rigsby, W. Stuart, Ph.D. Yale
Rousu, B.T., Ph.D. Georgia
Savage, Dwayne C. (Emeritus), Ph.D. California
Sayer, Gary S., Ph.D. Idaho
Stacey, G. (Liaison), Ph.D. Texas
White, D.C. (Distinguished Scientist), Ph.D. Rockefeller
Woodward, J.M. (Emeritus), Ph.D. Kansas

Associate Professors:
Hacker, David, Ph.D. Michigan State
Small, Pamela, Ph.D. Stanford
Zaghouni, Habib, Ph.D. Paris

Assistant Professor:
Wilhelm, Steve, Ph.D. Western Ontario

The Department of Microbiology offers both the M.S. and Ph.D. Students have the option of selecting from a variety of graduate research programs. For a departmental brochure, contact the department head.

ADMISSION REQUIREMENTS

Students are expected to have completed an undergraduate program with a 3.0 or better GPA on a 4.0 system. Included in the undergraduate course credits should be (1) a full year of general biological science, (2) one year of calculus, (3) two years of chemistry, including one year of organic, (4) one year of physics, and (5) an introductory course in microbiology. In many cases, deficiencies in requirements may be removed by taking appropriate courses during the first year of graduate study. The department also requires the general portion of the Graduate Record Examination. A satisfactory score on each part is 550 or higher with rare exceptions. Three letters of recommendation should be submitted by current or former faculty members.

Each new graduate student meets with an advisory committee chaired by the departmental Director of Graduate Studies to plan a program of study for the first one or two semesters until a research advisor is selected. All first-year students participate in a laboratory rotation program during the first semester of study. This program allows the student to adjust smoothly to the research programs of the department, to develop a background of research procedures and concepts, and to facilitate the selection of a
research professor. Usually the student selects a research professor toward the end of the laboratory rotation period. The major professor assists in the selection of and carrying out of a suitable research program and in the naming of a thesis or dissertation committee.

**THE MASTER'S PROGRAM**

The program leading to the M.S. is designed to provide the student with broad basic knowledge, to permit the acquisition of technical competence in the fundamentals of research, and to encourage creative and independent thinking. Two to three calendar years are usually needed for the course of study that has the following requirements:

1. 30 hours including 6 thesis credits; 2. a 3.0 GPA in all courses taken for graduate credit after 12 hours of credit have been earned in courses graded on the A-F system; (3) a 3.0 GPA in courses taken in the department; (4) a complete course sequence in biochemistry or molecular biology; (5) presentation of a research thesis and its oral defense.

**THE DOCTORAL PROGRAM**

The program leading to the Ph.D. is designed to develop the student's ability to pursue independent and original research in microbiology and allied fields, to teach both oral and written communication of the results of research to the scientific community, and to train effective teachers. Students may enter the program after receiving either a bachelor's or master's degree. Students who enter with a bachelor's degree usually receive the Ph.D. after four or five years; those with the master's degree usually take three or four years to complete the degree. Departmental requirements are: (1) a 3.0 GPA in all courses taken for graduate credit after 12 hours of credit have been earned in courses graded on the A-F scale; (2) a 3.0 GPA in courses taken in the department; (3) satisfactory performance in at least one semester as a teaching assistant; (4) one semester of physical chemistry; (5) one course in statistics; (6) two semesters of biochemistry or molecular biology; (7) satisfactory performance in a comprehensive examination that must be attempted before the end of the fifth semester in the program and passed before admission to candidacy; and (8) the presentation of a research dissertation and its oral defense.

**GRADUATE COURSES**

410 Bacterial Physiology (3) Modern concepts of structure and function of bacterial cell. Prereq: Introduction to Microbiology. F

411 Bacterial Genetics (3) Transmission and expression of genetic information by bacteria. Prereq: Introduction to Microbiology. Sp

429 Medical Microbiology (3) Disease-producing microorganisms, including bacteria, rickettsia, chlamydia and fungi. Prereq: Introduction to Microbiology. Sp

429 Medical Microbiology Laboratory (2) Laboratory exercises in medically important areas of microbiology: microorganisms, pathogenesis and immunology. Prereq: Introduction to Microbiology. Lab. 430. Coreq. 420. Sp

430 Immunology (3) Principles of inflammation and immunity; immunoglobulin structure and theories of formation and diversity; complement, hypersensitivities, cell cooperation and recognition in immune mechanisms; soluble factors. Prereq: General Genetics. F


470 Microbial Ecology (3) Physiological diversity and taxonomy of microorganisms from natural environments. Functional role of microorganisms in natural and simulated ecosystems. Prereq: 310. F

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 when the student receives credit and/or pass/fail before degree is completed. May not be used toward degree requirements. May be repeated. S/NC only: E

575 Applied Microbiology and Bioengineering (3) Same as Chemical Engineering 575, Environmental Engineering 575, and Biosystems Engineering 575.

591 Foreign Study (1-15) See College of Arts and Sciences.

592 Off-Campus Study (1-15) See College of Arts and Sciences.

593 Independent Study (1-15) See College of Arts and Sciences.

595 General Seminar (1) Lectures and seminars by invited speakers, faculty, and graduate students. May be repeated. Maximum 3 hrs. S/NC only. E

596 Laboratory Rotation (1) Familiarization with research areas in department through a series of rotations in laboratories of individual faculty members. May be repeated. Maximum 3 hrs. S/NC only.

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

601 Journal Club in Microbial Physiology (1) Readings and discussions based on current literature. May be repeated. Maximum 18 hrs. S/NC only. E

602 Journal Club in Microbial Pathogenesis (1) Readings and discussions based on current literature. May be repeated. Maximum 18 hrs. S/NC only. E

603 Journal Club in Immunology (1) Readings and discussions based on current literature. May be repeated. Maximum 18 hrs. S/NC only. E

604 Journal Club in Virology (1) Readings and discussions based on current literature. May be repeated. Maximum 18 hrs. S/NC only. E

605 Journal Club in Microbial Genetics (1) Readings and discussions based on current literature. May be repeated. Maximum 18 hrs. S/NC only. E

610 Topics in Microbial Physiology (1-3) Prereq: 410 or consent of instructor. May be repeated. Maximum 12 hrs.

620 Topics in Microbial Pathogenesis (1-3) Prereq: 420, 430 or consent of instructor. May be repeated. Maximum 12 hrs.

630 Topics in Immunology (1-3) Prereq: 420 or consent of instructor. May be repeated. Maximum 12 hrs.

640 Topics in Virology (1-3) Prereq: 440 or consent of instructor. May be repeated. Maximum 12 hrs.

650 Topics in Microbial and Molecular Genetics (1-3) Prereq: 411 or consent of instructor. May be repeated. Maximum 12 hrs.

670 Advanced Topics in Environmental Microbiology (1-3) Prereq: 570 or consent of instructor. May be repeated. Maximum 12 hrs.

**Microbiology-Veterinary Medicine**

See College of Veterinary Medicine and Comparative and Experimental Medicine

**Modern Foreign Languages and Literatures**

(Majors in College of Arts and Sciences)

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Carolyn R. Hodges, Head

**Professors:**

Barrett, Paul E., Ph.D.*..........................California

Brady, Patrick (Shumway Chair of Excellence), D.U.P. ..............Sorbonne

Campion, Edmund J., Ph.D.*.................Florida

Cobb, Carl W. (Emeritus), Ph.D.*............Tulane

Elliott, Jacqueline C. (Emerita), M.A.*......Illinois

Falen, James E. (Emeritus), Ph.D.*...........Pennsylvania

Fiene, Donald M. (Emeritus), Ph.D.*....Indiana

Handelsman, Michael H., Ph.D.*.............Florida

Helfin, William H., Ph.D.*....................Florida

State Hodges, Carolyn R., Ph.D.*.............Chicago

Irving, Thomas B. (Emeritus), Ph.D.*...........Princeton

Kratz, Henry (Emeritus), Ph.D.*..............Ohio State

Levy, Karen D., Ph.D.*..........................Kentucky

Maurino, Ferdinando D. (Emeritus), Ph.D.*...Columbia

Mellor, C. J., Ph.D.*............................Chicago

Osborne, J. C. (Emeritus), Ph.D.*...........Northwestern

Pinsky, Clara (Emerita), Ph.D.*..............California

Ritzenthaler, Ursula C. (Emerita)*..........Connecticut

Rivera-Rodas, Oscar, Ph.D.*....................California

Romeiser, John B. (Liaison), Ph.D.*...........Vanderbilt

Vazquez-Bigot, A. M. (Emeritus), Ph.D.*......Minnesota

Wallace, Albert H. (Emeritus), Ph.D.*......North Carolina

Washburn, Yulan M., Ph.D.*..................North Carolina

**Associate Professors:**

Beauvois, Margaret, Ph.D.*..................Texas

Brizco-Skov, Flavia, Ph.D.*..................Washington

Cree, Bryant, Ph.D.*..........................California

DiMaria, Salvatore, Ph.D.*....................Wisconsin

Hofmuller, Christine, Ph.D.*.................Wisconsin

LaCure, Jon, Ph.D.*............................Indiana

Lauckner, Nancy A. (Liaison), Ph.D.*.......Wisconsin

Lee, David E., Ph.D.*..........................Stanford

Nakuma, Constancio, Ph.D.*.................Sorbonne

Pervukhina, Natalia K., Ph.D.*..............Bryn Mawr

Young, Dolly, Ph.D.*...........................Texas

**Assistant Professors:**

Ayo, Alvaro A., Ph.D.*...........................Arizona

Blackwell, Stephen H., Ph.D.*..................Indiana

Cruz-Camara, Nuria, Ph.D.*.................SUNY (Buffalo)

Essif, Leo, Ph.D.*..............................Brown

Hoening, Peter, Ph.D.*.........................Wisconsin

Kaplan, Gregory, Ph.D.*......................Pennsylvania

Maxim, Hiram H., Ph.D.*......................Texas

McAlpin, Mary K., Ph.D.*......................Columbia

Ohnesorg, Stefanie, Ph.D.*...................McGill

Silva-Filho, Eudicte, Ph.D.*...............North Carolina
THE DEPARTMENT OF MODERN FOREIGN LANGUAGES AND LITERATURES offers graduate programs leading to the Master of Arts degree with majors in French, German, and Spanish, and the Doctor of Philosophy degree with a minor in Modern Foreign Languages. Inquiries should be addressed to the head of the department.

THE MASTER'S PROGRAMS

French

Thesis Option:
1. Completion of a minimum of 24 semester hours in coursework plus at least 6 hours in course 500 Thesis. French 501 is required. A maximum of 6 hours may be taken at the 400 level, the rest at the 500 level, and under certain conditions the student may take 600-level seminars. If the student chooses to have a minor (such as Italian or Portuguese), at least 24 hours (including 6 hours of thesis) must be taken in the major, 6 in the minor.
2. A thesis, with a minimum of 6 semester hours in course 500.
3. A written examination covering the coursework and selected items from a master reading list.
4. A final oral examination covering the thesis.

Non-Thesis Option:
1. Completion of at least 30 semester hours, with a maximum of 9 at the 400 level, the rest at the 500 level, including French 501. Under certain conditions, the student may take 600-level seminars. If the student chooses to have a minor (such as Italian or Portuguese), at least 24 hours must be taken in the major, 6 in the minor.
2. Three term papers that have been accepted by the student's advisory committee.
3. A written examination covering the coursework and selected items from a master reading list.
4. A final oral examination to discuss the papers.

German

Thesis Option: The minimum requirements are 24 semester hours of coursework and 6 hours of Thesis 500. German 510 and 519-20 are required, as are three courses on German literature or culture, one of which may be at the 400 level. In addition, students must take three further courses, only one of which may be chosen from 411-12 or 485. All graduate teaching assistants should take 512, and other candidates may take 512 or any other 500-level course. A maximum of three 400-level courses may be counted toward the 30 semester hours of coursework. A common written essay over the designated reading list is required, as is a standardized language exam, such as the Zentrale Mittelstufenprüfung. Each non-thesis M.A. candidate will have a committee of at least three faculty members in German to whom the student will submit a dossier consisting of the seminar paper and one paper previously submitted in a graduate course. The length and type of the papers is described in greater detail in the Manual for Graduate Students in German.

Spanish

Thesis Option:
1. Completion of a minimum of 24 semester hours in coursework plus at least 6 hours in course 500 Thesis. Spanish 550 is required. A maximum of 6 hours may be taken at the 400 level, the rest at the 500 level, and under certain conditions the student may take 600-level seminars. If the student chooses to have a minor (such as Italian or Portuguese), at least 24 hours (including 6 hours of thesis) must be taken in the major, 6 in the minor.
2. A thesis, with a minimum of 6 semester hours in course 500.
3. A written examination covering the coursework and selected items from a master reading list.
4. A final oral examination covering the thesis.

Non-Thesis Option:
1. Completion of at least 30 semester hours, with a maximum of 6 at the 400 level, the rest at the 500 level, including Spanish 550. Under certain conditions, the student may take 600-level seminars. If the student chooses to have a minor (such as Italian or Portuguese), at least 24 hours must be taken in the major, 6 in the minor.
2. Three term papers that have been accepted by the student's advisory committee.
3. A written examination covering the coursework and selected items from a master reading list.
4. A final oral examination to discuss the papers.

THE DOCTORAL PROGRAM

The Ph.D. in Modern Foreign Languages requires advanced training in a major language and either a second language or applied linguistics.

Admission Requirements

Applicants must have completed a B.A. in either French, German, or Spanish to be accepted into this program. Both graduates of institutions in the United States and those with undergraduate degrees from institutions outside the United States must have a grade point average of at least 3.0. Consideration will also be given to applicants who do not have an undergraduate degree in one of the three foreign languages but do have the equivalent of an undergraduate major in one of them.

Non-Thesis Option: The minimum requirements are 30 semester hours of coursework, including at least one 600-level course, for which a seminar paper is required. German 510 and 519-20 are required, as are three courses on German literature or culture, one of which may be at the 400 level. In addition, students must take three further courses, only one of which may be chosen from 411-12 or 485. All graduate teaching assistants should take 512, and other candidates may take 512 or any other 500-level course. A maximum of three 400-level courses may be counted toward the 30 semester hours of coursework. A common written essay over the designated reading list is required, as is a standardized language exam, such as the Zentrale Mittelstufenprüfung. Each non-thesis M.A. candidate will have a committee of at least three faculty members in German to whom the student will submit a dossier consisting of the seminar paper and one paper previously submitted in a graduate course. The length and type of the papers is described in greater detail in the Manual for Graduate Students in German.

Degree Requirements

Candidates must complete a minimum of 63 semester hours of coursework beyond the bachelor's degree in addition to 24 hours of doctoral research and dissertation.

For candidates with French or Spanish as a first concentration, two tracks are available:

The coursework for Track I must be distributed as follows: at least 39 hours in the first concentration; at least 18 hours in the second concentration; and at least 6 hours in a cognate field or in either the first or second concentration as approved by the student's graduate committee.

The coursework for Track II must be distributed in this way: at least 45 hours in the first concentration; at least 12 hours in the second concentration; and at least 6 hours in a cognate field or in either the first or second concentration as approved by the student's graduate committee. Because Track II students will have taken 12 graduate hours instead of 18 hours in the second concentration, they will normally not be eligible to teach that field at institutions which follow SACS guidelines for college foreign language teaching.

The coursework for all concentrations must be distributed as follows:

1. First Concentration: German. A minimum of 39 hours of German courses beyond the bachelor's degree, distributed as follows: 400 level: A maximum of 6 hours of 400-level classes taken for the M.A. may be applied.

500 level: A minimum of 21 hours must be taken. These must include German 512, 519, 584 or Spanish 512 and 550. Thesis hours are excluded. If 512 is used as part of a second concentration in applied linguistics, another course must be substituted in the first concentration.

600 level: A minimum of 12 hours must be taken, exclusive of dissertation hours.

First Concentration: French or Spanish. A minimum of either 39 (Track I) or 45 (Track II) hours of French or Spanish courses beyond the bachelor's degree, distributed as follows: 400 level: A maximum of 6 hours of 400-level classes taken for the M.A. may be applied.

500 level: A minimum of 21 (Track I) or 27 (Track II) hours must be taken. These must include French 512, 519, 584 or Spanish 512 and 550. Thesis hours are excluded. If 512 is used as part of a second concentration in applied linguistics, another course must be substituted in the first concentration.

600 level: A minimum of 12 hours must be taken, exclusive of dissertation hours.

2. Second Concentration. A minimum of 18 (German or Track I) or 12 (Track II) hours beyond the bachelor's degree, taken in the field of applied linguistics or in a second language, either French, German, Italian, Portuguese (Track II only), Russian or Spanish. For Track I and German, 12 of these hours must be at the 500 level or above. For Track II, 3 of these hours must be at the 500 level or above. French students choosing applied linguistics must take French 421 or 429; 425, 512; and 9 (Track I) or 3 (Track II) hours of appropriate electives in English or French.

German students choosing applied linguistics must take German 425, 435, 510, or 512; 3 hours of German linguistics, such as 426, 436, 631, or 632, and 6 hours of linguistics
electives in English or German. Spanish students choosing applied linguistics must take Spanish 421 or 429; 425; 512; and 9 (Track I) or 10 (Track II) hours of appropriate electives in English or Spanish. The student's graduate advisor must approve the electives chosen.

3. Cognate Field. Six hours in graduate courses numbered 400 and above in a field outside the department or language family of the first concentration but related to the student's principal area of research. Students choosing applied linguistics as a second concentration are strongly urged to take their cognate work in a second language. With the consent of the student's graduate committee, the 6 hours in the cognate field may be substituted by 6 hours in either the first or second concentration.

4. Additional requirements: For any languages taken as a first or second concentration, a student must demonstrate competence by taking a test. The test will include reading, writing, listening, and speaking, and should be completed by the time the student reaches 40 hours of study beyond the bachelor's degree. Standardized examinations that may be used for this purpose include applicable portions of either the National Teachers Examination, the MLAExamination for Teachers and Advanced Students, or the proficiency standards of the United States Foreign Service Institute (FSI). For students choosing applied linguistics as an area of second concentration, reading competence in a second language is required. Competence will be determined by translation of a text from the foreign language into English, the test to be administered by the department.

A comprehensive examination on the language and literature of the first and second concentrations must be passed before the student may be admitted to candidacy. The candidate is required to defend his/her dissertation in an oral examination. Central emphasis is put on the doctoral dissertation as a final test of the candidate's scholarly qualifications.

Graduate Teaching Assistants with a second concentration in another language should have the opportunity and will be strongly encouraged to instruct in the languages of both their first and second concentration, subject to staffing needs.

Doctoral students are strongly encouraged to reside and study abroad and will be assisted in identifying potential sources of financial support (e.g., Fulbright, McConnell, Rotary fellowships).

**ACADEMIC COMMON MARKET**

An agreement among southern states for sharing graduate programs allows legal residents of some states to enroll in certain programs at UT on an in-state tuition basis. The Ph.D. program in Modern Foreign Languages is open to residents of the state of Alabama. Additional information may be obtained from the Admissions Specialist in the Office of Graduate Student Services.

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**Asian Languages**

**GRADUATE COURSES**

431 Readings in Chinese Literature (3) Prereq: Mastery of intermediate-level Chinese or consent of instructor. May be repeated. Maximum 9 hrs.

451 Readings in Japanese Literature (3) Prereq: Mastery of intermediate-level Japanese or consent of instructor. May be repeated. Maximum 9 hrs.

**French**

**GRADUATE COURSES**


411 French Literature of the 16th Century (3) Highlights of 16th-century French literature. Excerpts from Rabelais and Montaigne; readings of poems from writers from Lyon and members of Pliade. Prereq: 300-level literature course.


413 French Literature of the 18th Century (3) Major works of Enlightenment. Prereq: 300-level literature course.


416 Survey of Francophone Literature (3) Examinations of French literature outside metropolitan France, particularly Africa and Caribbean. Prereq: 300-level literature course.

420 French Cinema (3) French cinema from earliest days through New Wave directors. Prereq: 300-level literature course. May apply toward major.

421 Phonetics (3) Foundation in science of phonetics. Practical exercises and individual performance. Graduate credit not offered to students majoring in Romance language. Prereq: Intermediate Composition and Conversation or equivalent.

422 Advanced Grammar (3) Improving one's written French by studying basic and more refined structures of French language. Writing creative free-style compositions. Prereq: Intermediate Composition and Conversation or equivalent.

423-24 Advanced Conversation (1, 1) Informal conversation with native speaker on contemporary topics. Stress in-class contact rather than outside preparation. Prereq: Intermediate Composition and Conversation or French for Business. 2 hrs weekly.

425 Introduction to Descriptive Linguistics (3) Theory and practice of techniques of linguistic analysis in subfields of phonetics, phonology, morphology, syntax, semantics, pragmatics and historical linguistics; discussion of relevance to learning and teaching of foreign languages and to study of literary texts. Recommended prerequisite: Language, Linguistics, and Society. (Same as German 425, Linguistics 425, and Spanish 425.)

426 Methods of Historical Linguistics (3) (Same as German 426, Spanish 426 and Linguistics 426.)

429 Romance Linguistics (3) Development of Classical Latin through Vulgar Latin into major Romance languages. (Same as Spanish 429 and Linguistics 429.)


431 Highlights of French Civilization (3) Survey of French civilization from the Gauls to World War II. Historical events, daily life, all forms of arts. Prereq: 300-level literature course.

432 Contemprary French Culture (3) Current French cultural issues placed in historical perspective with comparative emphasis. Taught in English; readings in French for majors.

434 Literature of Quebec (3) Survey of literature of Quebec as well as French literature connected with North America. Readings include explorer and missionary works, such as Voyages of Champlain and Journals of Jesuits, and literature of contemporary Quebec. Prereq: 300-level literature course.

445 Advanced French for Business (3) Advanced contemporary French language and culture as relates to business transactions. Comparative approach to explore differences and similarities between francophone business culture(s) and those of North America and Japan. Building knowledge of business terminology while being sensitized to cultural differences and dangers of simplistic stereotyping. Prereq: French for Business or consent of instructor.

500 Thesis (1-15) Prereq: 300-level French literature. May be repeated. S/NC only. E

501 Techniques in Literary Analysis (3) Required for M.A. program. Close stylistic analysis of texts representative of different eras and of different genres. Development and improvement of student's written French.

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 degree is completed. May not be used toward degree requirements. May be repeated. S/NC only. E

510 The French Language (3) French as spoken and written from Medieval period to present.

512 Teaching a Foreign Language (3) Practical application of methods for teaching and evaluating basic language skills and foreign language skills, and cultural aspects through role-playing, discussions, and observations of foreign language classes. Required of all M.A. and Ph.D. students holding Graduate Teaching Assistantships, except those whose previous training or experience warrants their being excused by department.

515 Technology Enhanced Language Learning (3) Introduction to TELL. Overview of existing software, programs, and professional literature on topic. Hands-on development of instructional Web site for teaching language, culture, or literature.

519 Bibliography and Methods of Research (3) Critical research tools and scholarly contributions in French literature and language. Practical exercises on compiling scholarly data using computer-based and non-computer sources.

520 French and Francophone Film (3) French and Francophone culture through film.

530 French and Francophone Theater (3) Changing approaches to French and Francophone Theater.

540 French Literature and Culture I (3) Literary and cultural heritage of French Middle Ages.

550 French Literature and Culture II (3) Literary and cultural heritage of 16th - 17th century France.

560 French Literature and Culture III (3) Literary and cultural heritage of 18th - 19th century France.

570 French and Francophone Literature and Culture I (3) Literary and cultural heritage of France and other Francophone countries in first part of 20th century.

573 French and Francophone Literature and Culture II (3) Literary and cultural heritage of France and other Francophone countries from late 20th century to present.

580 Critical Moments in French and Francophone Studies, or Linguistics (3) Contribution of France and Francophones world to evolution of literature, society, and ideas. May be repeated. Maximum 6 hrs with consent of department.
584 Modern Theory and Criticism (3) Survey of twentieth century critical theory, including psychoanalysis, Marxism, structuralism and more.

591 Foreign Study (1-15) See College of Arts and Sciences.

592 Off-Campus Study (1-15) See College of Arts and Sciences.

593 Independent Study (1-15) See College of Arts and Sciences. Letter grade or S/NC.

594-95 French Directed Readings (3,3)

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

610 Doctoral Seminar in French and Francophone Studies, or Linguistics (3) Content varies. May be repeated. Maximum 12 hrs with consent of department.

German

GRADUATE COURSES

331-32 Elements ofGerman for Upper-Division and Graduate Students (3,3) Elements of language, elementary and advanced readings, and a final 10,000 word translation project. Open to graduate students preparing for language examinations, and upper-division students desiring reading knowledge of the language. No credit for students having completed 101-02 or 107-52. May be repeated. Maximum 6 hrs. Undergraduate credit only.

411-12 Advanced Conversation and Composition (3,3) Prereq: 311-12 or equivalent or consent of department.

415 Special Topics (3) Topics vary. May be repeated. Maximum 6 hrs.

420 Selected Topics in German Literature from 1750 to the Present (2) Prereq: 6 hrs of 300-level courses (excluding 331-32 and courses in English translation) or equivalent.

421 German Lyric Poetry (3) Prereq: 6 hrs of 300-level courses (excluding 331-32 and courses in English translation) or equivalent.

422 German Drama (3) Prereq: 6 hrs of 300-level courses (excluding 331-32 and courses in English translation) or equivalent.

423 German Narrative Prose (3) Prereq: 6 hrs of 300-level courses (excluding 331-32 and courses in English translation) or equivalent.

424 German Literary Movements (3) Survey of major periods in development of German literature since 1750: problems and pitfalls of periodization.

425 Introduction to Descriptive Linguistics (3) (Same as French 425, Spanish 425, and Linguistics 425.)

426 Methods of Historical Linguistics (3) Phonetics, distinctive feature analysis, sound change, nature of sound and language change through time. Survey of non-phonological linguistic changes, language families, Proto-Indo-European, and other proto languages. Prereq: 6 hrs of upper division foreign language courses (excluding courses in translation and graduate reading courses). (Same as French 426, Spanish 426, and Linguistics 426.)

435 Structure of the German Language (3) Descriptive analysis, sound change types, nature of sound and reconstruction, and fundamental assumptions about language change through time. Survey of non-phonological linguistic changes, language families, Proto-Indo-European, and other proto languages. Prereq: 6 hrs of upper division foreign language courses (excluding courses in translation and graduate reading courses). (Same as Linguistics 435.)

436 History of the German Language (3) Development of German language from Indo-European through Proto-Germanic, Old High German, Middle High German, Internal and external linguistic history of German speech. Prereq: 6 hrs of upper division German language courses (excluding courses in translation or graduate reading courses). (Same as Linguistics 436.)

485 Business German (3) Survey of German used in fields of business, government, administration, and economics. Prereq: 8 hrs of upper-division German excluding courses in translation and graduate reading courses.

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 when students use 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 German Phonetics and Advanced Grammar (3) Advanced work in phonetics, pronunciation, and selected topics in German grammar. Prereq and prospective teachers. Prereq: Consent of Instructor.

512 Teaching a Foreign Language (3) Practical application of methods for teaching and evaluating basic language skills and foreign language skills, and cultural knowledge through seminars, demonstrations, peer teaching, and observation of foreign language classes. Required of all M.A. and Ph.D. students holding GTA's, except those who have previously taken or experience warrants excuse by department.

519 Bibliographical Methods (1) Bibliographical methods; major reference works and bibliographical problems in language and literature.

520 Proseminar (2) Advanced training in use of bibliographical and reference tools; illustrative problems; paper preparation.

541 Medieval German Language and Literature (3) Introduction to Middle High German.

550 Studies in German Literature (3) Content varies. May be repeated. Maximum 6 hrs.

552 German Enlightenment, Rococo, and Sturm und Drang (3) Content varies. May be repeated. Maximum 6 hrs.

553 German Classicism and Romanticism (3) Content varies. May be repeated. Maximum 6 hrs.

554 German Realism and Naturalism (3) Content varies. May be repeated. Maximum 6 hrs.

555 Modern German Literature 1890-1945 (3) Content varies. May be repeated. Maximum 6 hrs.

556 Modern German Literature 1945-Present (3) Content varies. May be repeated. Maximum 6 hrs.

560 German Literary Theory and Criticism (3)

561-62 Directed Readings in German Language and Literature (3,3)

591 Foreign Study (1-15) See College of Arts and Sciences.

592 Off-Campus Study (1-15) See College of Arts and Sciences.

593 Independent Study (1-15) See College of Arts and Sciences.

Italian

GRADUATE COURSES

401 Dante and Medieval Culture (3) Introduction to significance of this great Italian writer. Prereq: 212 or consent of instructor.

402 Petrarch and Boccaccio (3) Prereq: 212 or consent of instructor.

403 Literature of the Rinascimento (3) From Pulci to Tasso, Quattrocento and Cinquecento. Prereq: 212 or consent of instructor.

405 Modern Italian Poetry (3) From Pascoli to Montale. Prereq: Italian 212 or consent of instructor.

406 The Modern Italian Novel (3) From Manzoni to Calvino. Prereq: 212 or consent of instructor.

409 Directed Readings (3)

410 Italian Theatre (3) Survey of Italian theatre from Renaissance to present. Prereq: Intermediate Italian or consent of instructor.

421 Topics in Italian Literature and Cinema (3) Italian literature and cinema from 1930 to present focusing on literary works translated into English and adapted into film. Investigation of relationship between literature and cinema and achievement of greater understanding of Italian culture since 1930. Films in Italian with English subtitles. May be repeated. Maximum 6 hrs. (Same as Cinema Studies 421.)

450 Readings in Italian Literature (3) Topics vary. May be repeated with consent of department.

501 Foreign Study (1-15) See College of Arts and Sciences.

502 Off-Campus Study (1-15) See College of Arts and Sciences.

503 Independent Study (1-15) See College of Arts and Sciences.

Portuguese

GRADUATE COURSES

400 Portuguese for Speakers of Another Romance Language (3) Accelerated class for beginning students of Portuguese with strong background in another Romance language. Introduction to grammar, reading and culture of Portugal and Brazil. Prereq: 3 hours at 300-level in another Romance language or equivalent.

431-32 Topics in the Literature & Language of Portuguese-speaking World (3,3) Outstanding works of literature and culture from Portuguese countries. Topics vary. May be repeated. Prereq: At least one course at the 300-level or the equivalent. May be repeated. Maximum 12 hrs.

591 Foreign Study (1-15) See College of Arts and Sciences.

592 Off-Campus Study (1-15) See College of Arts and Sciences.

593 Independent Study (1-15) See College of Arts and Sciences.

Russian

GRADUATE COURSES

401-02 Advanced Grammar, Conversation, and Composition (3,3) Prereq: Russian Composition and Conversation or equivalent. (Same as Russian and East European Studies 401-02.)

430 Selected Topics in Russian Literature (3) Content varies. May be repeated. Maximum 9 hrs.

451-52 Senior Seminar (3,3) For majors in Russian; minors admitted at discretion of instructor. Intensive study of language, literary style, and literary criticism based on selected major novels. (Same as Russian and East European Studies 451.)

510 Russian Phonetics and Advanced Grammar (3) Phonetics, pronunciation, stylistics, and selected topics in Russian grammar. For teachers and prospective teachers. Prereq: Consent of instructor.

550 Studies in Russian Literature (3) Content varies. May be repeated. Maximum 9 hrs.

591 Foreign Study (1-15) See College of Arts and Sciences.
Modern Foreign Languages and Literatures 150

Spanish

GRADUATE COURSES

421 Phonetics (3) Prereq: Intermediate Conversation and Composition or consent of instructor.

422 Advanced Grammar and Translation (3) Structure of grammatical system of Spanish. In-depth analysis of selected syntactic phenomena, phonological, and historical illustration/application and exercise in Spanish-English and English-Spanish translation. Finer points of grammatical structures. Not available to native or bilingual students of Spanish without consent of department. Prereq: 332 Intermediate Composition and Grammar.

423 Advanced Composition and Conversation (3) Developed subjects in other types of artistic production at advanced level. Wide range of topics and situations. Variety of in-class and extra-class activities. Not available for credit for students whose level of proficiency in Spanish is superior as defined by the ACTFL Proficiency Guidelines or for graduate students in the Spanish M.A. or Ph.D. programs. Prereq: 332 Intermediate Composition and Grammar.

425 Introduction to Descriptive Linguistics (3) (Same as French 425, German 425, and Linguistics 425.)

426 Methods of Historical Linguistics (3) (Same as German 426, French 426, and Linguistics 426.)

429 Romance Linguistics (3) (Same as French 429 and Linguistics 429.)

430 Topics in Hispanic Linguistics (3) Spanish language through different areas of Linguistics: phonology, morphology, syntax, semantics, sociolinguistics, dialectology and second language acquisition. Prereq: 332 Intermediate Composition and Grammar. 332 Survey of Spanish Literature: 1700-Prepresent, 333 Survey of Spanish American Literature: 1700-Prepresent, and completion of an additional 9 hours of upper division Spanish. May be repeated. Maximum 6 hrs with consent of department. (Same as Linguistics 430.)

433 Images of Woman in Hispanic Literature (3) Major Hispanic texts (and/or women authors) in light of relation of female individuality to particular social, ideological, philosophical, social, and political implications. Not available for credit for students whose level of proficiency in Spanish is superior as defined by the ACTFL Proficiency Guidelines. Prereq: Intermediate Conversation and Grammar. 330 Textual Analysis and completion of 9 additional hours of upper division Spanish.

434 Hispanic culture through Film (3) Analysis of selected films on subjects concerning life, culture, and artistic traditions in the Hispanic world; exploration of ideological, philosophical, social, and political implications of films and comparison of them with treatments of related subjects in other types of artistic production. Prereq: 332 Intermediate Composition and Grammar. 332 Survey of Spanish Literature: 1700-Prerepresent, and completion of an additional 9 hours of upper division Spanish. Taught in Spanish. May be repeated. Maximum 6 hrs with consent of department. (Same as Cinema Studies 434.)

481 Special Topics (3) Aspects of Hispanic literature, culture, linguistics, or foreign language pedagogy. Topics vary. May be repeated with consent of department. Maximum 6 hrs.

485 Latin American Film and Culture (3) Latin American and Latino/a films and videos from 1900s to present as works of art in light of political, cultural, and social contexts. Taught in English. Graduate credit available only for Latin American Studies and Cinema Studies majors. 1 hr lecture, 2 hrs screening, and 1 hr discussion. (Same as Latin American Studies 485 and Cinema Studies 485.)

479 Disenchant Texts in Hispanic Literature (3) Texts representing trends and periods of renewal in Spanish and Latin American countries. Selected topics on traditions in crisis. Content varies. Prereq: 323 Intermediate Composition and Grammar, 332 Survey of Spanish Literature: 1700-Prepresent, 333 Survey of Spanish American Literature: 1700-Prepresent and completion of 9 additional hours of upper division Spanish. May be repeated. Maximum 6 hrs with consent of department. (Same as Latin American Studies 479.)

480 Social Forces in Hispanic Literary Expression (3) Analysis of major Hispanic texts that address factors and events that influenced and/or contributed to the evolution of Hispanic world, including literature itself. Prereq: 323 Intermediate Composition and Grammar, 332 Survey of Spanish Literature: 1700-Prepresent and completion of 9 additional hours of upper division Spanish. May be repeated. Maximum 6 hrs with consent of department.

482 Trends in Hispanic Thought (3) Intellectual and philosophical currents represented in literary works, life experiences of writers, and movements from historical periods of Spain and Latin American countries. Prereq: 323 Intermediate Composition and Grammar, 332 Survey of Spanish Literature: 1700-Prepresent, and completion of 9 additional hours of upper division Spanish. May be repeated. Maximum 6 hrs with consent of department.

484 Race, Ethnicity, and Nation in Hispanic Literature (3) Close reading and analysis of literary texts that discuss the relation of gender and race to the national politics of countries with work with regard to identity and concepts of nationhood. Topics: mestiza; conceptual distinctions between race and ethnicity in Latin America; Indigenism; Afrocentrism; issues of monarchy and empire; relationship between Jews, Christians, and Moors in Spain. Prereq: 323 Intermediate Composition and Grammar. 332 Survey of Spanish Literature: 1700-Prepresent and completion of 9 additional hours of upper division Spanish. May be repeated. Maximum 6 hrs with consent of department.

486 Literature and Artistic Movements in the Hispanic World (3) Relationships (thematic, cultural, ideological, aesthetical, philosophical, etc.) between specific trends in literature and other artistic media, in light of historical context and appropriate situations. Prereq: 323 Intermediate Composition and Grammar. 332 Survey of Spanish Literature: 1700-Prepresent and completion of 9 additional hours of upper division Spanish. May be repeated. Maximum 6 hrs with consent of department.

488 Topics in Hispanic Civilization (3) Analysis of major trends, issues and/or movements in the civilizations of Spain and Hispanic America. Study of thematic, structural, and stylistic issues in cultural and literary contexts. Not available for credit for students whose level of proficiency in Spanish is superior as defined by the ACTFL Proficiency Guidelines. Prereq: 323 Intermediate Composition and Grammar, 332 Survey of Spanish Literature: 1700-Prepresent and completion of 9 additional hours of upper division Spanish. May be repeated. Maximum 6 hrs with consent of department.

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 who uses facilities for less than full faculty term and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/N/C only. E

512 Teaching a Foreign Language (3) Practical application of methods for teaching and evaluating basic language skills and cultural aspects through seminars, demonstrations, peer teaching, and observation of language learning. Required of all M.A. and Ph.D. students holding Graduate Teaching Assistantships, except those whose previous training or experience warrants their being excused by department.

531 Old Spanish (3) Evolution of Spanish language from its origins through 15th century.

532 Medieval Spanish Literature (3) Literary works of 11th through 15th century. Application of literary theories to understanding of literature, nature and evolution of major literary genres during Spanish Middle Ages, and socio-historical contexts of medieval works. May be repeated. Maximum 6 hrs with consent of department.

533 Golden Age Prose (3) Wide range of prose fiction in Spanish during 16th and 17th centuries. Moliere, picarosque, sentimental, pastoral and exemplary novels, and dialogues.

534 Don Quijote (3) Cervantes' masterpiece in socio-cultural and literary context of its times: study of thematic, structural, and stylistic issues: crisis of aristocratic, Quixotic "madness," recurrent cognitive and ethical perspectives, satiric irony, culture of sentiment, and Cervantes' legacy to subsequent literary movements. Content varies. May be repeated. Maximum 6 hrs with consent of department.

535 Golden Age Poetry (3) Garcilaso, Fray Luis de León, San Juan de la Cruz, Lope de Vega, Quevedo, and Gongora.

537 Golden Age Drama (3) Major dramatists of period: Lope de Vega, Tirso de Molina, Ruiz de Alarcón, Guellin de Castro, Calderon de la Barca, Moreto, and Rojas Zorrilla.


542 20th Century Spanish Literature: Generation of '98 through Civil War (3) Principal achievements and representative directions in literature of Spain from Civil War years to present.

543 20th Century Spanish Literature: Post-Civil War through Present (3) Principal achievements and representative directions in literature of Spain from Post-Civil War period to present.

550 Techniques of Literary Analysis and Research Methods (3) Theoretical and critical essays on various techniques of literary analysis. Exploration of bibliographical and research materials.

551 Special Topics in Spanish or Spanish American Literature (3) May be repeated. Maximum 6 hrs.

552 Directed Readings (3)

561 Spanish American Colonial Literature (3) From pre-Columbian era through 19th century. Reading and analysis of selected works from Colonial Spanish American period and their Continental sources. Indigenous and non-Indigenous authors. May be repeated. Maximum 6 hrs with consent of department.


572 Spanish American Narrative: Boom to Present (3) Critical study of major trends and movements that established Spanish American narrative during second half of 20th century. Content varies. May be repeated. Maximum 6 hrs with consent of department.

573 Regional Approaches to Interpreting Spanish American Literature (3) Critical study of regional differences attributable to such factors as race, geography, migration, and socio-cultural development. Key regions include Mexico and Central America, Caribbean, Andean countries, and the Southern Cone. Course readings vary between specific regional perspectives and transregional content. May be repeated. Maximum 6 hrs with consent of department.

575 Spanish American Modernismo and Vanguardismo (3) Critical study of principal writers and literary works associated with Spanish American modernismo and vanguardismo published between 1880 and 1950. Concepts and expressions of modernity as
reflected in literature of period. Content varies. May be repeated. Maximum 6 hrs with consent of department.

576 Contemporary Spanish American Poetry (3) Critical study of major poets in Spanish America from 1950 to present. Content varies. May be repeated. Maximum 6 hrs with consent of department.

577 Contemporary Spanish American Theater (3) Reading and analysis of Spanish America’s major dramatic works published and performed since 1950. Content varies. May be repeated. Maximum 6 hrs with consent of department.


579 Spanish American Literary Criticism (3) Major works in which Spanish Americans have developed strategies to define, organize, and catalog literature published throughout continent. Critical approaches that surpass European and other non-Spanish American critical perspectives. Content varies. May be repeated. Maximum 6 hrs with consent of department.

581 Foreign Study (1-15) See College of Arts and Sciences.

592 Off-Campus Study (1-15) See College of Arts and Sciences.

593 Independent Study (1-15) See College of Arts and Sciences. Letter grade or S/NC.

600 Doctoral Research and Dissertation (3-15) Prerequisite: P/NC only. E

621 Seminar in Spanish Literature (3) Topics vary in field of Peninsular literature. May be repeated with consent of department. Maximum 9 hrs.

631 Seminar in Spanish American Literature (3) Topics vary. May be repeated with consent of department. Maximum 9 hrs.

Music (College of Arts and Sciences)

MAJOR DEGREES

Music

Dolly C. Davis, Head

Professors:

Bitzas, George C., M.M......................Converse
Brock, John P., M.M......................Alabama
Coker, J., M.A......................Sam Houston
Combs, F. M., M.A......................Missouri
Jacobs, K. A., D.M.A......................Texas
MacMorrow, W. S., M.M......................Wisconsin
McClellan, D. K., M.A......................Columbia
Moore, M. C., Ph.D......................Michigan
Northington, D. B., D.M.A......................Yale
Pederson, D. M., Ph.D......................Iowa
Sousa, G., Ph.D......................Ohio State
Suttenberger, D. R., D.M.A......................Maryland

Associate Professors:

Adams, Faye, M.M......................Tennessee
Binder, S. L., M.M......................Florida State
Boiling, M. E., M.M......................Tennessee
Brown, Donald R., Ph.D......................Indiana
Carter, P. Z., M.M......................Colorado
Davis, Dolly C., Ph.D......................Iowa
Gay, Jr., L. C., Ph.D......................Columbia
Hough, Don, M.M......................Tennessee
Leach, C. F., M.M......................New Mexico

Murphy, B. A., Ph.D......................Ohio State
Royse, David, Ph.D......................Kent State
Searle, S. R., M.M......................Tennessee
Smith, C., B.M.A......................SUNY-Fredonia
Sperl, G. R., M.M......................Indiana
Zelnominovich, Matus, M.A......................Lyon

Assistant Professors:

Balchin, Wesley, M.M......................New England
Batey, A. L., D.M.A......................South Carolina
Freeman, Carroll, M.P.A......................Oklahoma City
Haar, Paul, M.M......................Cincinnati
Keathley, Elizabeth, Ph.D......................SUNY (Stony Brook)
Powell, Edward, M.M......................Cincinnati
Richter, Jorge, M.M......................Andrews
Ryder, Donald, D.M.A......................Iowa
Walters, Christa, D.M..............Florida State
Wentzel, A. N., M.M......................Southern Cal

The School of Music offers the Master of Music degree with concentrations in accompanying, choral conducting, composition, instrumental conducting, jazz, music education, music history, music technology, musicology, performance, research, and instrumental studies. Content varies. May be repeated. Maximum 6 hrs with consent of department.

Applicants must have completed an undergraduate degree that is approximately equivalent in music requirements to degrees conferred by UT, with a major appropriate to the applicant's prospective area of concentration on the master's level.

Applicants who plan to pursue the concentration in performance or music education are required to audition for the appropriate area faculty. Applicants for admission to the program in composition must submit scores and recordings of representative works. Applicants for the concentration in jazz must audition in jazz improvisation and jazz piano proficiency and be recommended by members of the faculty in this area. Other applicants are required to have an interview with members of the faculty of the prospective area of concentration.

All entering master's degree students are required to take Diagnostic Examinations in music theory, ear-training, and music history/literature. These examinations are given by the School of Music at the beginning of each semester.

THE MASTER'S PROGRAM

A minimum of 33 semester hours of coursework is required for the Master of Music degree. These hours are specifically distributed according to the area of concentration. All concentrations require coursework in music bibliography, music history/literature, and music theory and allow for elective courses. Specific curricula are available from the department. All concentrations require a written and oral final examination.

A thesis is required of students in composition, musicology, and music theory. A graduate recital or performance project is given in lieu of thesis by students with concentrations in performance, pedagogy, jazz, accompanying, choral conducting, and instrumental conducting.

Music Education

GRADUATE COURSES

510 Foundations of Music Education (3) Historical, philosophical and aesthetic bases. Prerequisite: Consent of instructor.

520 Research in Music Education (3) Definition of research problems, data collection and analysis, and research report writing. Application of knowledge of research techniques to analysis of existing research literature in music education. Prerequisite: Consent of instructor.

550 Curriculum Development and Evaluation in Music Education (3) Principles of curriculum development and applications to music education programs. Formulating objectives; construction of evaluation instruments; survey of appropriate literature. Prerequisite: Consent of instructor.


570 Studies in Multicultural Music Education (3) Study of music literature, art, and customs and practices of various cultures appropriate for students in K-6. Strategies and techniques for teaching music at this level.

571 Musical Repertoire Laboratory (1) Performance of various cultures, production of musicals. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hrs.

572 Analysis for Teaching Professional Development (2) Strategies to document and analyze effectiveness of teaching and professional development. Study and application of various approaches. Corequisite: 375. F, S.

575 Professional Internship in Teaching (1-8) Teaching and related experiences in professional settings, including public schools. Enrollment limited to post-baccalaureate students in professional year program. Prerequisite: Admission to Teacher Education program and consent of School of Music. May be repeated. Maximum 12 hrs. S/NC only. F, S.

580 Seminar in Music Education (3) Class investigation and individual reporting of pertinent topics and issues in music education. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hrs.

590 Special Topics in Music Education (1-3) Prerequisite: Consent of instructor. May be repeated. Maximum 6 hrs.

591 Clinical Studies (4) Group and individual seminar activities during full-time internship. Application and evaluation of professional core competencies. Compilation and presentation of portfolio and analysis of teaching project. Corequisite: 575.

593 Special Problems in Music Education (3) Prerequisite: Consent of instructor. May be repeated. Maximum 6 hrs.

Music Ensemble

GRADUATE COURSES

502 Jazz-Saxophone Ensemble (1) May be repeated. Maximum 4 hrs.

503 Small Jazz Ensemble (1) May be repeated. Maximum 12 hrs.
Music General

GRADUATE COURSES

500 Thesis (1-15) P/NP only. E
501 Graduate Recital (2) 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 degree is completed. May not be used toward degree requirements. May be repeated. S/NC only. E
510 Music Bibliography (3) Bibliographic methodology in music. F
511 Lecture Recital (2) E
520 Musical Styles (3) Elements of design and their role in definition of musical styles. Prereq: Consent of instructor.
521 Special Topics in Performance (1-3) Prereq: Consent of department head.
530 Secondary Applied Music (1) May be taken by music majors desiring applied study on a 2nd or 3rd instrument. May be repeated for a maximum of 4 hours credit on each instrument. Admission by audition. Requires payment of Applied Music fee. E

Music History

GRADUATE COURSES

410 Music History Genre (3) Topics vary. May be repeated. Maximum 6 hrs.
420 History of Opera (3) Dramatic, vocal, and orchestral elements in opera of Italian, French, and German schools, 1600-present.
430 Symphonic Literature (3) Literature for orchestra from Baroque to present, evolution of symphony.
450 Composer Seminar (3) Life and works of single composer. Subjects vary.
460 Music Aesthetics (3) Nature of music and musical experience, sense perception and emotions, music, and role of artist in society. Aesthetic viewpoint of individuals and historical eras through selected writings.

Music Instrumental

GRADUATE COURSES

490 Instrumental Conducting (3) Development of knowledge and skills in instrumental conducting; study of various periods and composers and relationship of different styles to conductor's art; musical analysis and practice in conducting. Prereq: Music Education 320 or equivalent.
580 Band History and Literature I (3) Antiquity to 1900.
581 Band History and Literature II (3) 1900 to present.
583 Recitative for Instrumental Conductors (1) Problems in conducting recitatives. Prereq: Consent of instructor. S/NC only.
584 Practicum for Instrumental Conductors (1) Intern experience in field other than area of major interest. S/NC only.
590 Advanced Instrumental Conducting (2) Physical techniques of conducting, study and analysis of scores, rehearsal techniques. Attention to individual problems. Requires applied music fee. Prereq: Consent of instructor. May be repeated. Maximum 8 hrs.
595 Instrumental Conducting Performance (1) Preparation and juried performance of band or orchestral work(s). Prereq: Consent of instructor.

Music Jazz

GRADUATE COURSES

410 Advanced Improvisation (3) Further development of individual skills and solving individual problems in jazz improvisation. Prereq: 210 and 220.
420 Jazz Pedagogy (1) Methods and materials relating to teaching of jazz, designing and administering jazz programs, and rehearsal techniques for jazz ensembles. Prereq: Studio music and jazz major or consent of instructor.
520 Seminar in Jazz (3) Topic varies.

Music Keyboard

GRADUATE COURSES

420-30 Piano Literature I, II (3, 3) 420—From 1750 to middle 19th century; 430—Middle 19th century to present.
460-70 The Organ and Its Literature I, II (3, 3) Development of organ and organ literature from Middle Ages to present; problems of style and interpretation; pedagogical literature and methods; organ design. Prereq or coreq: Music History 220 and consent of instructor.
485-95 Suzuki Piano Method I, II (2, 2) Psychology, procedures, and literature of Suzuki piano method. Must be taken in sequence. Prereq: Consent of instructor.
520 Piano Literature Seminar (3) Topics vary. May be repeated. Maximum 6 hrs.
531-41 Recital Project (2, 2) Preparation and accompaniment of full recital for accompanying concentrations only. 531—Vocal recital, 541—Instrumental recital. Prereq: Consent of instructor.
540-50 Advanced Piano Pedagogy I, II (2, 2) 540—Evaluation and study of methods and materials for teaching piano at all levels, Supervised laboratory teaching. Prereq: Consent of instructor. 550—Introduction and principles of Kodaly, Orff, Suzuki, Dalcroze Eurythmics, and class piano teaching. Prereq: Consent of instructor.

Music Performance

GRADUATE COURSES

All performance courses require an audition and consent of instructor. May be repeated. Maximum 8 hrs toward M.M. degree.
403 Flute (1-4)
405 Oboe (1-4)
410 Bassoon (1-4)
415 Clarinet (1-4)
420 Saxophone (1-4)
425 Horn (1-4)
430 Trumpet (1-4)
435 Trombone (1-4)
440 Baritone (1-4)
445 Tuba (1-4)
450 Percussion (1-4)
455 Voice (1-4)
460 Violin (1-4)
465 Viola (1-4)
470 Cello (1-4)
475 String Bass (1-4)
476 Electric Bass (1-4)
479 Guitar (1-4)
480 Piano (1-4)
485 Harpsichord (1-4)
490 Organ (1-4)
494 Composition (1-3)
495 Composition with Electronic Media (1-3)
499 Improvisation (1-2) May not be used toward applied music requirement.
503 Flute (1-4)
505 Oboe (1-4)
Music Technology

GRADUATE COURSES

540 Computer Music Transcription (3) Projects in notation, playback, and publication of music incorporating elements of word processing, graphic design, sequencing, and page layout. Study of MIDI protocol as applied to computer music work station design. No credit toward M.M. concentration in Music Theory with technology emphasis. Prereq: Consent of instructor.

550 Computer Projects (3) High-level programming languages used to design and implement computer-managed instruction; Internet development tools; writing of documentation for computer projects. Prereq: 540 or equivalent.

560 Technology in Music Research (3) Use of technology for research projects in music analysis or pedagogy: development and execution of research project. Prereq: 550.

Music Theory

GRADUATE COURSES

430-40 Counterpoint I, II (3,3) 430—Study of species counterpoint in modal and tonal styles, works of Palestrina and J.S. Bach. 430- Prereq: 210 Theory III and 230 Advanced Ear Training IV with grade C or higher. 440 - Prereq: 430 with grade C or higher.

450 Choral Arranging (2) Analysis of scores and writing of arrangements for choruses. Prereq: 210 Theory III and 240 Advanced Ear Training IV with grade C or higher, or consent of instructor.

520 Analytical Techniques (3) Analytical techniques, contemporary approaches. Tonal and nonetonal music. Prereq: Consent of instructor.

530 Music Theory Pedagogy (3) Techniques, methods, and materials involved in college-level theory programs. Use of technology and review of existing software. Prereq: Consent of instructor.

593 Independent Study (1-15) See College of Arts and Sciences. Prereq: Consent of department head.

Nuclear Engineering

(College of Engineering)

MAJOR DEGREES

Nuclear Engineering M.S., Ph.D.

H. L. Dodds, Head

Professors:

Dodds, H. L., Ph.D. Tennessee

Mihalczo, J. T., Ph.D. Tennessee

Miller, L. F., Ph.D. Texas A&M

Mynatt, F. R., Ph.D. Tennessee

Shannon, T. E., Ph.D. Tennessee

Uhrig, R. E. (Distinguished Prof.), PE, Ph.D. Iowa State

Upadhyaya, B. R., PE, Ph.D. California

Associate Professors:

Groer, P. G., Ph.D. Virginia

Hines, J. W., Ph.D. Ohio State

Pevey, R. E., Ph.D. Tennessee

Ruggles, A. E., Ph.D. Rensselaer

Scott, T. H., Ph.D. Florida

Townsend, L. W., Ph.D. Idaho

The Department of Nuclear Engineering offers programs leading to the Master of Science and Doctor of Philosophy degrees. Students may elect a traditional nuclear engineering M.S. or Ph.D. program (focusing on fusion energy or fission energy) or a radiological engineering concentration at the master's level.

The radiological engineering concentration prepares students for careers in the radiation safety field (health physics). The program is designed for graduates of undergraduate programs in engineering, physics, biology and chemistry.

All entering students must have, as a minimum, competency in mathematics through ordinary differential equations, competency in atomic and nuclear physics, and competency consistent with a course in introductory nuclear engineering. If these competencies do not exist, the student must take appropriate courses for undergraduate credit. The department head is the contact for all interested students, both those with nuclear engineering degrees and those from other disciplines.

THE MASTER'S PROGRAM

A graduate program leading to the Master of Science is available to graduates of recognized undergraduate curricula in engineering and physics. Each applicant will be advised as to the necessary prerequisite courses before he/she enters the program.

The student must complete 24 semester hours of coursework approved by the student's advisory committee that includes the following:

1. A major consisting of a minimum of 12 semester hours of graduate courses in nuclear engineering. This must include at least one of the following sequences: 511, 512, 515, 552, 571, 572.

2. A minor of 6 semester hours of elective courses in mathematics, statistics, or computer science.

3. Six semester hours in either nuclear engineering or a related field.

The M.S. candidate must also demonstrate research or design capability. This requirement may be satisfied by a thesis project or engineering practice projects as described below:

Thesis: The student performs independent research on a topic approved by the graduate committee. He/she submits a thesis on this research. The student must pass an oral examination on the thesis and all graduate coursework. The student must enroll for six semester hours of NE 500 (Thesis).

Engineering Practice: The student performs independent research on two to four separate topics approved by his/her...
graduate committee. Each project is similar to a thesis project but smaller in scope. He/She submits a report, in thesis format, on each project. The student must then pass an oral examination on his/her engineering practice reports and all graduate coursework. The student must enroll for six semester hours of NE 598 (Nuclear Engineering Practice).

THE DOCTORAL PROGRAM

Students in the field of nuclear engineering desiring to study for the Doctor of Philosophy must have a Bachelor of Science or Master of Science from a recognized university, with a major in engineering or physics. All candidates will be required to demonstrate general competence in a comprehensive examination in the areas of engineering science, mathematics, physics, and nuclear engineering.

Specific course requirements for the Ph.D. in Nuclear Engineering include:
1. A minimum of 48 semester hours beyond the Bachelor's degree, exclusive of credit for the M.S. thesis or Nuclear Engineering Practice.
2. A minimum of 24 semester hours in doctoral research, NE 600.
3. A minimum of 30 semester hours in nuclear engineering courses numbered 500 and above (or the equivalent), with at least 9 semester hours of 600-level courses. These are exclusive of thesis or dissertation credit.
4. A minimum of 12 semester hours in mathematics, computer science, or statistics courses beyond nuclear engineering undergraduate requirements numbered 400 or above.
5. A minimum of 6 semester hours in courses numbered 500 or above from a department other than nuclear engineering. The choice depends on the student's overall program and should expand his/her knowledge in a given field.
6. A reading knowledge of one foreign language may be specified by the student's doctoral committee.

The comprehensive examination is prepared by the nuclear engineering faculty and consists of 12 hours of written examinations. All past examinations are filed in the library, and students are encouraged to review them. Students are invited to take the comprehensive examination after completing approximately 30 semester hours of coursework. A student who fails the written part of the examination must take and pass the examination the next time it is offered to remain in the Ph.D. program. Registration for NE 600 is not permitted until the written examination is passed. The comprehensive examination is completed with a successful oral defense of the dissertation proposal. A candidate must successfully defend, in an oral examination, all work presented for the degree—all coursework and the dissertation.

ACADEMIC COMMON MARKET

An agreement among southern states for sharing graduate programs allows legal residents of some states to enroll in certain programs at UT on an in-state tuition basis. The M.S. program in Nuclear Engineering is available to residents of the state of Mississippi. Additional information may be obtained from the Admissions Specialist in the Office of Graduate Student Services.

GRADUATE CREDIT FOR UNDERGRADUATE COURSES

400-level courses in nuclear engineering may be used for graduate credit. However, students must not recognize more than two-thirds of the minimum required hours (30) in a master's degree program must be taken in courses numbered 500 or above.

GRADUATE COURSES

403 Nuclear and Radiological Engineering Laboratory II (3) Cross section measurements, diffusion properties of neutrons, reaction rates, dynamic, and control variables; power distribution calculations and reactor safety. Prereq: NE 698 (Nuclear Engineering Practice), NE 598 (Nuclear Engineering Practice) and consent of instructor. May be repeated. S/NC only.

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

511-12 Transport Processes in Nuclear Engineering (3.3) Theory of neutron dynamics; neutron transport; solution of the Boltzmann equation; integral and multi-group neutron transport equations; effect of fuel heterogeneity; and implications of reactor design. Prereq: NE 470 or above. May be repeated. S/NC only.

521 Nuclear Systems Dynamics and Control (3) Introduction to state variable methods for system dynamics and control analysis and application of these methods to nuclear plant dynamics, simulation, and control problems.


541 Reactor Fuel Management (3) Topics relative to nuclear fuel management. Applicable topics in reactor physics, fuel depletion, isotopic inventories, reactivity control and numerical methods. Prereq: 470 or consent of instructor.

542 Management of Radioactive Materials (3) Technology for processing, treatment, handling and storage of radioactive nuclides. Analytical and numerical methods for evaluating environmental impact of radioactive materials. Licensing and regulation issues. Prereq: 470 or consent of instructor.

543 Selected Topics in Nuclear Criticality Safety (3) Criticality safety computational and experimental methods for fission, fabrication, storage, reprocessing and transporation: overview of safety and regulatory requirements. Prereq: 470. May be repeated. S/NC only.

550 Radiation Measurements Laboratory (3) Physics and electronics associated with radiation detection and measurement, methods of data analysis. Applicability of particular detector for measurement and fundamentals of radiation detection instrumentation operation. Prereq: 551.


552 Radiological Assessment and Dosimetry (3) Techniques for processing, treatment, handling and storage of radioactive nuclides in environment, food chain pathways, internal dosimetry, and external dosimetry. Prereq: 551 or consent of instructor.

553 Radiation Risk Analysis (3) Methods for radiation risk analysis, survival analysis, parameter estimation, real data analysis, extrapolation techniques. Prereq: 552 or consent of instructor.

576 Expert Systems in Engineering (3) Application of expert systems in engineering: logic and rationale, developing expert systems, programming, advanced topics. Prereq: 476 or consent of instructor. (Same as Mechanical Engineering 576 and Engineering Science 576.)

577 Neural Networks in Engineering (3) Neural network technology for use in intelligent systems; rationales for neural computing, structure of neural networks, and applications. Prereq: Consent...
Nursing

(College of Nursing)

MAJOR DEGREE
Nursing .................................................. M.S.N., Ph.D.

Joan L. Creasia, Dean
Martha Allgood, Director of M.S.N. Program
Sandra Thomas, Director of Ph.D. Program

Professors:
Allgood, Martha R., Ph.D. ............ New York
Cresia, Joan L., Ph.D. ................. Maryland
Droprleman, Patricia G., Ph.D. ......... Tennessee
Farr, Glen, Ph.D. ......................... Tennessee
Groer, Maureen, Ph.D. ................. Illinois
Mozingo, Johnie N., Ph.D. ............ Walden
Pierce, Joan U., Ph.D. ................... Utah
Seavor, Carol, Ed.D. .................... Massachusetts
Thomas, Sandra P., Ph.D. ............. Tennessee

Associate Professors:
Davis, Mitzi, Ph.D. ..................... Tennessee
Ellison, Kathy Jo, Ph.D. ............... Alabama (Birmingham)
Fenske, Mildred M., Ph.D. ......... Vanderbilt
Hall, Joanne, Ph.D. ...................... San Francisco
McGuire, Sandra, Ed.D. ............ Tennessee
Wallace, Debra C., Ph.D. ............ South Carolina

Assistant Professors:
Bell, Donald, M.S.N............. Tennessee
Brown, Alie J., M.S.N. Alabama (Birmingham)
Brown, Mary Lynn, Ph.D. ........ Tennessee
Chen, Shu-li, Ph.D. ................. Utah
Conlon, Kathleen P., M.S.N. SUNY (Buffalo)
Dyeas, Rachelle, M.S.N. .......... Tennessee
Evans, Ginger W., M.S.N. ........ Tennessee
Fox, Marie X., M.S.N. ............. Missouri
Hilton, Sally M., M.S.N. ........... Texas Women's
Kollar, Mary, Ph.D. ................. Tennessee
Narlo, Maureen, Ph.D. ............. Tennessee
Pierce, Margaret, M.S.N. ......... Tennessee
Preston, John, M.S.N. ............... Tennessee

THE MASTER'S PROGRAM

The College of Nursing offers the Master of Science in Nursing degree with concentrations in adult health nursing, family nurse practitioner, mental health nursing, nurse anesthesia, nursing administration, and nursing of women and children. The program is accredited by the National League for Nursing Accrediting Commission and is unconditionally approved by the Tennessee Board of Nursing.

The purpose of the Master's program in nursing is to prepare leaders, managers, and practitioners who facilitate achievement of optimal health in the dynamic health care system. The program prepares advanced practice nurses for a career in adult health nursing, nursing of women and children, mental health nursing, and nurse anesthesia as well as role preparation as nurse practitioners, clinical nurse specialists or nursing administrators. Advanced practice nursing involves the delivery of care, management of resources, interdisciplin ary collaboration, and application of technology, information systems, knowledge, and critical thinking.

Admission Requirements
1. Meet requirements for admission to The Graduate School.
2. Achieve a score of 500 or above on the verbal and on the quantitative portions of the Graduate Record Examination.
3. Achieve a TOEFL score of 550 or above if English is not the native language.
4. Applicants for nurse anesthesia require an interview.
5. Hold a Bachelor's degree in Nursing (BSN) from a National League for Nursing accredited program.
   a. Hold or be eligible for licensure to practice nursing in Tennessee.
   b. Have an undergraduate GPA of 3.0 or higher on a 4-point scale, or a GPA of 3.3 for courses in the undergraduate major.
   c. Have completed a health assessment and physiology course within the past five years.
   d. Have completed 3 hours of graduate level statistics.
   OR
   Hold a bachelor's degree in a discipline other than nursing (master's entry student or RN) from an accredited college or university.
   a. Have a cumulative undergraduate GPA of at least 3.0 on a 4-point scale.
   b. Have satisfactorily completed the following prerequisite courses: chemistry (8 hrs); microbiology (including lab); anatomy and physiology (6-8 hrs); nutrition (covering lifespan in health and illness); behavioral sciences (12 hrs in sociology, anthropology, growth and development, and at least one general psychology course); undergraduate research course or equivalent; 3 hours of graduate level statistics prior to enrollment in graduate research course.
   c. This option not available to nurse anesthesia or nurse administration students.
6. New students normally are admitted to the program only at the beginning of fall semester. However, under special circumstances and on a space available basis, a B.S.N. graduate may be admitted at the beginning of spring or summer terms in a temporary non-degree status. Applications from full-time BSN and master's entry students for fall admission must be received by February 1. Part-time and post-master's applications must be received by October 1.

Special Requirements
1. Each student must hold personal professional liability insurance.
2. Registered nurses must be licensed to practice nursing in Tennessee.
3. Each student must present proof of hepatitis B vaccination and rubella and rubeola immunization or sufficient titer for immunity; TB status.
4. Each student must present evidence of current 2-person CPR certification.
5. Non-registered student must have completed courses in chemistry, nutrition, microbiology, anatomy, and physiology plus 12 semester hours of behavioral science courses.
6. Contact student services for more detailed information about the application process: Student Services/MSN Program, UT College of Nursing, 1200 Volunteer Blvd., Knoxville, TN 37996-4180; phone: 865 974-7606.

Thesis and Non-Thesis Options
The thesis option is available for interested students and is especially encouraged for those who are considering pursuit of doctoral degrees sometime in the future. Students who choose the non-thesis option must register for 582 Scholarly Inquiry for Advanced Practice Nursing.
Program Requirements
All students must complete a minimum of 33 semester hours distributed as follows:

Core (9 credits)
503 Health Promotion in Advanced Practice Nursing 3
510 Theoretical Foundations of Nursing 3
520 Advanced Practice Nursing and Health Delivery Systems 3

Advanced Practice Core (9 credits)*
504 Advanced Health/Physical Assessment 3
505 Advanced Clinical Pharmacology 3
515 Advanced Pathophysiology for Nursing Practice (not required for nurse anesthesia students) 3

Required for nurse anesthesia students:
506 Advanced Anesthesia Pharmacology 3
516 Advanced Pathophysiology: Neurological and Cardiovascular with Anesthesia Implications 2
517 Advanced Pathophysiology: Respiratory/Renal with Anesthesia Implications 2
518 Advanced Pathophysiology: Obstetrics/Regional Anesthesia 2
521 Basics of Nurse Anesthesia 6
522 Integrated Health Science for Anesthesia 3
523 Advanced Principles of Nurse Anesthesia Practice 2

Research (6-9 credits)
591 Research: Methods, Design & Analysis 3
592 Thesis 6
OR
582 Scholarly Inquiry for Advanced Practice Nursing 3

Concentration (12-17 credits)—choose one
530-33 Adult Health Nursing I, II 12
544-45-46 Clinical Nurse Anesthesia 12
47-48-49 Practicum/Seminar I, II, III, IV, V, VI 40
550-51 Nursing of Women and Children I, II 16
560-61 Mental Health Nursing I, II 12
570-71-72 Family Nurse Practitioner I, II, III, IV, V, VI 40
590-91 Nursing Administration I, II 12

Elective (6 credits)—Required for students in nursing administration concentration only.
415 Family/Community Health Nursing 6
421 Health Maintenance & Restoration in Mental Health 4
451 Professional Leadership Issues II 2
461 Health Restoration across the Life Span 5
482 Health Promotion, Maintenance & Restoration in the Community 4

Registered nurses whose bachelor's degrees are not in nursing must have completed courses in chemistry, nutrition, microbiology, anatomy, and physiology plus 12 hours of behavioral science courses. They must also complete 305, 382, 452, 482 and 490 and complete or successfully challenge the following:

311 Foundations of Professional Nursing Practice 5
319 Pathophysiology of Health Deviations 4
333 Health Assessment 3
341 Health Promotion 3
351 Pharmacology I 2
361 Health Maintenance & Restoration across the Life Span 5
381 Professional Leadership Issues I 2
392 Health Promotion & Maintenance in the Community 4
406 Pharmacology II 2

A total of 10 credits can be obtained by successful completion of the NLN ACE Examination. See undergraduate catalog for other challenge options. RNs who are in the process of completing a BSN at UT with the intent of enrolling in the MSN program follow the same plan with the addition of 417.

Final Examination Requirements
All students must successfully complete a final examination as required by The College of Nursing. For thesis students, the examination will consist of an oral defense of the thesis as well as other written or oral questions designed to measure student mastery of the entire program of study. For non-thesis students, the written examination will cover the entire program of study and may, at the discretion of the student's committee, be followed by an oral examination.

Special Policies
1. If the clinical performance of any student for any course is found to be unsatisfactory, the student will receive a grade of "F" for the course.
2. If a student achieves a final grade of "D" or "F" for any required undergraduate or graduate nursing course, he or she will not be permitted to repeat the course and will be required to withdraw from the program.
3. If the clinical performance of any student is characterized by unethical, unprofessional, or disruptive behavior, or behavior that places the client in jeopardy, the student will be required to withdraw from the program.

THE DOCTORAL PROGRAM
The College of Nursing offers a doctoral program leading to the Doctor of Philosophy degree with a major in Nursing. This is a unified program offered jointly with The University of Tennessee, Memphis, College of Nursing. Students must complete all or part of the program at either site. The dissertation must be completed in its entirety at one site. The doctoral program prepares nursing scholars capable of integrating research, theory, and practice into their roles as researchers, educators, and/or administrators. Specifically, the graduate of this program should be able to:

1. Analyze, test, refine, extend, and expand the theoretical basis of nursing practice.
2. Conduct nursing research that generates knowledge and advances nursing as a discipline.
3. Provide leadership as nurse researchers, educators, and/or administrators in current and emerging health care settings.
4. Collaborate with members of other disciplines in health-related research of mutual concern.
5. Analyze, develop, and recommend health care policy at various levels.

Admission Requirements
1. Meet requirements for admission to The College of Nursing.
2. Hold a master's degree in nursing from a program accredited by the National League for Nursing. Some outstanding applicants who are prepared at the bachelor's level in nursing may be considered. In such cases, graduate level courses in nursing theory, concentration specialty, and/or research will be integrated into the formal program of doctoral degree requirements.
3. Have a minimum cumulative graduate grade-point average of 3.3 on a 4.0 scale for previous college work.
4. Have a combined score of at least 1000 on the verbal and quantitative sections of the Graduate Record Examination.
5. Have successfully completed a basic statistics course and graduate nursing theory and research courses prior to enrollment in nursing doctoral level courses.
6. Have TOEFL scores of at least 550 if native language is not English.
7. Complete Graduate Program Data Form, College of Nursing.
8. Submit Graduate School Rating Forms from three college level instructors and/or nurses and administrators who have supervised applicant's professional work.
9. Submit a sample of scholarly writing (e.g., thesis, published paper).
10. Submit an essay describing personal and professional aspirations.
11. Submit Graduate Application for Admission, academic transcript(s), Graduate Record Examination scores, and, if required, TOEFL scores to the Graduate School.
12. Schedule a personal interview with the College of Nursing PhD Student Admissions Committee prior to March 15 of the year preceding Fall admission. International applicants may be interviewed by telephone or teleconferencing at the discretion of the admissions committee.
Program Requirements

The following courses are required for all students:

620 Directed Research 3
601-02 Theory Analysis & Construction I, II 6
605-06 Nursing Research Seminar 4
607 Qualitative Nursing Research 3
608 Quantitative Nursing Research 3
609 Research Practicum* 4
610 Nursing Science Seminar 2
611 Advanced Nursing Seminar 2
612 Health and Nursing Policy/Planning 3
614 Nursing Preceptorship 3
Statistics 6
Cognates 6
Electives 3
600 Dissertation 24
TOTAL 72

*Note: A minimum of 1 hour per semester must be taken for 4 semesters.

Possible cognate areas include, but are not limited to, anthropology, child and family studies, psychology, education, management, medical ethics, public health, social work, philosophy, and statistics.

Doctoral Committee

Early in the student's program, a nursing faculty advisor will be selected by the student in consultation with the program director. The student's comprehensive examination committee consists of the faculty teaching core courses and one representative from the cognate area. The student then selects the dissertation committee. Four faculty holding the rank of assistant professor or above comprise the committee, three of whom (including the chair) must be approved by the Graduate Council to direct doctoral dissertations. At least one member of the committee must be from an academic unit other than nursing.

Special Policies

1. A maximum of 6 graduate hours taken before acceptance into the doctoral program may be applied toward the degree.

2. Minimum grades of B in all nursing doctoral courses and a 3.0 cumulative GPA are required for continuation in the program.

MINOR IN GERONTOLOGY

Graduate students in the College of Nursing may pursue a specialized minor in gerontology. This interdepartmental/interdisciplinary minor gives the student an opportunity for combining the knowledge about aging in our society with his/her major concentration. Please refer to Human Ecology for specific requirements.

POST-MASTER'S CERTIFICATE IN ADULT HEALTH NURSING

The College of Nursing offers a post-master's certificate program for nurses who need additional training in adult health nursing. Required for admission is a master's degree in nursing.

Course requirements are 530, 531, and 583, plus additional hours as determined by the college. The total hours will vary depending on the student's academic record, clinical experience and objectives. Students must complete a minimum of 12 credits. Typically students will complete 16-20 hours of course credit.

POST-MASTER'S CERTIFICATE IN NURSING OF WOMEN AND CHILDREN

The College of Nursing offers a post-master's certificate program for nurses who need additional training in nursing of women and children. Required for admission is a master's degree in nursing.

Course requirements are 550 and 551, plus additional hours as determined by the college. The total hours will vary depending on the student's academic record, clinical experience and objectives. Students must complete a minimum of 12 credits. Typically students will complete 16-20 hours of course credit.

POST-MASTER'S CERTIFICATE IN FAMILY NURSE PRACTITIONER

The College of Nursing offers a post-master's certificate program for nurses who need additional training in family nurse practice. Required for admission is a master's degree in nursing.

Course requirements are 570, 571, and 572, plus additional hours as determined by the college. The total hours will vary depending on the student's academic record, clinical experience and objectives. Students must complete a minimum of 12 credits. Typically students will complete 16-20 hours of course credit.

POST-MASTER'S CERTIFICATE IN NURSING ADMINISTRATION

The College of Nursing offers a post-master's certificate program for nurses who need additional training in nursing administration. Required for admission is a master's degree in nursing.

Course requirements are 590 and 591, plus additional hours as determined by the college. The total hours will vary depending on the student's academic record, clinical experience and objectives. Students must complete a minimum of 12 credits. Typically students will complete 16-20 hours of course credit.

ACADEMIC COMMON MARKET

An agreement among southern states for sharing graduate programs allows legal residents of some states to enroll in certain programs at UT on an in-state tuition basis. The M.S.N. program in Nursing is available to residents of the state of Oklahoma (concentration in nursing of women and children). Additional information may be obtained from the Admissions Specialist in the Office of Graduate Student Services.

GRADUATE COURSES

500 Thesis (1-15) P/NP only. E
501 Nursing Research: Methods, Design, and Analysis (3) Basic principles of research process in application to clinical questions; critical evaluation of nursing and health-related research. Prereq or coreq: 510, graduate level statistics. F.Sp
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. S/N/C only. E
503 Health Promotion In Advanced Practice Nursing (3) Principles of health promotion, education, and innovative strategies for achieving wellness of individuals, families, groups, and communities.
504 Advanced Health/Physical Assessment (3) Development of advanced clinical reasoning and assessment skills to determine client health status and needs. Application of physiological, pathophysiological, and psychological concepts with implications for advanced practice nursing. Didactic (2.5) and lab (5).
505 Advanced Clinical Pharmacology (3) Pharmacological agents utilized to treat common, recurrent health problems; indications, contraindications, side and interactive effects of commonly prescribed drugs. Prereq: 301 or equivalent or consent of instructor. F.
510 Theoretical Foundations of Nursing (3) Historical evolution of nursing science; nursing's paradigm and selected philosophies, conceptual models and theories as structures which guide critical thinking process, reasoning, and decision making for advanced practice nursing. F.Sp
511 Statistical Applications to Nursing Research (3) Descriptive and inferential statistics: statistical concepts and applications to clinical settings and their application to advanced practice nursing.
515 Advanced Pathophysiology for Nursing Practice (3) Advanced physiologic and pathophysiologic concepts, principles, and theories applied to deviations of human systems. Sp
516 Advanced Pathophysiology: Neurological/Cardiovascular with Anesthesia Implications (2) Review of anatomy and physiology of pathophysiologic processes involved in patients requiring anesthetics for surgical procedures (both children and adults) with and without cardiopulmonary bypass, interventional surgical procedures for vascular and mass occupying lesions, patients requiring somatosensory evoked potential monitoring, and patients requiring anesthesia for cardiac and non-cardiac procedures who present with either neurological and/or cardiovascular comorbidity.
517 Advanced Pathophysiology: Respiratory/Reproductive with Anesthesia Implications (2) Review of anatomy and physiology of pathophysiologic processes involved in administration of anesthesia for patients who present with respiratory pathology. Pathological implications of acute and chronic renal failure, renal transplantation, pulmonary disease states: obstructive and restrictive diseases, one lung ventilation, and acute pulmonary disease states and their management.
Carruth, Betty Ruth, Ph.D. .......... Missouri
Namey, T. C., M.D .... Washington (St. Louis)
Sachsen, Dilee S., Ph.D. .......... Illinois
Skinner, Jean D., Ph.D. .......... Oregon State
Smith, John T. (Emeritus), Ph.D. .... Missouri
Zemel, Michael (Liaison), Ph.D. .... Wisconsin

Associate Professors:
Bailey, James W., Ph.D. .......... Iowa State
Brooks, M. D. (Memphis), M.S. .... Alabama
Haughton, B., Ed.D. .......... Columbia
Karstad, Michael, Ph.D. .......... Loyola
Moussa, Nasrin, Ph.D. .......... Paris
Whelan, Jay, Ph.D. .......... Penn State
Zemel, Paula, Ph.D. .......... Wayne State

Assistant Professors:
Bittle, Joyce (Memphis), Ph.D. .... Tennessee
Chenarick, Judith (Memphis), Ed.D. .. Memphis

The Master of Science program is available in Nutrition, with a concentration in nutrition science or public health nutrition. A graduate degree combined with a Dietetic Internship (D.I.) beyond the baccalaureate degree qualifies the graduate to apply for the Registration Examination to become a Registered Dietitian (R.D.). Students may request more information from the department about the D.I. program. The Dietetic Internship is currently granted accreditation by the Commission on Accreditation for Dietetics Education of The American Dietetic Association, 216 W. Jackson Blvd., Chicago, IL 60606-6995, Tel: 312 899-5400. Students may also select an interdisciplinary minor in gerontology.

ADMISSION REQUIREMENTS

A complete file for review includes the Graduate School application form; completed departmental application form, Graduate Record Examination (GRE) scores for the general section, and three Graduate School Rating Forms completed by individuals who can attest to the applicant's potential for graduate education. Forms may be obtained from the Departmental Office, 229 Jessie Harris Building, University of Tennessee, Knoxville, 37996-1900. Forms may also be obtained from the Department's website at http://nutrition.he.utk.edu/.

Admission into the graduate program in the department is dependent on completion of undergraduate courses that give the necessary background for success in the graduate program. Required undergraduate courses include: general and organic chemistry, physiological chemistry/biochemistry, physics, statistics and advanced nutrition. Admission to the Ph.D. program in Human Ecology with a concentration in Nutrition Science requires a master's degree. Applicants to all programs with related needs of students who are interested in the benefits of majors in both nutrition and public health. Therefore, it accommodates 1) students who are interested in the benefits of majors in both nutrition and public health; 2) plan a career in nutrition and want to acquire the knowledge and skills of the nutritionist and public health professional; 2) plan a career in nutrition and want to acquire the knowledge and skills of the nutritionist and public health professional; or 3) plan a career in public health and want to acquire the knowledge, skills and perspective of the nutritionist.

Admission Requirements

Applicants for the M.S.-M.P.H. program must make separate application to, and be competitively and independently accepted by, the Department of Human Ecology, the Department of Health and Safety Sciences for the M.P.H., and the Public Health Academic Program committee.

Students who have been accepted by both departments may apply for approval to pursue the dual program anytime prior to, or after, matriculation in either or both departments. Such approval will be granted, provided that dual program studies be started prior to entry into the fourth semester of the M.S. and M.P.H. programs.

Curriculum

A dual degree candidate must satisfy the requirements for both the M.S. (public health nutrition concentration) and the M.P.H. degrees, as well as the requirements for the dual program. All candidates for the dual degree must successfully complete Health and Society (PH 555), two credits of Seminar in Public Health (PH 509), and a minimum of 60 credits. The Department of Nutrition will award a maximum of 9 semester hours of credit toward the M.S. degree for successful completion of approved graduate level courses offered in the Department of Health and Safety Sciences. The Department of Health and Safety Sciences will award a maximum of 11 semester hours of credit toward the M.P.H. degree for successful completion of approved courses offered in the Department of Nutrition. All courses for which such cross-credit is awarded must be approved by the Public Health Academic Program Committee and the student's graduate committee. A single block field experience (or public health internship) is required of all students and the analytical field paper incorporates public health nutrition and the student's public health concentration. Dual degree students who withdraw from the program before completion of the requirements for both degrees will not receive credit towards the M.S. or M.P.H. degree. 

Approved Dual Credit

M.S. courses to be counted toward the M.P.H. program must include 10 semester hours of Field Study in Community Nutrition (NTR 515) and 1 semester hour of Graduate Seminar in Public Health (NTR 509). M.P.H. courses to be counted toward the M.S. include Public Health Administration (PH 520), Biostatistics (PH 550), and Epidemiology (PH 540).

THE PH.D. CONCENTRATION

The doctoral program emphasizes cellular/molecular nutrition, human nutrition, nutritional epidemiology, and experimental nutrition. The doctoral program requires a major in nutrition science, public health nutrition, or clinical nutrition. Cognate areas may include anthropology, biochemistry, chemistry, communications, education, food technology, human development, nutrition science, public health, sociology, statistics, and/or toxicology.

Minimum requirements include:

1. Sixteen hours in nutrition including 4 hours at the 600 level (exclusive of dissertation).
2. NTR 511, 512, 541, and 2 hours from either 542-544.
3. Four hours of NTR 540, attendance required every semester;
4. Six hours of statistics;
5. Six hours in a cognate area;
6. Nine hours at the 600 level;
7. Students without college teaching experience are required to take the fall semester teaching seminar for GTAs and NTR 548 comprising a faculty-supervised problem in college teaching.

GRADUATE COURSES

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 when student uses University facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/HNC only: E
508 Culture, Food, and Nutrition (3) Food-related behavior of individuals and groups in United States. Sociocultural, economic, and technological influences. Nutrition and food surveys, public policy. Prereq: Advanced Nutrition or consent of instructor. F.A
509 Graduate Seminar in Public Health (1) (Same as Public Health 509, Exercise Science 509, Nursing 509 and Social Work 509).

511 Advanced Physiological Chemistry (4) Bioenergetics, flux control and hormonal interrelationships. Prereq: Advanced Nutrition or equivalent. F

512 Human Nutrition (3) Advances in carbohydrates, proteins, fats, minerals, and vitamins. Nutritional requirements of humans. Prereq: Advanced Nutrition or consent of instructor. F

513 Community Nutrition I (3) Orientation to community; assessment of nutrition problems, needs, and resources; functional roles of public health nutritionist. Concurrent field experiences. Prereq: Advanced Nutrition or consent of instructor. F

514 Community Nutrition II (3) Planning, implementation, and evaluation of public health nutrition programs. Concurrent field experiences. Prereq: 513 or consent of instructor. Sp

515 Field Study in Community Nutrition (1-12) Personal participation in and analysis of state or regional community nutrition program. Location of in-depth study to be selected in consultation with instructor. Prereq: 513, 514 and consent of instructor. SNC only. Su

516 Maternal and Child Nutrition (3) Nutrition principles related to growth and development during pregnancy, infancy, and childhood to age 5, high risk conditions. Prereq: Advanced Nutrition or consent of instructor. F

517 Childhood and Adolescent Nutrition (3) Application of nutrition principles to school age children; effects of diseases on growth and health maintenance; nutritional assessment and counseling for nutrition. Prereq: Advanced Nutrition or consent of instructor. Sp

518 Nutrition and Aging (3) Nutritional problems of adults; nutritional requirements, dietary intakes; effects of nutrition on biological aging. Prereq: Advanced Nutrition or consent of instructor. Su

520 Nutritional Ecology (2) Examination of issues in natural, political, physical, and social environments that impact availability of food and nutrients in U.S. food supply. F

521 Physiological Basis for Diet and Disease (2) Altered nutrient needs as result of metabolic changes that occur in selected disease states. Prereq: Nutrition or consent of instructor. Sp

522 Nutrition Counseling (2) Individual eating habits and disorders, evaluation strategies for effectiveness of helping process. Prereq: Nutrition in Disease or consent of instructor. F

524 Nutrition Education: Principles, Implementation, and Evaluation (3) Conceptual models, principles, application, and evaluation models in nutrition education research. Prereq: 508 or consent of instructor. Su

530 Molecular Application in Nutrient-Gene Interaction (1) Theories and applications of gene regulation methodologies. Experimentation with DNA and RNA. RNA and DNA isolation and analysis to illustrate nutrient regulation of gene expression. Combination of lab/lecture.

540 Seminar in Nutrition (1) May be repeated. S/NC only. E

541 Research Methods (1) Basic principles of planning, conducting, and interpreting nutrition and foodservice systems administration research. Prereq: 6 graduate hrs in nutrition and food system administration and statistics. Sp

542 Advanced Experimental Nutrition (2) Application of research principles to individual project using experimental animals. Prereq or coreq: 541. Sp

544 Survey Methods in Food and Nutrition (2) Application of survey research methods to nutrition projects: assessment of food consumption, nutrient intakes, nutritional status, sociocultural-economic paramaters, food production and service. Prereq or coreq: 541. Sp

547 Field Experience (3-9) Experience in food-related industry or agency under supervision of faculty member. Prereq: Consent of instructor. SNC only. E

548 Directed Study in Nutrition (1-3) Advanced study in nutrition. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs. E

549 Special Topics (1-3) Recent advances in nutrition or food systems administration. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs. E

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

602 Advanced Topics in Nutrition Science (1-3) Application of survey research methods to nutrition. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs. E

603 Current Trends in Food and Sociocultural Change (2) Critical evaluation of research. Prereq: 508 or consent of instructor. F, A

Ornamental Horticulture and Landscape Design

(College of Agricultural Sciences and Natural Resources)

MAJOR

DEGREE

Ornamental Horticulture and Landscape Design ....................... M.S.

Robert N. Trigiano, Interim Head

Professors:

Albrecht, M. L., Ph.D. ..................................... Ohio State

Augé, R. M. (Liaison), Ph.D. Washington State

Callahan, L. M. (Emeritus), Ph.D. Rutgers

Carter, G. D. (Emeritus), Ph.D. Ohio State

Graham, D. O. (Emeritus), Ph.D. Penn State

McDaniel, G. L., Ph.D. ....................................... Iowa State

Rogers, S. M., M.L.A. ...................................... Georgia

Thompson, J. M., Ph.D. ...................................... NC State

Williams, D. B. (Emeritus), Ph.D. Penn State

Associate Professors:

Rogers, S. M., M.L.A. ...................................... Georgia

Assistant Professors:

Garton, S., Ph.D. ............................................. Minnesota

Hamilton, S. L., Ed.D. ..................................... Tennessee

Klingseman, W. E., Ph.D. .................................. Georgia

Menendez, G. L., M.S. ..................................... Tennessee

The Department of Ornamental Horticulture and Landscape Design offers the Master of Science degree with concentration in floriculture, landscape design, turfgrass, woody ornamentals, and public horticulture. Various interests may be emphasized in any of these commodity areas, including micropropagation, innovative production and maintenance systems, and the molecular biology, genetics, histology and stress physiology of ornamentals.

The MASTER'S PROGRAM

Admission Requirements

Students having bachelor's degrees in fields both related and unrelated to ornamental horticulture may apply, although acceptance may require some prerequisite courses. For admission to the M.S. degree program, a student must meet all of the requirements of The Graduate School and must have completed (in semester hours): 12 hours of upper level ornamental horticulture and/or landscape design (in some cases, depending on individual student's interests and up to the discretion of a major professor in consultation with the OHLD Graduate Coordinator, upper level courses in other agricultural, biological or environmental subjects may substitute for some or all of these hours); 6 additional hours of biological science; 6 hours of math; 8 hours of chemistry. In addition, three completed rating forms and a written statement of career goals and interest in ornamental horticulture are required.

Students from non-science fields applying for the program may wish to enroll as non-degree graduate students while taking prerequisites.

Both thesis and non-thesis options are available, each guided by a graduate committee with three or more faculty members. For further information see web site at http://ohld.ag.utk.edu/, or contact the graduate liaison.

Degree Requirements

1. Approval of the academic program by the master's committee.

2. Successful completion of 12 hours of coursework in OHLD at the graduate level (400 or above), exclusive of 500, 502, and 503. Two of these hours must be 590. Six of these hours may be satisfied by Botany 412, 521, 522, Plant and Soil Sciences 471, 532, Animal Science 571, Ecology and Evolutionary Biology 520, or Information Sciences 560, Human Resource Development 521, 522, 562, Art 481, or Geography 439.

3. Attendance at graduate seminar each semester enrolled.

4. Preparation of a publication-ready, written or graphic communication.

Thesis Option:

1. Satisfactory preparation of a written thesis proposal and its oral defense to the student's committee, prior to enrolling in 500.

2. Successful completion of 30 hours of graduate credit, which must include 6 hours of 500. At least 14 of these hours must be at the 500 level or above.


Non-Thesis Option:

1. Successful completion of 34 hours of graduate credit, which must include 2-4 hours of 503. At least 22 of these hours must be at the 500 level or above.

2. Completion of a project and preparation of a written report summarizing the project.

3. Passing written and oral examinations covering the project and coursework.

GRADUATE COURSES

410 Nursery Management and Production (3) Modern management methods as applied to retail and wholesale nurseries and landscape contracting firms. Methods of producing liners, container and field-grown ornamentals. Prereq: 220, 330, and Plant and Soil Science 210, or consent of instructor. 2 hrs and 1 lab. Sp

426 Public Horticulture (2) In-depth study of public horticulture industry. Diversity of public horticulture.
Pathology

See College of Veterinary Medicine and Comparative Medicine, Experimental Medicine

Philosophy

(College of Arts and Sciences)

MAJOR

Philosophy 

M.A., Ph.D.

DEGREES

John Hardwig, Head

Professors:

Aquila, Richard E., Ph.D. ........ Northwestern University
Cebik, L. B. (Emeritus), Ph.D. ........ Northern Illinois University
Cohen, Sheldon M., Ph.D. ........ Northwestern University
Davis, John W. (Emeritus), Ph.D. ........ Emory University
Emery, Rem B. (Emeritus), Ph.D. ........ Emory University
Graber, Glenn C., Ph.D. ........ Michigan State University
Hardwig, John, Ph.D. ........ Texas A&M University
Kohn, John E., Ph.D. ........ Ohio State University
Postow, Betsy C., Ph.D. ........ Yale University
Van de Vate, Dwight, Jr. (Emeritus), Ph.D. ........ Yale University

Associate Professors:

Bennett, James O., Ph.D. ........ Tulane University
Bohlenstein, Kathleen Emmett (Liaison), Ph.D. ........ Ohio State University
Hamilin, H. Phillips, Ph.D. ........ Georgia State University

Assistant Professors:

Kaplan, Jonathan M., Ph.D. ........ Stanford University
McLeod, Carolyn W., Ph.D. ........ Dalhousie University
Reidy, David A., Ph.D. ........ Kansas State University

The Department of Philosophy offers graduate study leading to the Master of Arts and Doctor of Philosophy. The M.A. program includes thesis and non-thesis options and offers a concentration in medical ethics and in religious studies. The Ph.D. program also has a concentration in medical ethics. Detailed information may be obtained from the Director of Graduate Studies in Philosophy.

THE MASTER'S PROGRAM

The department offers both a thesis and a non-thesis option. The course requirements for an M.A. with thesis are 30 hours, including 6 hours in Philosophy 500. Of non-thesis hours, at least two-thirds must be in courses at or above the 500 level. No philosophy course numbered under 400 may be taken for graduate credit. There are no specific course requirements for a non-thesis option.

THE DOCTORAL PROGRAM

Students must hold an M.A. with a major in Philosophy or an equivalent degree when entering the Ph.D. program. Twenty-seven hours of coursework beyond the M.A. is required, of which 6 hours will be in courses numbered above 600. See the Philosophy Department Graduate Student Procedures for specific course requirements.

Students must demonstrate a reading knowledge of one foreign language, normally a living language in which there exists a
significant body of philosophical literature. (In special circumstances, including dissertation research, the Graduate Committee may approve a language not satisfying these conditions.) This may be done by passing the doctoral language examination given by the appropriate department, if available, or by passing French 302 or German 332 with a B or better. Bi- or multilingual (normally, foreign) students, whose native language (other than English) is one in which there is a significant body of philosophical literature, are exempted from the foreign language requirement. Students receiving the Ph.D. with concentration in medical ethics are also exempted.

CONCENTRATIONS

Medical Ethics

The department has an M.A. and Ph.D. program of graduate study with a concentration in medical ethics. Detailed information concerning the program may be obtained from either the Director of Graduate Studies in Philosophy or the Director of the Medical Ethics Program.

Religious Studies

The department has an M.A. program of graduate study with a concentration in religious studies. Details concerning the program may be obtained from the Director of Graduate Studies in the Department of Religious Studies.

ACADEMIC COMMON MARKET

An agreement among southern states for sharing graduate programs allows legal residents of some states to enroll in certain programs at UT on an in-state tuition basis. The M.A. and Ph.D. programs in Philosophy are available to residents of the states of Alabama, Kentucky, or Texas; the Ph.D. program to residents of Louisiana, Mississippi, Virginia or West Virginia; and the M.A. program to residents of Delaware or Oklahoma. Additional information may be obtained from the Admissions Specialist in the Office of Graduate Student Services.

GRADUATE COURSES

400 Special Topics (3) May be repeated when topic varies. Maximum 6 hrs.

411 Modern Religious Philosophies (3) (Same as Religious Studies 411.)

420 Topics in History of Philosophy (3) Figures or movements from antiquity through mid-twentieth century. Prereq: 6 hrs of philosophy or consent of instructor. May be repeated when topic varies. Maximum 9 hrs.

435 Intermediate Formal Logic (3) Metalanguage of formal logic and philosophy of logic. Prereq: Consent of Instructor.

440 Contemporary Ethical Theory (3) Topics in meta-ethics or ethics. Prereq: 6 hrs of philosophy or consent of instructor.

446 Theoretical Issues in Medical Ethics (3) Prereq: 240 or 345 or consent of instructor.

482 Philosophy of Biology (3) Current issues: nature of natural selection, adaptation, and fitness; level of selection debate; nature of species; interaction of environment and organism, and others. Prereq: upper division coursework in philosophy or biology or consent of instructor.

472 Philosophy of Language (3) Problems of meaning, reference and truth. Relation between words and world. How sentences manage to be about the world. What is true? Prereq: 3 philosophy courses 200 level or above.

473 Philosophy of Mind (3) Problems of mind and body in relation to consciousness and personal identity. Prereq: 6 hrs of philosophy or consent of instructor.

479 Studies in Recent Continental Philosophy (3) Selected thinkers or topics: existentialism, phenomenology, hermeneutics, structuralism, post-structuralism. Prereq: 6 hrs of philosophy or consent of instructor. May be repeated when topic varies. Maximum 6 hrs.

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 when student uses University facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/N only.

510 Philosophical Research (3) Paper workshop (writing, revising papers, getting papers ready to publish). Does not count toward hours required for degree. May be repeated. S/N only.

520 Topics in Ancient or Medieval Philosophy (3) Intensive critical work on major philosopher or school. May be repeated. Maximum 9 hrs.

522 Topics in Modern Philosophy (3) Intensive critical work on major philosopher or school. May be repeated. Maximum 9 hrs.

524 Topics in Twentieth-Century Philosophy (3) Intensive critical work on major philosopher or school. May be repeated. Maximum 9 hrs.

528 Topics in Contemporary Philosophy (3) Intensive critical work on themes in late 20th-century philosophy. May be repeated. Maximum 9 hrs.

540 Topics in Ethics or Value Theory (3) May be repeated. Maximum 9 hrs.

542 Topics in History of Ethics (3) Dominant movements in history of ethics. May be repeated. Maximum 9 hrs.

544 Topics in Applied Ethics (3) Single author, tradition, or topic in ethical theory, application to issues in health, business, technology, ecology, and other practical fields. May be repeated. Maximum 9 hrs.

546 Orientation to Medical Ethics (3) Survey of ethical theories in application to issues in medical ethics.

547 Ethical Issues in Mental Health (3) Values in “mental health” and “mental illness,” informed consent in psychiatry, competence, patients’ rights, involuntary hospitalization and treatment, and behavior control therapies.

548 M.A. Clinical Practicum (3) Series of clinical rotations at one or more local health care institutions. Open only to graduate students concentrating in medical ethics. Prereq: 547 and consent of Medical Ethics Committee and the UTMC Graduate Education Committee.

575 Topics in Metaphysics and Epistemology (3) May be repeated. Maximum 9 hrs.

577 Topics in Philosophy of Mind (3) Relation of mental to physical and of role of words in discourse for mental activities, thinking and feeling. May be repeated. Maximum 9 hrs.

585 Special Topics (3) May be repeated. Maximum 9 hrs.

567 Advanced Clinical Medical Ethics (3) Critical concepts in medical ethics, relationship of theory to practice, and professional roles and responsibilities for health care ethics consultant. Open only to Ph.D. students concentrating in medical ethics. Prereq: Consent of Medical Ethics Committee.

588 Ph.D. Clinical Practicum (9) Series of clinical rotations at one or more local health care institutions. Open only to Ph.D. students concentrating in medical ethics. Prereq: Consent of Medical Ethics Committee and the UTMC Graduate Education Committee.

590 Topics in Social and Political Philosophy (3) Philosophy of problems concerning social and political life: family, state, freedom, justice, major theoretical responses: anarchism, social contract, Marxism. May be repeated. Maximum 9 hrs.

591 Foreign Study (1-15) See College of Arts and Sciences.

593 On-Campus Study (1-15) See College of Arts and Sciences.

593 Independent Study (1-15) See College of Arts and Sciences.

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

620 Topics in Ancient or Medieval Philosophy (3) May be repeated. Maximum 9 hrs.

622 Topics in Modern Philosophy (3) May be repeated. Maximum 9 hrs.

624 Topics in Contemporary Philosophy (3) May be repeated. Maximum 9 hrs.

640 Topics in Ethics or Value Theory (3) May be repeated. Maximum 9 hrs.

646 Topics in Applied Ethics (3) Prereq: Consent of Medical Ethics Committee. May be repeated. Maximum 9 hrs.

PHYSICS AND ASTRONOMY

(College of Arts and Sciences)

MAJOR DEGREES

Physics ........................................... M.S., Ph.D.

Soren Sorensen, Head

Professors:

Barnes, E. F., Ph.D. .................................. California

Bingham, C. R., Ph.D. ......................... Tennessee

Bliss, W. E., Ph.D. .............................. Michigan State

Breinig, M., Ph.D. ............................... Oregon

Bugg, W. M., Ph.D. .............................. Tennessee

Burgdorfer, J. (Distinguished Prof.), Ph.D. ............... Frie Universitat Berlin

Callcott, T. A., Ph.D. ......................... Purdue

Childers, R. W., Ph.D. ......................... Vanderbilt

Crater, H. W. (UTSI), Ph.D. ................. Yale

Eguiluz, A. G., Ph.D. ........................ Massachusetts

Elsot, S. B., Ph.D. .............................. Massachusetts

Georgiou, S., Ph.D. ............................ Manchester

Guidry, M. W., Ph.D. ........................ Tennessee

Handler, T., Ph.D. .............................. Rutgers

Hart, E. L., Ph.D. ............................... Cornell

Kamyshkov, I., Ph.D. ........................... ITP (Russia)

Lewis, J. W. L. (Distinguished Prof.) (UTSI), Ph.D. ................. Mississippi

Macek, J. (Distinguished Scientist), Ph.D. .......................... Rensselaer

Mahar, G. D. (Distinguished Scientist), Ph.D. ......................... California

Nazarewicz, W., Ph.D. ......................... Warsaw

Painter, L. R., Ph.D. ........................... Tennessee

Pegg, D. J., Ph.D. ............................... New Hampshire

Plummer, E. W. (Distinguished Scientist), Ph.D. ............... Cornell

Quinn, J. J. (Willis Lincoln Chair of Excellence), Ph.D. ................. Maryland

Riedinger, L. Ph.D. .............................. Vanderbilt

Shih, C. C. (Liaison), Ph.D. ..................... Cornell

Sorensen, S. P., Ph.D. .......................... Copenhagen

Strayer, M. R., Ph.D. ........................... MIT
Physics during the fall semester registration period.

THE MASTER'S PROGRAM

Thesis Option
This program is designed primarily for students intending to go into industrial or governmental laboratories as physicists. The course requirements include 24 semester hours of physics courses, of which at least 12 semester hours are taken from Physics 511-12, 521-22, 531-32, 541-42, or 571-72. Each candidate who does not meet these requirements will have the option of taking a minor in Physics or its equivalent.

The department offers an M.S. thesis program with a concentration in geophysics. Program requirements are: 12 hours from Physics 531-32, 541-42, 571-72; a minimum of 12 additional hours in geophysics, geology, and/or physics, as approved by the student's committee; and the presentation of an acceptable thesis, 6 hours of Physics 500, and the passing of an oral examination on course material and thesis.

Non-Thesis Option
This program is designed primarily for students intending to teach in colleges or universities on the elementary or intermediate level, or for students specifically intending to work toward a Ph.D. Students seeking the non-thesis option must apply to the department's graduate committee for permission to enroll under this program. The requirements are the satisfactory completion of 30 hours of coursework composed of 18 semester hours from Physics 511-12, 521-22, 531-32, 541-42, and 571-72; 6 semester hours in a minor field; and 6 semester hours from other courses numbered above 400 (preferably of advanced laboratory nature.) At least 20 hours must be taken at the 500 level or above. In addition, the candidate must pass a written examination administered by his/her committee.

THE DOCTORAL PROGRAM

All students are expected to take Physics 521-22, 531-32, 541-42, 551, 571-72, and 611. Physics 601-02 are normally required of students specializing in atomic physics; Physics 621-22 of students in nuclear physics; Physics 626-27 of students in elementary particle physics (and/or Physics 613-14 for students specializing in theoretical high-energy physics); Physics 671-72 of students in condensed matter and surface physics; and Physics 681-82 of students specializing in molecular spectroscopy. Students specializing in chemical physics may substitute Chemistry 572 for Physics 551, and should complete at least 6 semester hours from Chemistry 580, 670.

The courses Physics 531-32, 571-72, 521-22, 541-42 constitute the core curriculum. They are the usual basis for the departmental comprehensive examination which is normally taken by a well-prepared student after two years of graduate study.

The dissertation topic will be chosen with reference to one of the fields in which research facilities can be made available either at The University of Tennessee laboratories in Knoxville; The University of Tennessee Space Institute at Tullahoma, Tennessee; the Oak Ridge National Laboratory, Oak Ridge, Tennessee; or at other research facilities used by the University faculty.

Astronomy

GRADUATE COURSES

411 Astrophysics (3) Development of analytical physical models of galactic structure, stellar and interstellar matter, and planetary systems. Topical and interdisciplinary, consisting of quasars, pulsars, black holes and current developments in general. Acceptable for major credit in physics. Prereq: Physics 232 and consent of instructor.

490 Special Topics in Astronomy (1-3) Topics of current interest in astronomy. May be repeated with consent of department. May be repeated with consent of department. Maximum 9 hrs.

Physics

GRADUATE COURSES


461-62 Modern Physics Laboratory (3,3) 461 - Introduction to fundamental and modern techniques in experimental physics, and to theory and practice of measurement and data analysis. Selected experiments in nuclear, atomic, molecular and solid state physics, and modern optics. Prereq: Electronics Laboratory and either Fundamentals of Physics: Modern Physics or 411, 462 - Advanced experiments and experimental techniques in modern physics; experimental team work. Thorough quantum mechanical interpretation of results and preparation of scientific reports. Prereq: 461, 6 hrs lab per week.

490 Senior Seminar (1-3) Topic of current interest. May be repeated with consent of department. Maximum 6 hrs.

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

501 Graduate Research Participation (3) Advanced research techniques under supervision of staff research director whose research area coincides with interests of student. Open to all graduate students in good standing. Prereq: Consent of department and research director. May be repeated with consent of department. Maximum 16 hrs. S/NCo only. 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 degree is completed. May not be used toward degree requirements. May be repeated. S/NCo only. E

505 Physics of Fluids (3) Fluid physics overview of fluid mechanics and associated computational tech-
Howard, Donald D., Ph.D. ................. Auburn
Lockwood, David W., Ph.D. ............... Georgia
Mullins, Charles A., Ph.D. ............... Tennessee
Parks, William L. (Emeritus), Ph.D. .... Purdue
Rhodes, G. Neil, Jr., Ph.D. .............. NC State
Rusludge, Alvin D. (Emeritus), Ph.D. ... Tennessee
Sams, Carol R., Ph.D. ............... Michigan State
Sams, David W., Ph.D. .............. Minnesota
Shelby, Paulus P., M.S. ............. Tennessee
Springer, Maxwell E. (Emeritus), Ph.D. California
Tyler, Donald D., Ph.D. ............... Kentucky
West, Dennis R., Ph.D. ................. Nebraska

Associate Professors:
Bates, Gary E., Ph.D. ................. Georgia
Essington, Michael E. (Liaison). Ph.D. (California (Riverside))
Miller, Robert D., Ph.D. .............. Wisconsin
Pantalone, Vincent R., Ph.D. ........ NC State
Logan, James A., Ph.D. ............ Nebraska
Mueller, Thomas C., Ph.D. ........ Ohio State
Mullen, Michael D., Ph.D. ....... NC State
Reich, Vernon H., Ph.D. ........ Iowa State
Savoy, Hubert, J., Ph.D. ........... Louisiana State
Wyatt, Jim E., Ph.D. ............... Florida

Assistant Professor:
Pantalone, Vincent R., Ph.D. ........ NC State
Robinson, Darrell K., Ph.D. .......... NC State
Straw, R. Allen, Ph.D. .............. Tennessee
Walker, Forbes R., Ph.D. .......... NC State

Research Professors:
Fribourg, Henry A., Ph.D............ Iowa State
Lee, S. Y., Ph.D. .................. Wisconsin
Miller, Robert D., Ph.D. .......... Kentucky
Reynolds, John H., Ph.D. ........... Wisconsin

The Department of Plant and Soil Sciences offers graduate programs leading to the Master of Science and the Doctor of Philosophy. Concentrations for the graduate programs are offered in soil science, plant breeding and genetics, and crop physiology and ecology.

For further information, contact the department head.

THE MASTER'S PROGRAM

Thesis Option
A written thesis based on original research is required. A graduate advisory committee will be assembled at the beginning of the student's program. The committee consists of the student's major professor, who acts as chair of the committee, and at least two other faculty members. Prior to conducting research, the student must develop a detailed written research proposal that shall be approved by the student's committee. Upon completion of the thesis, this committee will also conduct the final oral examination that integrates the thesis and coursework.

Six hours of 500 Thesis are required. In addition to the thesis hours, a minimum of 24 hours of graduate coursework is required. At least 14 of these hours must be taken in courses numbered 501 and above. The student must take at least 12 of the 24 hours in Plant and Soil Sciences courses, excluding 500. The student's committee may require additional coursework beyond the 24 hours if the student's progress or background indicates a need or deficiency. All students pursuing the M.S. degree must take the following courses: 500 Scientific Communication (1 hr); 503 Seminar (1 hr); 511 Soil-Plant Relations (3 hrs). The student must also present an oral examination to the Department over the research project.

All students pursuing a concentration in soil science must also take at least three of the following courses: 512, 513, 514, and 516. All students pursuing a concentration in plant breeding and genetics, or in crop physiology and ecology must take two of the following courses: 532, 551, and 553.

The DOCTORAL PROGRAM

A minimum of 72 hours beyond the Bachelor's degree, exclusive of credit for Thesis 500, is required. Of this number, 24 hours must be Doctoral Research and Dissertation 600. A minimum of 28 hours must be completed in courses numbered above 500 exclusive of doctoral research and dissertation, of which 6 must be in courses numbered above 600. A minimum of 9 hours of graduate course work taken during the doctoral program must be outside the department in one or more cognate areas.

The student and the major professor identify a doctoral committee composed of at least four faculty members holding the rank of assistant professor or above, three of whom, including the chair, must be approved by the Graduate Council to direct doctoral research. At least one member must be from outside the department. The committee must approve all coursework applied toward the degree, certify the student's mastery of the major field and any cognate fields, direct the research, and recommend the dissertation for approval and acceptance by The Graduate School.

GRADUATE COURSES

412 Soil Genesis and Classification (3) Soil genesis and formation; observing and describing morphology of agricultural and forest soils; chemical and physical properties, classification, 3 weekend field trips. Prereq: Soil Science. 2 hrs and 1 lab. F

413 Environmental Soil Chemistry (3) Composition and chemical properties of soils and processes that govern fate and behavior of chemicals in soil environment: clay mineralogy; soil organic matter; mineral weathering and stability; aqueous speciation; surface chemistry: ion exchange, adsorption and molecular retention; oxidation-reduction; and soil acidity, alkalinity, and salinity. Prereq: Soil Science and Introduction to Organic and Biochemistry or Organic Chemistry or equivalent. F

414 Soil, Land Use, and the Environment (3) Soil as environmental component and soil properties affecting land use. Soil as resource in development planning: consideration of nonengineering aspects of site selection for land use, soil survey and resource data in land use, recognition and prevention of soil pollution. Prereq: Soil Science or consent of instructor. Sp,A

415 Soil Hydrology (3) Physical relationships among solid, liquid, and gaseous phases of soil system. Relationships of soil properties to processes governing transport of water, and chemicals in soil. Prereq: Soil Science. 2 hrs and 1 lab. Sp

431 Physiological Ecology in Agroecosystems (3) Plant physiology and ecology principles related to crop production and management. Plant physiology and ecology principles related to crop production practices for seed production, seed handling, and production of crops with environmental and sustainable agroecosystems. Prereq: Crop Science. 2 hrs and 1-2 hr lab. F

432 Bioclimatology (3) Solar energy budget; interactions between global, regional and local climates and biophysical systems: quantification of macro- and micro-climates; microclimates and their modification; automated data collection and analysis; biological responses to climatic stress; adaptive variation and change and their effects on biological systems. Prereq: Agriculture and Natural Resources 260, Computer Applications to Problem Solving, or equivalent, 1 yr physical or biological science, junior standing. Sp

433 Agricultural Pesticides (3) Regulation of pesticidal development, manufacture, transportation, marketing and use. Structure, mode of action, degradation and environmental impact of pesticides used in agriculture, forestry and related areas. Prereq: 1 yr biological sciences and 1 semester chemistry. 2 hrs and 1 lab. Sp

434 Fruit and Vegetable Crops (3) Principles of production systems to counter environmental stresses and to increase productivity of warm and cool season vegetable crops, small fruit crops, and deciduous tree fruit crops. Storage of crops after harvest. Prereq:
435 Field and Forage Crops (3) Agronomic principles of crop production and management; design, evaluation, interpretation, and management of field and forage crops. Prereq: Introduction to Crop Science and World Crops or Crop Science. 2 hrs and 1 lab. F.

453 Principles of Plant Breeding (3) Genetic principles and techniques used in crop improvement. Consideration of breeding methods for various types of plant reproduction systems and application. Discussion of heritability estimation, genetic advances through selection and theory upon which breeding methods are based. Prereq: Introduction to Crop Science and World Crops or Crop Science. 2 hrs and 1 lab. Sp, A.

471 Statistics for Biological Research (3) Application of statistics to interpretation of biological research. Notation, descriptive statistics, probability, distributions, confidence intervals, t and chi-square tests, analysis of variance, mean separation procedures, linear regression and correlation. Prereq: Mathematics 121 or equivalent. F.

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

501 Seminar Preparation (1) Application of speaking, writing, and organizational skills in preparation and presentation of material to both scientific and general audiences. Preparation of abstracts for scientific presentations. Required of all entering graduate students during their first year of graduate study. F.

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 degree is completed. May not be used toward degree requirements. May be repeated. S/N only. E.


507 Professional Development Seminar (1) (Same as Agriculture and Natural Resources 507, Animal Science 507, Biosystems Engineering 507, Biosystems Engineering Technology 507, Food Science and Technology 507, and Ornamental Horticulture and Landscape Design 507.) S/N or consent of instructor. F.

511 Soil-Plant Relationships (3) Principles of mineral nutrition of higher plants: plant physiological characteristics that influence uptake of water and nutrients; functions of nutrient elements in plants; soil factors influencing nutrient availability to plants; important relationships at soil-plant root interface; and responses to adverse soil environmental conditions. Prereq: 413 or 431 or Introduction to Plant Physiology. 3 hrs and 1 rec. F, A.

512 Pedology (3) Physical and chemical weathering processes, factors of soil formation, soil forming processes. Prereq: 412 or consent of instructor. 2 hrs and 1 lab. Sp.

513 Advanced Soil Chemistry (3) Chemical properties and processes that operate in soil environment: thermodynamics of soil solutions, and surface chemistry of soils, soluble complex formation, mineral solubility, mineral equilibria, field leaching, geomorphology, ion exchange equilibria, surface functionality and reactivity, adsorption phenomena, and surface complexation modeling. Prereq: 413 or consent of instructor. Sp.


516 Soil Biology and Biochemistry (3) Soil organisms and their activities in soils: soil ecology, biogeochemical cycling of important elements, organic matter dynamics, and applications of agricultural and environmental biology and biochemistry. Prereq: Soil Science 2 hrs and 1 3-1 hr. F, A.

530 Integrated Pest Management (3) (Same as Entomology and Plant Pathology 530.) F.

532 Environmental Crop Physiology and Ecology (3) General and specific relations among environmental factors, crop organisms, and agricultural systems. Interrelationships of atmospheric gases in photosynthesis, evapotranspiration and foliar insect herbivory. Nematode-plant interactions and their influence on yield. Prereq: Consent of instructor. 2 hrs and 1 lab. Sp, A.

536 Ecology of Grazing Land Systems (3) Multi-university, field-oriented course. Components and functions of grazing lands and how these vary in different ecoregions; research needs, objectives and techniques in soil-plant-animal research; forage-livestock ecology and systems in grazing lands (cropland, pastureland, rangeland and forestland); role of forages in conservation practices, wildlife habitats, and sustainable agriculture; and industries involved with forages and livestock. Two-week field trip, inclusion report and examination. Prereq: Consent of instructor. Sp.

551 Organismal Plant Genetics (3) Discovery of genotypes, polygenic, or environmental inheritance, apomixis, incompatibility systems, mutations, controlling elements, quantitative inheritance and heritability. Prereq: General Genetics, 471 or equivalent. F, A.

553 Plant Breeding Technologies (3) Principles and methodologies targeting genetic gain for crop improvement. Concepts of molecular genetics and quantitative trait improvement. Parental germplasm, population formation, hybridization, introgression, and quantitative genetics. Prereq: Consent of instructor. 2 hrs and 1 lab. Sp, A.

571 Design and Analysis of Biological Research (3) (Same as Agriculture and Natural Resources 571.) F.

593 Special Problems in Plant and Soil Science (1-3) May be repeated. Maximum 6 hrs. E.

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

601 Special Topics in Soil Science (1-3) Thermodynamics of soil solutions, clay structure and surface chemistry, soil mineralogy, plant mineral nutrition, stability of biomass, water movement and use by plants, soil structure, soil thermal properties, interaction in the soil-plant environment. May be repeated. Maximum 6 hrs. E.

603 Special Topics in Crop Physiology and Ecology (1-3) (Same as Agriculture and Natural Resources 603.) Micrometeorology of agroecosystems, dormancy and responses to stress, physiology of crop growth and reproduction. Interactions of physiology and germplasm in crop production, theory and application of quantitative methods in crop physiology and ecology research. May be repeated. Maximum 6 hrs. E.

605 Special Topics in Plant Breeding and Genetics (1-3) Genotype by environment interactions, estimation of quantitative parameters, mutations, chromosome dynamics, polyploidy, gene flow, inbreeding, interspecific hybridization, linkage, screening methods, genotype organization. May be repeated. Maximum 6 hrs. E.

613 Advanced Topics in Soil Chemistry and Fertility (2) Topics of current significance; scientific literature. Prereq: 513 or equivalent. Sp.

614 Advanced Topics in Soil Biology and Biochemistry (2) Topics of current significance; scientific literature. Prereq: 516 or equivalent. F, A.

615 Advanced Topics in Soil Physics, Genesis, and Morphology (2) Topics of current significance; scientific literature. Sp.

633 Plant Metabolism (3) Metabolism of chemical compounds of economic importance in crop production: plant growth regulators, naturally occurring plant metabolites, and herbicides. Prereq: Botany 521 or 522 and organic chemistry or biochemistry. Sp.

563 Advanced Plant Breeding (4) Development and utilization of concepts of quantitative parameters, inbreeding, heterosis, methods of selection, in vitro breeding, interfpecific hybridization, stability parameters, genetic resistance and vulnerability to pests and environmental stresses. Prereq: 453 and 571 or equivalent or consent of instructor. 3 hrs and 1 lab. Sp.

Political Science (College of Arts and Sciences)

DEGREES

MAJORS

Political Science ........................................ M.A., Ph.D.
Public Administration .................................. M.P.A., J.D.-M.P.A.

Patricia Freeland, Head

Professors:

Cunningham, Robert B., Ph.D. .......... Indiana University, Bloomington
Fitzgerald, Michael R., Ph.D. ............ Oklahoma State University
Freeland, Patricia K., Ph.D. ........... University of Wisconsin (Milwaukee)
Gant, Michael M., Ph.D. .................. Michigan State University
Gorman, Robert A., Ph.D. ............. New York University
Lyons, William, Ph.D. .................... Ohio State University
Plaas, Hyram, Ph.D. ...................... Utah State University
Schef, John M., Ph.D. .................... Florida State University
Smith, T. Alexander, Ph.D. ............ Ohio State University
Stots, Otis H. (Distinguished Prof.), Ph.D. .................................................. Johns Hopkins University
Ungs, Thomas D. (Emeritus), Ph.D. .... Iowa State University
Walbom, David M. (Emeritus), Ph.D. ... Texas A&M University

Assistant Professors:

Lapinski, Daniel, Ph.D. .................. Duke University
Van Cott, Donna, Ph.D. ................. Georgetown University

The Department of Political Science offers the M.A., M.P.A., and Ph.D. The department also offers a dual program with the College of Law. Inquiries concerning all programs should be directed to the departmental office.

ADMISSION REQUIREMENTS

Three departmental recommendations must be submitted to The Graduate School, at least two of which must be completed by instructors at the institution most recently attended. In addition, scores on the general portion of the Graduate Record Examination must be submitted.

THE MASTER OF ARTS PROGRAM

A Bachelor's degree or its equivalent is required for admission. Normally an average of 3.0 is also required together with an average of 3.2 in the last two years of political science or social science. In addition, a composite score of at least 1100 on the verbal and quantitative parts of the GRE is normally required.

Students pursuing the Master of Arts degree may follow one of two options:
THE MASTER OF PUBLIC ADMINISTRATION PROGRAM

The M.P.A. program is intended to prepare students for public service careers by acquainting them with management principles, analytical tools, and the ethical dilemmas they will face as public administrators. It consists of a total of 39 semester hours, including core courses, an elective specialization and a recommended internship.

Applicants for admission to the program must have a Bachelor's degree or its equivalent. Normally, an overall average of 3.0 and an average of 3.2 in the last two years of political science or social science courses is required. In addition, a composite score of at least 1100 on the verbal and quantitative parts of the GRE is normally required.

Students must demonstrate proficiency in the use of software applications for the personal computer. This requirement can be fulfilled by achieving a satisfactory grade in Political Science 596, Workshops in Computer Applications. Exceptions to this requirement will be considered on an individual basis.

The M.P.A. is a non-thesis program requiring 39 hours. Specific requirements include the following:

1. Core Curriculum (24 hours)
   a. General Perspectives (9 hours) - 550 Public Administration; 552 Organization Theory; and one of the following: 539 State and Local Government; 540 Public Law; 546 Law and the Administrative Process; 548 Public Policy Process; 558 The Politics of Administration; or 566 Ethics, Values, and Morality in Public Administration.
   b. Analytical Skills (9 hours) - 512 Quantitative Political Analysis; 514 Research and Methodology in Public Administration.
   c. Management Skills (6 hours) - 560 Public Budgeting and Finance; and any two of the following: 562 Public Management; 564 Human Resources Management; 566 Policy Analysis.
   d. Specialization (9 hours) - A specialization is designed by the student in consultation with the coordinator of the M.P.A. degree program. Possible specializations include general government, public health, budgeting and finance, planning, natural resources, program evaluation, criminal justice, public relations, personnel, and others.

2. Recommended Internship (6 hours)

Internships are arranged in consultation with the coordinator of the M.P.A. degree program.

3. Final Examination
   A written final examination, which may be followed by an oral examination, is required.

DUAL J.D.-M.P.A. PROGRAM

The College of Law and the Department of Political Science in the College of Arts and Sciences offer a coordinated dual degree program leading to the conferred of both the Doctor of Jurisprudence and Master of Public Administration. In this program, a student may earn the M.P.A. and J.D. degrees in about four years rather than the five years that otherwise would be required. Students pursuing the dual degree program should plan to be enrolled in coursework or an internship for one summer term in addition to taking normal course loads for four academic years.

Admission

Applicants for the J.D.-M.P.A. program must make separate application to, and be independently accepted by, the College of Law for the J.D. degree and the Department of Political Science and The Graduate School for the M.P.A. degree. Applicants must also be accepted by the Dual Degree Committee. All applicants must submit a Law School Admission Test (LSAT) score. An applicant's LSAT score may be substituted for the Graduate Record Examination (GRE) score, which is normally required for admission to the M.P.A. program. Application may be made prior to, or after matriculation in either the J.D. or the M.P.A. program, but application to the dual program must be made prior to entry into the last 29 semester hours required for the J.D. degree and prior to entry into the last 15 hours required for the M.P.A. degree.

Curriculum

A dual degree candidate must satisfy the requirements for both the J.D. and the M.P.A. degrees, as well as the requirements for the dual program. The College of Law will award a maximum of 9 semester hours of credit toward the J.D. degree for successful completion of approved graduate level courses (500 or 600 level) offered in the Department of Political Science. The M.P.A. program will award a maximum of 9 semester hours of credit toward the M.P.A. degree for successful completion of approved courses offered in the College of Law. All courses for which such cross-credit is awarded must be approved by the J.D.-M.P.A. coordinators in the College of Law and the Department of Political Science. All candidates for the dual degree must successfully complete Administrative Law (Law 821), and are encouraged to take Local Government (Law 824). An internship is strongly recommended for students in the dual degree program, as it is for all M.P.A. candidates, but an internship is not required. During the first two years in the dual program, students will spend one academic year completing the required first year of the College of Law curriculum and one academic year taking courses solely in the M.P.A. program. During these first two years, students may not take courses in the opposite area, without the approval of the J.D.-M.P.A. coordinators in both academic units. In the third and fourth years, students are strongly encouraged to take both law and political science courses each semester.

Dual degree students who withdraw from the program before completion of the requirements for both degrees will not receive credit toward either the J.D. or the M.P.A. degree for courses taken in the other program except as such courses qualify for credit without regard to the dual program.

Awarding of Grades

For grade recording purposes in the College of Law and the Department of Political Science, grades awarded in courses in the other unit will be converted to either Satisfactory or No Credit and will not be computed in determining a student's GPA or class standing. The College of Law will award a grade of Satisfactory for an approved M.P.A. course in which the student earns a grade of B or higher and a grade of No Credit for any lower grade. The Political Science Department will award a grade of Satisfactory for an approved law course in which the student earns a grade of 2.3 or higher and a grade of No Credit for any lower grade. The official academic record of the student maintained by the Registrar of the University shall show the actual grade assigned by the instructor without conversion.

THE DOCTORAL PROGRAM

The Ph.D. program prepares students for careers in college teaching, as well as careers in other occupations related to service in the public or private sectors. Applicants for admission to the program should normally have completed a master's degree in political science or a related field with a 3.5 GPA and have earned a composite score of at least 1100 on the verbal and quantitative parts of the Graduate Record Examination.

Doctoral students admitted to the program must complete 84 hours beyond the bachelor's degree, including 24 hours of coursework beyond the master's degree, graded A-F. must successfully pass written comprehensive examinations in two broad subfields of political science, and must pass a final oral examination on the dissertation. In addition, students must satisfy a research tool requirement. Usually, students meet this requirement by completing 12 hours of coursework number above 500 in empirical theory and research methodology. However, if a student's advisor and program committee certify that competency in a foreign language is a more appropriate research tool, a foreign language can be used instead.

In addition to the total hours required for the degree, the following requirements must also be met:

1. At least 69 hours must be in political science courses.
2. At least 54 hours in political science must be in courses numbered above 500.
3. Completion of Political Science 510, 511, and 512.
4. Completion of at least three courses or seminars at UT in each of the two broad subfields in which the students take examinations.
not be used toward degree requirements. May be repeated. S/NC only. E
510 Scope and Methods in Political Science (3) Procedures of analysis in political science.
511 Research Design (3) Methods for planning and executing research from case studies to experimental designs: development of research questions and hypotheses; measurement issues; and validity of inferences.
512 Quantitative Political Analysis (3) Methods and techniques in quantitative political analysis: univariate and bivariate statistics.
513 Quantitative Political Analysis (3) Methods and techniques in quantitative political analysis: multi-variate model building.
514 Research and Methodology in Public Administration (3) Basic assumptions and techniques of research in public administration; measurement, analysis, and reporting of data.
520 Political Theory (3) Survey of major ideas, thinkers and works of Western political theory.
522 American Political Thought (3) Systematic examination of the normative and empirical theories of leading American political thinkers from the colonial period to the present.
530 American Government and Politics (3) Survey of literature, approaches to research and analysis, critical examination of major works and overviews of research in various subfields. May be repeated with consent of department. Maximum 9 hrs.
532 Presidency (3) Systematic examination of the structure, functions and powers of the American presidency as they have evolved from the founding to the present.
533 Congress (3) Formal, empirical and theoretical approaches to and models of the institutional workings of Congress and the behavior of legislators.
535 Mass Political Behavior (3) Theoretical and empirical analyses of public opinion, political socialization, political attitudes and behavior, especially voting behavior.
537 Political Parties and Interest Groups (3) Theoretical and empirical examination of the structure, functions and operations of political parties and interest groups.
539 State and Local Government and Politics (3) Theoretical and empirical analysis of government, politics, policymaking and public administration at the state and local levels.
540 Public Law (3) Selective examination of published research and current approaches in subfields of constitutional law, judicial process, and judicial behavior. May be repeated with consent of department. Maximum 9 hrs.
548 Public Policy Process (3) Theoretical, formal and empirical analysis of the roles, functions and decision making processes of public policymakers, including legislative, executive and judicial actors.
550 Public Administration (3) Overview of public administration theory and function.
552 Organization Theory (3) Appraisal of major theories of organization and their applicability to public sector.
553 Management of Information Systems (3) Theory, design, development, implementation and evaluation of information systems in public organizations. Database systems, computer applications, and training for management information technology.
556 Policy Analysis (3) Strategies and techniques for identification and analysis of public problems and policy solutions. May be repeated with consent of department. Maximum 9 hrs.
558 The Politics of Administration (3) Examination of public administration in context of American political system, policy making and political roles of public administrators and agencies. May be repeated with consent of department. Maximum 9 hrs.
560 Public Financial Administration (3) Principles and techniques of public finance at state and local levels: budget preparation, execution and audit, risk management, capital planning, major tax structures, economic forecasting, cash management, and debt administration.
562 Public Management (3) Interpersonal and leadership skills, techniques and methods for planning, decision making, and implementation of management strategies in public sector. May be repeated with consent of department. Maximum 9 hrs.
566 Ethics, Values, and Morality in Public Administration (3) Moral-ethical-value dilemmas confronting administrators in American political system.
569 Internship in Public Administration (3-9) Open to students participating in approved internship programs. May be repeated with consent of department. Maximum 9 hrs. S/NC only.
570 Comparative Government and Politics (3) Selected topics in contemporary politics. May be repeated with consent of department. Maximum 6 hrs.
572 The Politics of Development (3) Selected topics dealing with political problems of less developed countries. May be repeated with consent of department. Maximum 9 hrs.
574 Area Seminar in Comparative Government and Politics (3) Selected topics in area studies: African, Asian, Latin America, Middle East, Soviet Union and Eastern Europe or Western Europe. May be repeated with consent of department. Maximum 9 hrs.
580 International Politics (3) Survey of literature and major aspects of international politics. May be repeated with consent of department. Maximum 9 hrs.
591 Foreign Study (1-15) See College of Arts and Sciences.
592 Off-Campus Study (1-15) See College of Arts and Sciences.
593 Independent Study (1-15) See College of Arts and Sciences.
594 College Teaching in Political Science (1) Instructional effectiveness, techniques, organization, materials for teaching political science at college level. Prereq: Consent of instructor. S/NC only.
595 Readings and Special Problems in Political Science (1-3) Prereq: Consent of instructor. May be repeated. Maximum 15 hrs.
596 Workshops in Computer Applications (1) Training in software applications to support research and decision making tasks in public service. Successful completion certifies proficiency of MPA students in use of software applications for personal computer. S/NC only.
600 Doctoral Research and Dissertation (3-15) P/NP only. E
610 Special Topics in Empirical Theory and Methodology (3) Advanced methods and procedures of analysis in political science. May be repeated with consent of department. Maximum 9 hrs.
615 Formal Political Analysis (3) Assumptions, methods and applications of formal political models, including game theory, rational choice theory, and public choice theory, and mathematical modeling. May be repeated with consent of instructor. Maximum 9 hrs.
628 Topics in Political Theory (3) Selected topics and issues in normative political theory. Specific content determined by instructor. May be repeated with consent of instructor. Maximum 9 hrs.
639 Special Topics in American Government and Politics (3) Advanced study of selected topics. May be repeated with consent of instructor. Maximum 6 hrs.
640 Special Topics in U.S. Constitutional Law (3) Systematic analysis of published research and judicial decision: development of constitutional law as major component of public policy. May be repeated with consent of department. Maximum 9 hrs.
Polymer Engineering

See Materials Science and Engineering

Psychology

(College of Arts and Sciences)

MAJOR DEGREES

Psychology ......................................................... M.A., Ph.D.

James E. Lawler, Head

Professors:

Burghardt, Gordon M. (Distinguished Prof.), Ph.D. .................. Chicago
Calhoun, William H., Ph.D. ............................ California
Fine, Harold J. (Emeritus), Ph.D. ...................... Syracuse
Handler, Leonard, Ph.D. ................................. Michigan State
Jones, Warren H., Ph.D. ................................. Oklahoma State
Lawler, James E., Ph.D. ................................. North Carolina
Lawler, Kathleen A. (Liaison), Ph.D. ........................... North Carolina
Lounsbury, John W., Ph.D. ............................... Michigan State
Lubar, Joel F., Ph.D. ............................... Chicago
Malone, John C., Ph.D. ............................... Duke
Newton, Kenneth R. (Emeritus), Ph.D. .................. Tennessee
Pollio, Howard R. (Distinguished Prof.), Ph.D. .............................. Michigan
Samejima, Fumiko, Ph.D. ................................. Kelo
Saudargas, Richard A., Ph.D. ............................. Florida State
Shrader, Raymond R. (Emeritus), Ph.D. ...................... Tennessee
Sundstrom, Eric D., Ph.D. .................................. Utah
Travis, Cheryl B., Ph.D. ................................... California (Davis)
Verplack, William S. (Emeritus), Ph.D. Brown
Wahler, Robert G. (Liaison), Ph.D. ................................. Washington
Wiberley, J. Albert (Emeritus), Ph.D. Syracuse

Associate Professors:

Baldwin, Debora R. (Liaison), Ph.D. ............................ Kent State
Johnson, Michael G., Ph.D. ............................. Johns Hopkins
Mclntyre, Anne, Ph.D. ................................. Yale
Morgan, Wesley G., Ph.D. ............................... Tennessee
Nash, Michael R., Ph.D. ............................... Ohio
Welsh, Deborah, Ph.D. ................................. Massachusetts

Assistant Professor:

Gordon, Kristina C., Ph.D. ................................ North Carolina

THE MASTER'S PROGRAM

Graduate study leading to the M.A. degree in psychology is available with a concentration in experimental psychology. This program is appropriate for students who desire a master's degree as part of their toward a doctorate or for those who wish to complement a degree in a different field.

Admission

Any student with a B.A. or B.S. may apply to the Department of Psychology for admission to the master's program. All students must also submit scores from the Graduate Record Examination (general and subject).

Major Advisor and Committee

Initially, the Director of Experimental Psychology will advise the student. As soon as possible, the student must select an advisor and obtain his or her approval for registration. Subsequently, the advisor and student will select two additional faculty members to comprise the student's master's committee. Final committee approval comes from the Graduate Dean, upon recommendation by the Department Head.

Program Requirements

All students must complete 30 semester hours of graduate level courses in psychology. These hours must include 504-05, or Statistics 531-32, or an equivalent sequence; 565 or 420; six semester hours of Thesis 500; and twelve hours of 500- or 600-level foundation courses. Students must earn a grade of B or better in all courses that are to count toward the 30-hour total. Students must also propose, conduct and successfully defend an original piece of research in the form of a master's thesis.

THE DOCTORAL PROGRAM

A student with a B.A. or B.S. may apply to the Department of Psychology for admission to the doctoral program with a concentration in experimental psychology or clinical psychology. All students must submit scores from the Graduate Record Examination (general and subject).

Experimental Psychology

The Ph.D. program in Psychology with a concentration in experimental psychology is designed to allow students to select from a variety of specializations oriented toward careers in research, teaching, and application of psychology in academic, institutional, or industrial settings. The program is flexible, individualized, and emphasizes a professional apprenticeship model of training.

The basic requirements are:

1. Twelve semester hours of statistics and research (504-05 or Statistics 531-32 or equivalent and 6 additional hours in research methods or design).
2. Fifteen semester hours in experimental psychology (565 or equivalent and 4 courses from the following: 510, 511 or 512, 513, 543, 546 or 547, 550, 560, and 570 or 571).
3. Six semester hours of research practicum (508).
4. Psychology 528 - preparation for college teaching.
5. Two 600-level graduate seminars.
6. Six semester hours of graduate level courses outside the Psychology Department.
7. Predissertation research project involving the collection of original data or the analysis of existing data, reported in publishable form and accepted by the student's advisory committee.
8. Comprehensive examination, determined and evaluated by the student's doctoral committee. This examination is comprised of an integrative review or theoretical paper and an oral exam or additional questions.
9. Twenty-four hours of dissertation research (600).
10. An original piece of research in the form of a doctoral dissertation, proposed, conducted, and defended.

Clinical Psychology

This program is designed to lay the groundwork for a career as a clinical psychologist capable of working in both academic and applied settings. The program emphasizes the theoretical foundations of psychology as well as supervised experience oriented toward the development of practical skills. The program embodies a model of clinical psychology in which practice and research are integrated.

Clinical program students must complete a predissertation research project by the end of the second year.

After forming the doctoral committee, students must then pass a comprehensive examination administered and evaluated by the committee. This examination is comprised of two papers, one addressing a topic of the student's choice, and the second addressing an understanding of one individual's personality and cognitive functions. All doctoral students must complete a minimum of 78 hours of graduate level courses, including courses required by their program; at least 6 hours in courses outside of psychology; and at least 24 hours of dissertation research (Psychology 600). Finally, students must complete an acceptable doctoral dissertation and conduct a satisfactory oral defense of the dissertation. Requirements are as follows:

1. Apprenticeship with one faculty member during the first year, two days each week.
2. Predissertation research project completed before forming a doctoral supervisory committee, reported in written form acceptable to two members of the faculty or, if reviewed and accepted for publication or external presentation, by one member of the faculty.
3. Supervised clinical placement two days (16 hours) each week during the second
year, and the following option during the third and fourth years:

a. continued two-day clinical placement in the third and fourth years.

b. teaching assistantship in the department in either the third or fourth year and two-day clinical placement in the other year.

c. satisfactory completion of listed courses (or equivalents) in the following sixteen categories:

  a. Foundations of Psychology: Biological Factors, Perception, Learning, Thinking, Motivation (513);

  b. Interviewing and Observation (558) and Laboratory (559);

  c. Research Practicum (509) (4 hrs.);

  d. Life-Span Development (512) or Developmental Psychology (511);

  e. Personality: Theory and Research I and II (570-71);

  f. History and Systems of Psychology (565);

  g. Research Questions and Designs (580);

  h. Psychological Assessment I and II (594-95) and Laboratory (596);

  i. Empirical Methods in Psychology (504) and Research Design (505);

  j. Social Psychology (550);

  k. Field Placement in Clinical Psychology (695) (18 hrs.);

  l. Dynamics of Psychopathology (573);

  m. Psychometrics (555) or Applied Psychological Measurement (557);

  n. Ethical, Legal and Professional Issues in Psychology (529);

  o. Psychodynamic Psychotherapy I and II (670-71) and Laboratory (675) (4 hrs.);

  p. Doctoral Research and Dissertations (600) 24 hrs.);

5. satisfactory completion of a one-year clinical internship at a site approved by the program.

6. Students who choose a teaching assistantship in the third or fourth year must have satisfactorily completed 528 College Teaching in Psychology.

7. satisfactory completion of at least 3 additional graduate-level courses in non-clinical topical areas.

8. satisfactory completion of a one-year clinical internship at a site approved by the program.

GRADUATE COURSES


409 Group Facilitation (3) Study of theory and techniques through supervised experience in small groups. Prereq: General Psychology or consent of instructor. May be repeated. Maximum 6 hrs.

410 Sensory Processes & Perception (3) Survey of physiological and psychological theories of perception. Audition and vision. Prereq: General Psychology or consent of instructor, Statistics in Psychology or Statistical Reasoning or Introduction to Statistics or graduate standing.

415 Psychology of Religion (3) History of psychology of religion: major philosophical and empirical orientations. Psychological function of religion for individuals and society. Prereq: General Psychology or consent of instructor.

420 History and Systems of Psychology (3) History of psychological thought. Classical approaches and recent developments. Prereq: General Psychology or consent of instructor or graduate standing.

424 Psychology and the Law (3) Psychological aspects of legal systems. Prereq: General Psychology or consent of instructor. (Same as Legal Studies 424.)

430 Health Psychology (3) Survey of psychological factors related to health and illness: stress, personality, and environment. Applications of psychological treatments to physical illness. Prereq: General Psychology or consent of instructor.

434 Psychology of Gender (3) Biological, psychological, and social factors in gender: importance of gender roles and stereotypes for behavior and experience. Prereq: General Psychology or consent of instructor. (Same as Women's Studies 434.)

440 Organizational Psychology (3) Social-psychological analysis of organizations, role-theory and systems theory. Prereq: General Psychology and Social Psychology or consent of instructor.

454 Measurement and Testing (3) Theory of test construction and psychological measurement. Statistical methods and test theory. Survey of existing tests. Prereq: General Psychology, Statistics in Psychology or Statistical Reasoning or Introduction to Statistics or consent of instructor.


450 Comparative Animal Behavior (3) (Same as Ecology and Evolutionary Biology 450.)

459 Comparative Animal Behavior Laboratory (3) Coreq: 450. (Same as Ecology and Evolutionary Biology 450.)

461 Physiological Psychology (3) Nervous system and physiological correlates of behavior: biological basis of emotion, learning, memory and stress. Prereq: General Psychology or consent of instructor and either Biodiversity and Organization and Function of the Cell or Human Origins and Principles of Biological Anthropology.

470 Theories of Personality (3) Survey of major theories of human personality and their development. Prereq: General Psychology or consent of instructor.

475 Adolescent Development (3) Theoretical perspectives and empirical research findings pertinent to adolescent development. Prereq: General Psychology or consent of instructor. Sp

480 Theories of Learning (3) Classical and current approaches to learning and cognition. Prereq: General Psychology or consent of instructor.

482 Topics in Psychology (3) Intensive analysis of special topics: Afro-American psychology or evaluation of programs in community. Prereq: General Psychology or consent of instructor. May be repeated. Maximum 6 hrs.

489 Supervised Research (1-9) Prereq: Consent of instructor. May be repeated. Maximum 12 hrs in 489, 491, 492, and 493 combined may apply toward undergraduate major.

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: the student uses University facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. SC only.

503 Research Design (3) Techniques for planning and conducting research in controlled and natural settings: experiments, quasi-experiments, observational studies, surveys, and program evaluations. Development of questions and hypotheses, design of studies to maximize validity. Prereq: Consent of instructor. Sp

505 Foundations of Applied Psychology (3) Fundamental methods for application of psychology principles and techniques in community, organizational, and industrial settings, and related ethical and theoretical issues. Prereq: 505 and consent of instructor.

508 Readings and Special Issues in Psychology (1-3) Prereq: Consent of instructor. May be repeated. Maximum 9 hrs. E

509 Research Practicum (1-3) Required of first-year graduate students in psychology. May be repeated. Maximum 9 hrs. S/N only. E

510 Topics in Psychology (3) Intensive examination of selected issues in psychology. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs. F

512 Life-Span Development (3) Theories and research concerning normal human development throughout life, adulthood and old age. Prereq: Consent of instructor.

513 Foundations of Psychology: Biological Factors, Perception, Learning, Thinking, Motivation (3) Intensive survey. Prereq: Consent of instructor.

515 Colloquium in Experimental Psychology (1) Research and practical issues in experimental psychology. Prereq: Consent of instructor. May be repeated. Maximum 4 hrs. S/N only, F,Sp

516 Colloquium in Ethology (1) Current research and theory. May be repeated. Maximum 9 hrs. (Same as Ecology and Evolutionary Biology 516.) S/N only. E

526 General Vertebrate Neuroanatomy (3) Lecture and laboratory. Structure and functioning of central and peripheral nervous system. Prereq: 461, 469, or equivalent and consent of instructor.

527 Behavioral Neurology (3) Disorders of nervous system, organic brain dysfunctions. Diagnosis and treatment. Prereq: Consent of instructor.

528 College Teaching in Psychology (3) Concepts, techniques, and materials for teaching psychology at college and/or university level. Prereq: Consent of instructor. S/N only.


545 Advanced Animal Behavior (3) (Same as Ecology and Evolutionary Biology 545.)

546 Ethological Psychology (3) Basic ethology and contemporary psychology of non-human behavior. Prereq: Consent of instructor.

547 Conceptual Foundations of Evolution and Behavior (3) Critical evaluation of seminal writings on theory and methods in comparative analysis of behavior. (Same as Ecology and Evolutionary Biology 547.)

550 Social Psychology (3) Survey of theory and research concerning interpersonal interaction and individual behavior in social context. Prereq: Consent of instructor. F

554 Laboratory in Psychometrics (3) Further learning about psychometrics theories: item response theory (modern mental test theory), factor analysis, and applications of those methods using computer programs to simulated or empirical data. Prereq: 555. May be repeated. Maximum 6 hrs.

555 Psychometrics (3) Basic concepts: factor analysis, scale testing, probability models and their applications, computerized adaptive testing and other topics. Prereq: Statistics 537-538 or equivalent. May be repeated. Maximum 6 hrs.

557 Applied Psychological Measurement (3) Issues and techniques in applying psychological measurement in organizational, clinical, and community research. Prereq: Statistics 537-538 or equivalent or consent of instructor. May be repeated. Maximum 6 hrs.

558 Studying and Observation (3) Sensitizing students to understandings and beliefs and to feelings of interviewee, and ability to understand and use language content, style, and tone. Prereq: Language course important aspects of interviewee's life. Prereq: Admission to doctoral program in clinical psychology or consent of instructor. Coreq: 656.
559 Laboratory in Interviewing and Observation (3) Prereq: Admission to doctoral program in clinical psychology or consent of instructor. Coreq: 553.

560 Psychology of Learning (3) Review of current evidence from research involving human and/or non-human animals. Prereq: 400 and consent of instructor. May be repeated. Maximum 6 hrs.

565 History and Systems of Psychology (3) History of philosophy concerning psychology. Major systems of psychology which emerged during 20th century. Prereq: Graduate standing. Sp

570 Personality: Theory and Research I (3) Advanced survey of psychodynamic and neo-Freudian approaches to personality and related research. Prereq: Admission to doctoral program or consent of instructor. F

571 Personality: Theory and Research II (3) Advanced survey of behavioral and humanistic approaches to personality: related research. Prereq: Admission to clinical program or consent of instructor.

573 Descriptive and Theoretical Psychopathology (3) Current psychiatric taxonomic system. Theories of etiology for various diagnostic categories. Examples from written case vignettes and recorded interviews. Prereq: Admission to doctoral program in clinical psychology or consent of instructor. F

575 Psychopharmacology (3) Connections between pharmacology and psychology. Prereq: Consent of instructor.

576 Object Relations (3) European and American conceptions of normal and psychopathological development of object relations. Significance for psychotherapy, psychoanalysis, and psychoanalytic theory. Prereq: Admission to doctoral program in clinical psychology or consent of instructor.

580 Research Questions and Designs (3) Question-asking process in research and strategies or designs through which answers might be derived. Prereq: Admission to doctoral program in clinical psychology or consent of instructor.

593 Independent, Off-campus, or Foreign Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 9 hrs. SNC only.

594 Psychological Assessment I (3) Basic concepts and techniques of adult assessment: intelligence tests and personality tests. Prereq: Admission to doctoral program in clinical psychology or consent of instructor. Sp

595 Psychological Assessment II (3) Basic concepts and techniques of adult assessment: intelligence tests and personality tests. Prereq: Admission to doctoral program in clinical psychology and 594 or consent of instructor. F

596 Laboratory in Psychological Assessment (1) Prereq: Admission to doctoral program in clinical psychology or consent of instructor. Coreq: 594 or 596. May be repeated. Maximum 4 hrs. SNC only. Sp

600 Doctoral Research and Dissertation (3-15) Prereq: Only by arrangement with department. May be repeated. Maximum 12 hrs.

601 Seminar in Psychology (3) Prereq: Consent of instructor. May be repeated. Maximum 12 hrs.


610 Seminar in Applied Psychology (3) Prereq: Consent of instructor. May be repeated. Maximum 12 hrs.

613 Seminar in Existential-Phenomenological Psychology (3) Prereq: Consent of instructor. May be repeated. Maximum 12 hrs.


623 Seminar in Methods of Naturalistic Research (3) Prereq: 546 or consent of instructor. May be repeated. Maximum 12 hrs.

635 Ethical, Legal, and Professional Issues in Psychology (3) Research, human services, teaching and public policy. Prereq: Admission to doctoral program in psychology or consent of instructor. (Same as Counseling Education and Counseling Psychology 635 and Psychoeducational Studies 635.) SNC only.

670 Psychotherapy I (3) Theories and principles. Prereq: Admission to doctoral program in clinical psychology or consent of instructor. F

671 Psychotherapy II (3) Theories and principles. Prereq: Admission to doctoral program in clinical psychology and 670 or consent of instructor. Sp

673 Laboratory in Psychotherapy (2) Prereq: Admission to doctoral program in clinical psychology or consent of instructor. Coreq: 670 or 671. May be repeated. Maximum 6 hrs. SNC only.

683 Seminar in Behavioral Medicine (3) Current research and theory concerning relationships between behavior and health. Prereq: Consent of instructor. May be repeated. Maximum 12 hrs.

695 Field Placement in Clinical Psychology (3) Prereq: Admission to doctoral program in clinical psychology and consent of instructor. May be repeated. Maximum 24 hrs. SNC only. E

696 Advanced Psychology Clinic Placement (1-3) Prereq: Admission to doctoral program in clinical psychology or consent of instructor. May be repeated. Maximum 24 hrs. SNC only. E

697 Supervised Field Work in Applied Psychology (1-6) Guided practice in applying psychological principles and techniques to the professional, organizational, and community settings. Prereq: 505, 507, 555, 557, and consent of instructor. May be repeated. Maximum 12 hrs. SNC only.

Religious Studies

(College of Arts and Sciences)

Charles H. Reynolds, Head

Professors:
Dungan, David L., Th.D..............Harvard
Hackett, Rosalind I. J., Ph.D.........Aberdeen
Humphreys, W. Lee, Ph.D............Union
Lingle, David E., Ph.D..............Vanderbilt
Lusby, F. Stanley (Emeritus), M.Div. ........................................ Colgate Rochester
Norman, Ralph V., Jr., Ph.D.........Yale
Reynolds, Charles H., Ph.D..........Harvard
Schmidt, Gilia G., Ph.D...............Pittsburgh

Associate Professors:
Fitzgerald, James L., Ph.D............Chicago
Gwynne, Rosalind W., Ph.D..........Washington
Hodges, John O., Ph.D..............Chicago
Hulsether, Mark, Ph.D...............Minnesota
Levering, Miriam L., Ph.D..........Harvard

A master's degree in Philosophy with a concentration in religious studies is available. Contact the department for details of this program. Graduate courses in religious studies provide opportunity for students in a variety of disciplines to pursue work in religious studies as a graduate concentration.

GRADUATE COURSES

405 Modern Jewish Thought (3) History, culture, and geography of the now Israeli portion of Levant from 1850 to present. Founding of modern state of Israel in 1948 and political complexities of Middle East. Israeli culture and literature. Writing emphasis course. (Same as Judaic Studies 405.)

411 Modern Religious Philosophies (3) Religious implications of major Western thinkers and movements from Nietzsche of 1840s to transtheosophy. (Same as Philosophy 411.)

412 Classical Indian Systems of Philosophy: The Moksha Tradition (3) Investigation of selected writings and philosophic problems of traditions of Samkhya, Yoga, Vedanta, Buddhism, Jainism. Prereq: 374 or 376 or consent of instructor.

425 Seminar in Western Religions (3) Selected figures, themes, movements, and problems. Content varies. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs.

430 Seminar in American Religion (3) Selected figures, themes, movements, and problems. Content varies. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs.

440 Seminar in Comparative Religion (3) Selected figures, themes, movements, and problems. Content varies. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs.

490 Readings and Research in Religious Studies (3) Prereq: Consent of instructor. May be repeated. Maximum 6 hrs.


506 Historical and Comparative Studies of Religions (3) Description and analysis of religious traditions, phenomena, and themes. May be repeated. Maximum 6 hrs.

507 Religion, Power and Society (3) Studies of religions in relation to social structure and political institutions: issues of gender, race, class, ethnicity, caste, slavery, religion and the state, globalization and human rights. May be repeated. Maximum 6 hrs.

513 Religion, the Arts, and the Media (3) Material and expressive culture, religion and journalism, mass communication technologies, popular culture, issues of representation, cultural studies methodologies. May be repeated. Maximum 6 hrs.

514 Religion and Healing (3) Ecology of religion, nature, shamanism, healing of body and mind, spirituality, religious dimensions of medical ethics. May be repeated. Maximum 6 hrs.


520 Readings in the Study of Religion (1-6) May be repeated. Maximum 12 hrs.

532 Topics in the History of Religions (3) Prereq: Consent of instructor.

533 Topics in Religious Thought (3) Prereq: Consent of instructor.

591 Foreign Study (1-15) See College of Arts and Sciences.

592 Off-Campus Study (1-15) See College of Arts and Sciences.

593 Independent Study (1-15) See College of Arts and Sciences.

Russian

See Modern Foreign Languages and Literatures
Small Animal Clinical Sciences
See College of Veterinary Medicine and Comparative and Experimental Medicine

Social Work
(College of Social Work)

MAJOR DEGREES
Social Work............................. M.S.S.W., Ph.D.

Karen Sowers, Dean

Professors:
Bleich, Mary H. (Emeritus), M.S. Ohio State
Cetingok, Muammer, Ph.D. Washington (St. Louis)
Fryer, Gideon W. (Emeritus), Ed.D. Columbia
Gallois, Charles A., Ph.D. Washington (St. Louis)
Gallman, Dennis R., Ph.D. Washington (St. Louis)
Granger, Ben P. (Emeritus), Ph.D. Brandeis
Hirayama, Hisashi (Emeritus), Ph.D. Washington (St. Louis)
Nooe, Roger M., Ph.D. Tulane
Mullins, M. Kate (Emeritus), Ph.D. Chicago
Page, Timothy F., Ph.D. Western Michigan

Associate Professors:
Bailes, Melinda (Nashville), M.S.S.W. Tennessee
Bowers, Karen, Ph.D. Florida State
Combs-Orme, Terri, Ph.D. Washington (St. Louis)
Dupper, David R., Ph.D. Florida State
Evans, Theora A., Ph.D. Minnesota
Frye, Eunice (Emeritus), Ph.D. New York (U. Buffalo)
Fryer, Gideon W. (Emeritus), Ed.D. Columbia
Gallois, Charles A., Ph.D. Washington (St. Louis)
Granger, Ben P. (Emeritus), Ph.D. Brandeis
Hirayama, Hisashi (Emeritus), Ph.D. Washington (St. Louis)

Clinical Associates/Field Practice Coordinators:
Allen, Sandra (Memphis), M.S.S.W. Tennessee
Bailes, Melinda (Nashville), M.S.S.W. Tennessee
Betz, Phyllis (Knoxville), M.S.S.W. Tennessee

THE MASTER'S PROGRAM
The Master of Science in Social Work program prepares social workers to provide professional leadership in 1) clinical social work practice and 2) social work management and community practice. These objectives are met through a curriculum requiring of all students a professional foundation and a concentration in either clinical social work practice or social welfare management and community practice. The M.S.S.W. program is accredited by the Council on Social Work Education.

Admission Requirements
Admission to the master's program is based on the following requirements:
1. A Bachelor's degree from an accredited college or university with appropriate preparation in the social sciences. At least three-fourths of the applicant's undergraduate work should be in the social sciences, humanities, physical sciences, and other Arts and Sciences subjects. Applicants must have a course in human biology and demonstrate a liberal arts perspective through coursework in at least four of the following five areas: economics or mathematics; government, political science or history; sociology or anthropology; psychology; philosophy, literature, or the arts.
2. Applicants with other academic backgrounds may request consultation to discuss ways that they can meet the requirements.
3. Students must successfully complete a minimum GPA of 2.7 for admission to The Graduate School.
4. Students must have an overall GPA of 3.0 or better on all graded courses and satisfactory performance in field practice.

The Professional Foundation Curriculum
All students must complete 30 semester hours in the foundation curriculum consisting of 24 hours in foundation classroom courses and 6 hours in field practice. The foundation is the initial phase of the master's program. It contributes to the process of professional identification and provides a comprehensive, broad base of theory, knowledge and skills from which to practice. The foundation classroom courses include Foundations of Social Work Practice I and II; Social Welfare Policy and Services; Social Work Research; and Social Work and Oppression. Students also complete a two-semester field placement, Field Practice (6 hours). Upon successful completion of the foundation curriculum, all students must complete a minimum of 30 hours in the concentration curriculum including field practice (12 hours). Students select a concentration in clinical social work practice or social welfare management and community practice.

Clinical Social Work Practice: The clinical social work practice concentration focuses on students developing expertise in clinical social work practice with client systems including individuals and small groups, particularly with clients from high-risk and vulnerable groups. The concentration emphasizes the theoretical and empirical knowledge and practice skills in differential assessment, clinical interventions and practice evaluation. The concentration also emphasizes knowledge and skills directed...
Experiences are planned and designed within the placement, each student’s placement is related to the foundation curriculum content. Students are responsible for meeting the requirements of their placement agencies in terms of office hours and workload coverage. This responsibility begins the first year of field practice and may result in variations in holidays and office hours for the student.

Transfer Credits
Coursework equivalent to the first year of the master’s program, completed in another accredited graduate social work program, is usually accepted toward degree requirements. Transfer courses must meet the admission requirements of The Graduate School and the College of Social Work. Transfer courses must be approved by the Dean of Graduate Studies and meet the following criteria:

1. The coursework must be equivalent to specific courses approved by the Doctoral Program Committee.
2. The coursework must be completed within the last three years of the student’s master’s program.
3. The coursework must be completed with a grade of B or better.

Field Practice
Field instruction is a critical component of the student’s first and second year programs. Through cooperation with a wide range of social service agencies and human service programs throughout Tennessee, the college is able to provide field placements in a variety of social work practice areas. The faculty works closely with the placement agencies and the field instructors to ensure that students have quality field practice experiences that meet the requirements of the core curriculum and the concentration.

The college uses a concurrent class and field placement system. Students are in field two days per week during the first year and three days per week during the second year.

First-year agency placements are selected to provide practice experiences related to the foundation curriculum content. Within the placement, each student’s experiences are planned and designed according to educational objectives.

Second-year placements are selected according to the student’s area of concentration, individual career interests and educational needs. The student actively participates with the field practice coordinator and the educational committee in selection of the second-year placement. The second-year field placement experience focuses on the integration of social work knowledge and values and emphasizes the acquisition and development of practice skills.

Students are responsible for meeting the requirements of their placement agencies in terms of office hours and workload coverage. This responsibility begins the first year of field practice and may result in variations in holidays and office hours for the student.

Students receiving a grade of NC in field practice may not repeat the field practice.

Admission Requirements
The Ph.D. program is designed for students who have completed a master’s degree in an accredited school of social work and have post-master’s social work/social welfare experience. Applicants who do not meet these requirements, but believe they have equivalent credentials should contact the Chair of Ph.D. program for further information regarding admissions criteria.

General Requirements

1. A minimum of 66 hours beyond the master’s degree including: a) completion of 27 hours of required coursework; b) completion of 15 credits of advanced electives, at least 12 of which are taken outside the department, and 9 of those 12 related to the dissertation; and c) completion of at least 24 credit hours of dissertation research.

2. Successful completion of qualifying and comprehensive examinations.

3. Completion and defense of the dissertation.

Curriculum
The curriculum of the Ph.D. program consists of foundation coursework, electives, and dissertation research. The foundation curriculum consists of 27 hours of coursework in the history and philosophy of social work, issues in direct service and administration and planning, areas of practice, and research methodology and statistics. Upon this foundation, students and their academic committees develop a plan of study consisting of coursework in Social Work and other departments of the University.

Typically, the 24 hours of foundation curriculum are completed and elective coursework begun during the first year of study. Social Work 670 and the elective requirement are completed and dissertation research begun in the second year of study, and dissertation research is continued in the third year of study. While it is generally expected that the coursework will be completed on a full-time basis, dissertation research can be completed on a part-time basis.

Specific courses required are 601, 602, 612, 613, 640, 650, 670, and Statistics 531 and 532 or any two graduate level statistics courses approved by the Doctoral Program Chair.

Examinations
All doctoral students are required to pass a qualifying examination and a comprehensive examination. The qualifying examination covers the foundation curriculum. The comprehensive examination is administered by members of the doctoral committee and is designed for the student to demonstrate...
comprehensive knowledge of the major and cognate areas and the dissertation topic. In case of failure of either examination, the student may request a retake. The result of the second examination is final.

Financial Aid

Financial aid is available to qualified students in the form of fellowships, scholarships, and teaching and research assistantships. Graduate assistantships and other forms of assistance are awarded on the basis of merit and interest to applicants who are accepted into the Ph.D. program.

MINOR IN GERONTOLOGY

Graduate students in the College of Social Work, at the Knoxville location, may pursue a specialized minor in gerontology. This Interdepartmental/Interdisciplinary minor gives the student an opportunity for combining the knowledge about aging in American society with his/her major concentration. Please refer to Human Ecology for specific requirements.

POST-MASTER'S CERTIFICATE IN MANAGEMENT AND COMMUNITY PRACTICE

The College of Social Work offers a 15-credit hour post-master's certificate program designed for social workers desiring supervisory, management, administration and community practice training and education to enhance career advancement or career redirection. Required for admission is a master's degree in social work or closely related field.

Course requirements are 541, 543, 547, and two courses selected from 550, 551, 552, 555.

ACADEMIC COMMON MARKET

An agreement among southern states for sharing graduate programs allows legal residents of some states to enroll in certain programs at UT on an in-state tuition basis. The M.S.W. and Ph.D. programs in Social Work are available to residents of the state of Arkansas; the Ph.D. to residents of Delaware, Oklahoma or West Virginia.

Additional information may be obtained from the Admissions Specialist in the Office of Graduate Student Services.

GRADUATE COURSES

NOTE: Graduate students majoring in fields other than social work are admitted to certain social work courses with the approval of the College of Social Work and the student's major professor.

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

501 Foundations of Social Work Practice I (3) Survey of history, mission, and identity of profession. Basic theory, professional values and ethics, and methods of social work practice at various systems levels. Assessment, planning, communication, intervention, and evaluation skills.

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 degree is completed. May not be used toward degree requirements. May be repeated. S/N/C only. E

503 Foundations of Social Work Practice II (3) Generalist practice with family and small group systems. Ecological understanding of such systems and their adaptation to environments. Various social work roles and intervention strategies pertaining to client systems.

504 Foundations of Social Work Practice III (3) Basic theory, methods, and strategies in implementing planned change within and among larger social systems: task groups, human service organizations, and community systems. Various practice roles: planner, program developer, supervisor, administrator, advocate and task group leader.

506 Social Work Research (3) Research methodologies with respect to evolution and application to social work theory and practice. History and philosophies of science; problem formulation; research design; ethics; instrument use and construction; data collection; analysis and reporting; and evaluation and utilization of research.

508 Practicum in Social Work Research (3-6) Supervised practice in application of research methods to social work. May be repeated. Maximum 6 hrs. S/N/C only.

509 Graduate Seminar in Public Health (1) Same as Public Health 509, Exercise Science 509, Nutrition 509, and Nursing 509.

514-15 Human Behavior in the Social Environment I, II (3,3) Major social science theories that inform social work profession's understanding of human behavior and social systems from ecological perspective. Interactions among biological, social, psychological, and cultural systems on development across life cycle. Effects of ethnic, racial, economic, gender, and sexual orientation variables. 514—Life cycle from infancy through adolescence. 515—From young adulthood through senescence.

516 Social Welfare Policy and Services (3) Development of contemporary social policy at local, state, national, and international levels. Contribution of social work professionals to formal policy-making process through which macrosocial change is effected and through which aggregate social welfare services are proposed, authorized, financed, and programmed. Theories of complex organizations applied to social welfare service delivery settings.

518 Social Work and Oppression (3) Sources, dynamics, and impact of oppression in U.S. society as manifested in both social/ecological/economic systems and personal experience. Connections among various forms of oppression: sexism, classism, and heterosexism, and forces that perpetuate such conditions.

521 Clinical Social Work Practice with Individuals (3) Theories, knowledge, and skills for clinical practice with individuals from ecological perspective. Therapeutic process and intervention strategies, incorporating content from psychodynamic and cognitive practice models, and specific client problems.

523 Clinical Social Work Practice with Families (3) Concepts related to understanding and analyzing family dynamics and interactional patterns from perspective of major family therapy models. Techniques of intervention in terms of application to families with varied system and individual problems and to families from varied social and cultural backgrounds.

525 Clinical Social Work Practice with Groups (3) Theoretical and historical approaches to social work with groups and clinical principles supporting specific types of group work used in clinical practice and associated leader interventions.

526 Evaluating Clinical Practice (3) History and philosophies, conceptual approaches, techniques and methods in the practice of evaluation as applied to implementation and evaluation of direct services to clients.

530 Seminar in Clinical Social Work (2-3) Topics in theory and practice of clinical social work with individuals, couples, families and groups. May be repeated. Maximum 6 hrs.

532 Short-Term Interventions (3) Theory and practice of planned short term, emergency, and crisis interventions.

533 Social Work Interventions with Couples (3) Theories regarding contemporary marital/partnering lifestyles, problems in areas in relationships, methods and skills for problem resolution.

534 Social Work Interventions with Children and Adolescents (3) Various practice modalities for assessing and intervening with children and adolescents.

535 School Social Work (3) Place of school as community institution and resource. Methods, processes, and techniques employed in school social work.

541 Leadership and Management in Human Services (3) Management practices and leadership skills required in development and management of human service delivery systems. Issues regarding human resources management, resource allocation, strategic planning, and organizational dynamics.

543 Financial Management and Resource Development (3) Administrative decision-making related to financial planning and resources allocation in human service organizations. Knowledge and skills in budgeting, allocating, expenditure control, fundraising, grant writing, marketing, and evaluation.

547 Evaluation Research (3) History and philosophies of social work research. Tools and techniques and methods, and issues in practice and utilization of evaluation research as applied to development and evaluation of social work programs and policies. Issues pertaining to strengths and limitation of various evaluation methods, microcomputer application of data, and measurement of program goals and objectives.


552 Community Organization (3) Locality development and planning and social action as practice models for development of resources to meet human needs.

555 Current Issues in Management and Community Practice (3) Major trends affecting delivery of human services and requisite knowledge and problem solving skills needed to address them: board/leadership development, coalition building, conflict management, and team development.

561 Supervision and Consultation in Social Work (3) Roles, techniques, and practices of social work supervision and consultation.

564 Substance Abuse (3) Survey and analysis of social, cultural, medical and psychological factors underlying drug and alcohol problems, drug abuse and addiction; recent research and practice innovations.

566 Social Gerontology (3) Physical, psychological and social aspects of aging, and major social policies and programs.

580 Field Practice (3) Instruction and supervision in social work practice. S/N/C only.

581 Field Practice (3) Instruction and supervision in social work practice. S/N/C only.

582 Field Practice (6) Instruction and supervision in clinical social work practice or management and community practice. S/N/C only.

583 Field Practice (6) Instruction and supervision in clinical social work practice or management and community practice. S/N/C only.

584 Field Practice (2-6) Instruction and supervision in social work practice. S/N/C only.


588 Independent Study (1-6) Individualized study, student selects, designs, and completes examination of special issue or problem. May be repeated. Maximum 6 hrs.
Sociology

(College of Arts and Sciences)

MAJOR

DEGREES

Sociology .............................................. M.A., Ph.D.

Suzanne B. Kurth, Head

Professors:

Benson, Michael L., Ph.D. .................. Illinois
Black, James A., Ph.D. ....................... Iowa
Hastings, Donald W., Ph.D. ............. Massachusetts
Hood, Thomas C., Ph.D. ................. Duke
Perrin, Robert G., Ph.D. ................. British Columbia
Shover, Neil, Ph.D. ......................... Illinois
Wallace, Samuel E., Ph.D. ............. Minnesota

Associate Professors:

Cable, Sherry, Ph.D. ....................... Penn State
jalata, Asafa, Ph.D. ............... SUNY (Binghamton)
Jones, Robert E., Ph.D. .......... Washington State
Kurth, Suzanne B., Ph.D. ........ Illinois (Chicago)

Assistant Professor:

Shenef, Jon, Ph.D. ................. California (Davis)

The Sociology Department offers graduate study leading to the Master of Arts and the Doctor of Philosophy. The M.A. program includes a thesis and non-thesis option. The graduate program has concentrations in criminology, environment, energy, and resource policy; and political economy. The concentration curriculum includes 505, 551, 653, and 655. The energy, environment and resource policy concentration includes 560, 563, 661, 662, and 665. The political economy curriculum includes 504, 540, 541, 543, 644, and 645. Both the master's and the doctoral program allow for the construction of individualized programs of study. Detailed information may be obtained from the Programs and Curriculum Committee in Sociology. New students are admitted in the fall semester only and applications must be received by the Graduate Student Services Office by February 1.

ADMISSION REQUIREMENTS

1. Acceptable scores on the general Graduate Record Examination (verbal, quantitative, and analytical) are required. GRE scores in the subject area (Sociology) are requested but not required.
2. Three letters of recommendation (forms may be obtained from the department).
3. Completion of the appropriate previous degree (baccalaureate, preferably with a major in one of the social sciences, for the M.A. program; master's degree in one of the social sciences for the doctoral program).

THE MASTER'S PROGRAM

Thesis Option

A minimum of 30 hours beyond the baccalaureate degree, including 24 hours of coursework and 6 hours of Thesis 500, is required. Students must complete Sociology 521, 531, Statistics 531, and one foundation course (504, 505, or 560). Sociology 534, 592, and Statistics 532 are recommended. A student's plan of study should follow one of the following approaches: Plan 1, 6 hours in one of the department's concentrations and 6 hours in a second area, including areas outside the department, subject to the approval of the student's committee; Plan 2, 12 hours in a special area of study approved by the student's committee and the department's Programs and Curriculum Committee. Students are encouraged to prepare a paper synthesizing their knowledge of the concentration(s). Students who incorporate supervised field experience in their programs are encouraged to prepare a report based on those experiences that demonstrates their understanding of research, theory, and methods and on their special areas of study.

Subject to approval by the student's committee, up to 12 hours may be taken in courses outside the department for either program. Sociology courses at the 400 level may also be taken with the approval of the student's committee.

THE DOCTORAL PROGRAM

Coursework

Twenty-four hours of coursework beyond the master's degree are required (exclusive of S/NC credit). Twelve hours of course credit in Sociology at the 600 level are required. Students who enter the program without the courses required for the M.A. degree (521, 531, Statistics 531) or their equivalents must take them as remedial work which does not count toward residence. Students must complete Sociology 622; 534, 653, 633, or 636; and Statistics 532 or another advanced course in statistics. Completion of 9 hours in each of two concentrations is encouraged. A student who cannot achieve his/her educational goals within the department may construct an individualized course of study subject to the approval of the student's doctoral committee and the Programs and Curriculum Committee. Sociology courses at the 400 level may not be taken without the consent of the student's advisor and the Programs and Curriculum Committee. Six hours may be taken in related fields without petitioning the Programs and Curriculum Committee for approval. The student's program may include a minor or cognate field.

Comprehensive Examinations

Written examinations in four areas are required (sociological theory, research methodology, and two substantive areas). Doctoral students are eligible to take the theory and methodology examinations whenever offered. Substantive examinations may be taken upon completion of theory and methodology examinations. Detailed information on examinations and examination options (generalist, specialist, and collateralist) may be obtained from the department.

Dissertation and Final Examination

A dissertation based on original research must be completed (24 hours). The candidate must pass an oral defense of the dissertation, including the theory and methodology related to the research, in accordance with the deadlines specified by The Graduate School.

MINOR IN ENVIRONMENTAL POLICY

The department participates in a program designed to give graduate students an opportunity to develop an interdisciplinary specialization in environmental policy. See Economics for program description.
MINOR IN GERONTOLOGY

Graduate students in the Department of Sociology may pursue a specialized minor in gerontology. This interdisciplinary/interdisciplinary minor gives the student an opportunity for combining the knowledge about aging in American society with his/her major concentration. Please refer to Human Ecology for specific requirements.

ACADEMIC COMMON MARKET

An agreement among southern states for sharing gradate programs allows legal residents of some states to enroll in certain programs at UT on an in-state tuition basis. The M.A. program in Sociology is available to residents of the state of Virginia (concentration in criminology only), the Ph.D. to residents of Florida (concentration in criminology only), or West Virginia. Additional information may be obtained from the Admissions Specialist in the Office of Graduate Student Services.

GRADUATE COURSES

405 Sociology of Sport (3) Social meaning, organization, and process of sport. Prereq: 291 or consent of instructor.
414 Sociology of Health Care (3) Organization of health care facilities, staff—patient relationships, demographic characteristics, and prevalence of disease.
415 Sociology of Aging (3) How roles and statuses change with age in relation to major social institutions; impact that rapidly increasing number of older people has on society, effect of society on older people.
446 The Modern World System (3) Critical examination of capitalist world-system as social system, its coherence, boundaries, regions, member groups, cleavages, and patterns of conflict. Analysis of who gets what, why, and how in global political economy.
451 Criminal Justice (3) Critical assessment of criminal justice apparatus and its components. Brief examination of police; criminal courts and institutions, and prisons; prison problems, and parole. Analysis of their operation and impacts. Recommended prereq: 350. (Same as Legal Studies 451.)
455 Society and Law (3) How laws and legal processes are affected by social change; social impact of legal sanctions; relations between law and social justice. (Same as Legal Studies 445.)
459 White-Collar Crime (3) Distinctive nature and dynamics of white-collar crime, victims and costs of white-collar crime, organizations as white-collar offenders, causal theories, and dynamics of responses to white-collar crime by private and public parties.
462 Population (3) Demographic factors and social structure; trends in fertility, mortality, population growth, migration, distribution, and composition; population policy.
464 Urban Ecology (3) Relation of humans to their urban environment; conservation and use of appropriate technology. (Same as Urban Studies 464.)
465 Social Values and the Environment (3) Human dimensions of ecosystem management and public policy. Applied focus on social values actuated within specific biophysical and social settings. Prereq: 110 Social Problems and Social Change or 120 General Sociology or consent of instructor.
471 Sociolinguistics (3) (Same as English 471 and Linguistics 471.)
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 when 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
504 Sociological Foundations of Political Economy (3) Survey of contemporary sociological theories of political economy, sources of political and economic power and conflict.
505 Foundations of Criminology (3) Critical overview of contemporary developments in criminology, theories of crime causation and theories of responses to crime. Prereq: 350 or equivalent.
507 Foundations of Social Psychology (3) Current and classical theoretical perspectives in social psychology.
510 Teaching Sociology (3) Art and craft of teaching sociology from curricular considerations through teaching techniques. May be repeated. Maximum 6 hrs.
521 Sociological Theory I (3) Assessment of what sociological theory is; its major figures and their approaches to understanding society.
531 Research Methods in Sociology (3) Research design, measurement, sampling, quantitative and qualitative data collection techniques, data, reduction, and analysis.
534 Advanced Sociological Analysis (3) Underlying assumptions and logical procedures used by sociologists in formulating explanations. Foundations of sociological research strategies and techniques.
540 Occupations (3) Occupations in relation to individuals and society, economic stratification, and social organizations.
541 Collective Behavior, Social Movements, Social Change (3) Basic theory and research on conditions of social unrest in human collectivities and efforts of collectives to change existing society.
543 Sociology of Development (3) Sociological theories and studies of development: modernization, colonialism, dependency, comparative impact of various development paths upon selected aspects of social structure and change.
551 Delinquency and the Social Structure (3) How study of delinquency and juvenile justice is affected by changing structures of childhood and adolescence, changing demographic and institutional influences, and changing views about responsibility and punishment.
560 Environmental Sociology (3) Systematic treatment of current research in environmental sociology. Social impact analysis and conflicts over environmental issues.
563 Demographic Techniques (3) Standard rates and measures of demographic variables, life table analysis, increment—decrement models, and survey techniques of population analysis.
568 Advanced Rural Sociology (3) (Same as Rural Sociology 580.)
585 Seminar in Gerontology (1) (Same as Human Ecology 585, Counselor Education and Counseling Psychology 585, Exercise Science 585, Nursing 585, Public Health 585, Psychosocial Services 585, and Social Work 585.)
591 Foreign Study (1-15) See College of Arts and Sciences.
592 Off-Campus Study (1-15) See College of Arts and Sciences.
593 Independent Study (1-15) See College of Arts and Sciences.
599 Readings (3) Selected topics. May be repeated. Maximum 6 hrs.
600 Doctoral Research and Dissertation (3-15) P/NP only. E
622 Sociological Theory II (3) Distinct schools of sociological theory and contributions of their principal exponents. Prereq: 521 or consent of instructor.
629 Supplementary Readings in Sociological Theory (3) Individual guidance. Preparation for comprehensive examination. Prereq: Consent of instructor. S/NC only.
631 Survey Design and Analysis (3) Systematic exploration of survey problems through student participation in design and analysis of survey. Prereq: 531 or consent of instructor. (Same as Child and Family Studies 621.)
632 Field Research (3) Research experience in selected field sites using techniques of interviewing, participant observation, and other methods of field research. Prereq: 531 or consent of instructor.
633 Supplementary Readings in Methodology (3) Individual guidance. Preparation for comprehensive examination. Prereq: Consent of instructor. S/NC only.
644 Political Sociology (3) Critical examination of theories of state and political processes.
645 Advanced Studies in Political Economy (3) Topical seminar. Prereq: 504 or consent of instructor. May be repeated. Maximum 6 hrs.
649 Supplementary Readings (3) Prereq: Consent of department. May be repeated. Maximum 6 hrs. S/NC only.
653 Sociology of Law (3) Intensive examination of selected topics in sociology of law. Prereq: 505 or consent of instructor.
655 Advanced Studies in Criminology (3) Intensive examination of selected topics in criminology. Recommended prereq: 505. May be repeated. Maximum 6 hrs.
661 Theory and Methods of Human Ecology (3) Historical and contemporary studies of interaction between humans and their environment. Prereq: Consent of instructor.
662 Urban and Regional Sociology (3) Historical and contemporary studies of South and Appalachian region with comparisons to other regions.
665 Advanced Studies in Energy, Environment and Natural Resources Policy (3) Topical seminar covering particular lines of research and theory within area. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs.
678 Advanced Studies in Social Psychology (3) Selected contemporary research issues related to social psychological theories. Prereq: 541 or consent of instructor. May be repeated. Maximum 6 hrs.
695 Advanced Special Topics (3) Topic of special interest or student-initiated courses that will not be regularly offered. Prereq: Consent of department. May be repeated. Maximum 6 hrs.

Spanish
See Modern Foreign Languages and Literatures

Speech Communication

(College of Communications)

MAJORS

Speech Communication

DEGREES

Communications..............................M.S., Ph.D.
John W. Haas, Head

Professors:
Julian, Faye D. (Liaison), Ph.D.......Tennessee
Leaser, Lorraine W., Ed.D...............Tennessee
Yeomans, G. Allan (Emeritus),
Ph.D. Louisiana State

Associate Professors:
Ambrester, M. L., Ph.D................Ohio
Graduate courses in Speech Communication also provide opportunities for students in a variety of disciplines to investigate how oral language can effect changes in the knowledge, the understanding, the ideas, the attitudes, or the behavior of other human beings.

GRADUATE COURSES

466 Rhetoric of the Woman's Rights Movement to 1920 (3) Historical and critical study of rhetoric in campaign for women's rights in United States from 1830's through 1920's. (Same as Women's Studies 466.)

476 Rhetoric of the Contemporary Feminist Movement (3) Historical and critical study of rhetoric in campaign for women's rights in United States from 1949 to present. (Same as Women's Studies 476.)

505 Research Methods (3) Understanding of wide array of data collection and analysis procedures used in speech communication research. Development of project/thesis proposal.

510 Orientation to Teaching Assistantship (1) Curriculum, classroom management, and other issues associated with teaching at college level. For departmental GTAs.

525 Seminar in Interpersonal Health Communication (3) Current research in health communication support groups, medical ethics, medical narratives, doctor-patient communication, or interpersonal communication theories. Perspectives in medicine.

530 Special Topics in Speech Communication (3) Contemporary topics. Prearranged consent of instructor. May be repeated. Maximum 6 hrs.

535 Contemporary Rhetorical Theory (3) Current theoretical contributions to rhetoric: Burke, Perelman, Weaver, feminist and critical scholars.

530 Directed Reading and Research (3) May be repeated. Maximum 6 hrs.

531 Independent Study (1-5) Independent study outside traditional classroom setting: community involvement and/or work experiences. Credit given only upon fulfilling all requirements set by department. May be repeated. Maximum 15 hrs.

592 Off-Campus Study/Internship (1-6) Independent study outside traditional classroom setting: community involvement and/or work experiences. Credit given only upon fulfilling all requirements set by department. May be repeated. Maximum 6 hrs.

593 Independent Study (1-5) Independent study by individual under direction of faculty member. Must obtain approval of faculty member and department prior to study.

THE MASTER'S PROGRAM

The M.S. program in Statistics provides students with the foundations in theory and practice required for careers in applied statistics. In addition to the education traditionally offered in such a program, the department offers a concentration in industrial statistics, which provides unique opportunities for experiences in practical applications of statistics. Through involvement in The University of Tennessee Practical Strategies for Process Improvement Institute and related programs, department faculty participate in a variety of consulting and research projects in industry. Students may supplement their classroom study with an industrial internship and participation in research projects dealing with industrial problems. Department faculty also collaborate with researchers from many academic disciplines. Statistics graduate students may gain consulting experience by working with faculty involved in these consulting activities. All students are encouraged to participate in supervised internship or consulting activities as part of their graduate program. Individuals with undergraduate or graduate degrees in other disciplines are encouraged to enter this program. The candidate's mathematics background should include differential and integral calculus of several variables. Individuals with limited mathematics background should seek departmental guidance regarding specific ways in which they may prepare themselves for the program by taking coursework as non-degree students. Requests for application forms and further information may be sent to the Director of Graduate Study, Department of Statistics, Steedle Management Center, University of Tennessee, Knoxville, TN 37996-0532 or mleitnaker@utk.edu or http://bus.utk.edu/stat.

Admission Requirements

General admission requirements for The Graduate School are stated beginning on page 12. Applicants for Statistics must submit results of the Graduate Record Examination (GRE) general portion, although GMAT exam scores may be substituted. Applicants for the statistics program must have completed at least two years of college-level mathematics, including the calculus of several variables and matrix algebra, and be proficient in a computer language. Applicants whose native language is other than English must submit results of the Test of English as a Foreign Language (TOEFL).

Curriculum

A minimum of 33 credit hours must be completed for the master's degree. Required of all students are 6 hours in statistical methods, 6 hours in statistical theory and 1 hour in statistical computing. Students must complete a minimum of 21 hours in approved statistics courses, exclusive of consulting, internship, independent study, or thesis.

Thesis or Independent Study

The thesis option for the master's degree requires the student to complete 6 hours for the thesis. Alternatively, the non-thesis option requires a minimum of 3 hours for an independent study project.

Comprehensive Examination

Students must pass a two-part written comprehensive examination covering 1) theory and 2) methods. Upon failing either part of the examination, the student may retake it. The result of the second examination is final. For students writing a thesis, this examination must be passed before the thesis is defended.

Department of Speech Communication offers a concentration area for the master's degree with a major in Communications and participates in the interdisciplinary doctoral program. See Communications for additional information.
INTERCOLLEGIATE GRADUATE STATISTICS PROGRAM

The Intercollegiate Graduate Statistics Program (IGSP) is a formal University of Tennessee academic program established to enable students to earn either a minor or an M.S. in Statistics simultaneously with a master's or doctoral degree in another department. Approved coursework taken to meet doctoral requirements in the student's home department may also be credited toward the M.S. in Statistics. Similarly, approved coursework selected from statistics courses taken to meet the requirements for a master's or doctoral degree in another department may also count toward the minor in Statistics. The program is open to graduate students in all departments which have an approved minor and/or M.S. joint major curriculum offered through the program. The program is administered by an Executive Committee, consisting of college representatives from all colleges with approved programs, with advisory input from the program faculty.

Degree Program

<table>
<thead>
<tr>
<th>Hours in Approved IGSP Courses</th>
<th>Master's in home department, minor in Statistics</th>
<th>Master's in home department, M.S. in Statistics</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctorate in home department, minor in Statistics</td>
<td>Doctorate in home department, M.S. in Statistics*</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Doctorate in home department, M.S. in Statistics*</td>
<td>24</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The M.S. in Statistics requires 33 hours.

Course options consist of courses in statistics, offered either by the Department of Statistics or by other departments, which have been reviewed and approved by the IGSP Executive Committee. Students taking an M.S. in Statistics must pass the two-part comprehensive examination covering statistical theory and methods. Students taking a minor in Statistics in conjunction with a doctorate in another field must pass a written comprehensive examination in Statistics, constructed and evaluated by the student's Examination Committee. No formal comprehensive examination is required of students earning a Statistics minor along with a master's in another field beyond questions which the home department wishes to include as part of the comprehensive examination for the master's degree.

General Admissions and Degree Requirements

1. The student's home department must have approved a program of courses with the Executive Committee. That program will specify the sequences of statistics courses, chosen from the IGSP approved list, that are considered appropriate by the home department. Students who wish to participate in this program should contact their college representative or the Chair of IGSP in the Department of Statistics.

2. The student's graduate committee must include a member of the IGSP faculty. For students seeking doctoral degrees or the M.S. in Statistics, the committee member must be a faculty member in the Statistics Department.

The student's Admission to Candidacy form must contain all courses required for the chosen degree program set off in a group and labeled "Statistics Courses Required for the Minor or M.S. in Statistics." Should the student not decide to apply for admission to the program until after completion of some of the courses, the student's major professor should file a program change with the cooperating departments and assist the student in obtaining a Department of Statistics faculty member to serve on the student's graduate committee.

Successful completion of the Statistics M.S. or minor is recognized by appropriate documentation on the student's transcript. Students who do not complete the requirements of the minor or M.S. will still receive academic credit for the statistics courses they have successfully completed.

For information contact

meyounger@utk.edu or http://bus.utk.edu/stat/igsp.

BUSINESS ADMINISTRATION CONCENTRATION

For complete listing of program requirements, see Business Administration.

Ph.D. Concentration: Statistics

This degree provides students with a broad knowledge of the field of statistics, the ability to apply statistics in practical situations to problems of business and industry and the ability to develop new statistical methods; all of which takes place while students are exposed to coursework in the basic functional areas of business.

Minimum course requirements are: 673, 666, 691, and 592.

CERTIFICATE IN APPLIED STATISTICAL STRATEGIES

The Department of Statistics offers a certificate program in applied statistical strategies. The program is designed for the part-time student, and several of the courses are offered through distance education. The 12-credit certificate is available by completing two required courses, 571, 72, and two elective courses from the following: 573, 575, 579, and 585 or 566 or other graduate statistics courses as approved by the Statistics Graduate Program Committee chair.

ACADEMIC STANDARDS

A graduate student in the College of Business Administration whose grade-point average falls below 3.0 will be placed on probation. A student on probation will be dropped from the program unless his/her cumulative grade-point average is 3.0 or higher at the end of the probationary period. The probationary period is defined as the next semester's coursework as established by the degree program for full-time students and the next two semesters' coursework as established by the degree program for part-time students.

GRADUATE COURSES


500 Thesis (1-15) IP only. 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 course time before degree is completed. May not be used toward degree requirements. May be repeated. S/N only. E


531 Survey of Statistical Methods (3) Univariate and bivariate data collection and organization, statistical estimation and hypothesis testing; analysis of relationships for categorical and numerical data, including Chi-square tests and simple and multiple regression. Use of computing facilities required. Credit not given for both 521 and 537. Prereq: 1 yr. college mathematics. F

532 Survey of Statistical Methods II (3) Multiple linear regression, including use of dummy variables, single and multiple factor analysis of variance and covariance; issues in experimental design and analysis. Use of computing facilities required. Prereq: 531. Sp

537 Statistics for Research I (3) Principles and application of statistical methodology, integrated with considerable use of major statistical computing system. Probability and probability distributions, forming and testing hypotheses using parametric and nonparametric inference methods. Matrix-based simple linear regression and correlation. Credit not given for both 531 and 537. Prereq: 1 yr. undergraduate mathematics and 1 undergraduate statistics course. F

538 Statistics for Research II (3) General linear model with emphasis on analysis and application of variance. Diagnostic and influence techniques. One-way, factorial, block, and nested designs, planned versus post hoc contrasts, interaction factors and repeated measures. Prereq: 537 or 532. Sp

561 Introduction to Computing for Data Management and Analysis (1) UT computing environment for beginning statistics graduate students. Use of operating system commands, introduction to data entry and editing, file management and statistical analysis. Use of UT/COM computing facilities required. Coreq: 531, 537 or 537, or consent of instructor. F

563 Introduction to Mathematical Statistics (3) Basic probability models and theory of distributions on random variables. Prereq: Mathematics 241. F

564 Theory of Statistical Inference (3) Introductory theory underlying common statistical procedures of hypothesis testing and estimation. Prereq: 533. Sp

566 Statistical Techniques in Industrial Processes (3) Applications of control charts and other statistical techniques in industrial setting. Attributes and variates control charts, process capability analysis, aspects of sampling, statistical analysis, estimation of variance components, problems of measurement, special industrial applications. Prereq: 571 or equivalent. F


666 Advanced Statistical Process Control (3) Development of advanced SPC concepts; theory governing properties of Shewhart-type control charts. Comparisons with competing methodologies. Prereq: 664 and 566.

673 Advanced Topics in Design of Experiments and Linear Models (3) Experimentation for product and process improvement: response surface methodology and robust design methods; mixture experiments; optimal design topics; distribution theory and inference for linear models. Prereq: 573 or consent of instructor.

677 Statistical Modeling (3) Modern techniques of statistical modeling: predictive, likelihood, Bayesian, and information-based model selection and evaluation paradigms. Application of techniques in various types of models for both continuous and discrete data modeling problems. Interactive computational tools. Prereq: 564 and 572 or 538, or consent of instructor.

679 Multivariate Statistical Modeling (3) Modern information based techniques and model selection in multivariate analysis, informational tests of significance, graphical displays of results. Prereq: 572 or 573.

683 Special Topics in Statistics (1-3) Presentation of specialized topics in statistics. May be repeated. Maximum 6 hrs.

592 Internship (1-6) Supervised off-campus experience in application of statistical principles and methods in business, government, industry, or government. Written and oral report. Prereq: 4 courses in graduate-level statistics or consent of statistics department director of graduate studies. May be repeated. Maximum 6 hrs. S/NC only.

593 Independent Study (2-6) Faculty directed research and active participation in colloquium program of Department of Statistics. Prereq: Consent of statistics department director of graduate students. May be repeated. Maximum 6 hrs. S/NC only.

595 Statistical Consulting Practicum (1-6) Supervised experiential learning on-campus researchers plan, manage data, and report analysis. Discussion of activities in regular seminar meetings. Final written report and/or presentation required. Prereq: 572 or 538. May be repeated. Maximum 6 hrs.

662 Computational Methods in Statistics (3) Up-to-date computational methods in statistics: open architecture interactive computational languages supplemented by other statistical packages with graphical capabilities. Statistical optimization, numerical methods for linear models and generalized linear models, non-linear statistical methods, matrix computations and special matrices, essentials of Monte Carlo simulation, and resampling techniques. Prereq: Knowledge of programming language and 572 or consent of instructor.

663 Advanced Statistics Theory I (3) Univariate models and theory of distributions, general theory of estimation and method of maximum likelihood, sufficient statistics, small and large sample efficiency of estimators, and confidence and tolerance intervals.

The Theatre (College of Arts and Sciences)

MAJOR DEGREE
Theatre ........................................ M.F.A.

Blake Robison, Head

Professors:
Black, W., M.F.A. ......................... Illinois
Custer, M., M.F.A. ......................... Wisconsin
Lester, L. W., Ed.D ......................... Pennsylvania

Associate Professors:
Craven, E. H., M.A. ......................... Tennessee
DeCuir, L. J. (Liaisio), M.F.A. ......... Tulane
Gould, B. K., M.F.A. ......................... Catholic

Assistant Professors:
Heil, M., M.F.A. .......................... Texas
Speas, B., M.F.A. ......................... Virginia
Van den Berg, Klaus, Ph.D. .......... Indiana
Webber, T., M.F.A. ......................... Alabama

The Department of Theatre offers the Master of Fine Arts degree with a major in Theatre, concentration in acting, directing, or performance, lighting design, scene design, and theatre technology. Not all areas of concentration accept applicants every year.

UT Theatre maintains an active presence on the international theatre scene through the engagement of distinguished guest artists, touring to foreign theatre festivals, participation in international conferences, and other educational initiatives.

Applicants must have completed undergraduate degrees approximately equivalent in requirements to those specified for degrees conferred by The University of Tennessee. Three letters of recommendation and interviews with appropriate faculty are required of all applicants. Applicants for admission to the M.F.A. design/technical theatre programs must submit samples of their work. Auditions are required of M.F.A. degree performance applicants. For detailed information about the graduate program, contact the Director of Graduate Studies, Department of Theatre.

THE MASTER 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 in 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 year of residence. Three additional hours at the 500 level are required from history, literature, or dramaturgy.

Students in the M.F.A. degree program are evaluated annually by juried performance or portfolio submission. Continuation in the program is with the approval of the faculty committee for the M.F.A. degree program. Theatre 593 Projects in Lieu of Thesis, and an oral defense of the project must be completed satisfactorily before the degree is conferred.

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 Theatre 580, Design and Technical Production Seminar, and at least 6 hours in the projects courses. Theatre 401, Principles of Design is required in the first year of residence.

Performance

At least 12 hours each of 520 Master Class in Performance: Acting; 523 Master Class in Performance: Movement; and 525 Master Class in Performance: Voice. Coursework in this concentration is conducted in a conservatory environment. In the third year, students are expected to intern with either the resident professional Clarence Brown Theatre Company or another regional professional theatre.

REQUIREMENTS FOR SECOND MASTER'S DEGREE

Students admitted to the M.F.A program who have already earned a master's or a doctoral degree may apply up to 12 credit hours from the previous graduate program to the M.F.A degree with approval of the student's committee, the Dean of the College of Arts and Sciences, and the Dean of The Graduate School.

Any such credits applied from a previous graduate program would be from courses that are directly relevant to the student's M.F.A.
curriculum and must have been earned within the time limit (6 years) established for completion of the MFA degree.

**GRADUATE COURSES**

401 Principles of Theatrical Design (3) Fundamental principles of design, visual and structural relationships. Projects assigned to develop understanding and perception.

409 Stage Make-up (3) Study and problems in make-up design and application: character analysis. Prereq: Introduction to Theatre.

420 Special Studies in Acting (3) Content varies. Exercises in selected specialized areas such as styles, techniques, approaches, e.g., Shakespeare, movement, humor. Prereq: Advanced Acting and consent of instructor. May be repeated. Maximum 9 hrs.

425 Selected Musical Theatre Techniques (2) Study and practice of musical theatre material: dance and vocal work. Prereq: Theatre Dance or consent of instructor. May be repeated. Maximum 4 hrs.


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

446 Costume Patternining (3) Draping patterns for period costumes. Ornatey and study of historic 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 skill and understanding through studio experience. Prereq: Consent of instructor.

455 Rendering (3) Techniques in monochrome and full color illustration of space and form. Prereq: Acquaintance with basic mechanical perspective and freehand sketching.

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

464 Computer Assisted Design for Theatre (3) Advanced techniques in computer assisted design for theatre. Work with CAD, Computer Drawing, Graphics, and/or 3D Modeling software for preparation of theatrical designs. Specific content varies with semester. Admission by consent of instructor only. May be repeated. Maximum 9 hrs.

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

491 Foreign Study (1-15) See College of Arts and Sciences.

492 Off-Campus Study (1-15) See College of Arts and Sciences.

493 Independent Study (1-15) See College of Arts and Sciences.

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

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 degree is completed. May not be used toward degree requirements. May be repeated. S/N only. E

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

512 Dramatic Literature Analysis (3) Dramaturgical strategies of major playwrights, using a variety of analytical approaches from Aristotle to deconstruction.

520 Master Class in Performance: Acting (3) Master class in acting techniques. Theatre MFA students only. May be repeated. Maximum 18 hrs.

523 Master Class in Performance: Movement (3) Master class in movement techniques. Theatre MFA students only. May be repeated. Maximum 16 hrs.

526 Master Class in Performance: Voice (3) Master class in voice and speech techniques. Theatre MFA students only. May be repeated. Maximum 18 hrs.

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

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 Patternining (3) Advanced studies in patterned period costume. Development of historic patterns through flat pattern method. Prereq: 446.

547 Painting and Dyeing for the Theatre (2) Fibers, dyes and dye processes; color matching and distressing.

548 Projects in Costume Technology (1-3) Individualized studies in costume technology in theatre production. Prereq: Consent of instructor. May be repeated. Maximum 9 hrs.


551-552 Structural Design for Stage (3,3) Application of advanced theatre technology and analysis of common building materials to design of safe stage scenery. Must be taken in sequence.

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

554 Studies in Scene Design (3) Advanced scene design techniques and approaches to design for complex dramas and varied dramatic forms. May be repeated. Maximum 8 hrs.

555 Model Building (3) Techniques of model building for scenic designer. Theatre MFA students only. Prereq: 401 and one semester of 580.

556 Drafting (3) Drafting techniques for scenic designers. Theatre MFA students only.

560 Projects in Lighting Design (1-3) Conception and completion of major projects, both theoretical 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.

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

581 Technical Design (3) Technical problems and solutions in scenery construction using traditional and modern techniques with application of unusual materials, consideration of budgeting, safety, and structural integrity. Prereq: 551-552.

582 Production Planning (3) Theatre management techniques useful in structuring orderly, effective production: survey of applicable computer programs.

583 Stage Machinery (3) Design of safe, effective machinery for movement of stage scenery. Prereq: 551-552.

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

599 Project in lieu of Thesis (1-6) Available to theatre MFA students only. Prereq: Minimum of 30 hrs toward MFA degree and consent of advisor. May be repeated. Maximum 9 hrs.

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**Theory and Practice in Teacher Education**

(College of Education)

**MAJORS**

**DEGREES**

Education.........................M.S., Ed.S., Ed.D., Ph.D.

L. Knight, Head

Professors:

Alexander, J. Estill. (Emeritus), Ed.D.......................Kentucky

Benner, Susan M., Ed.D.....................Columbia

Brozo, William G., Ph.D..............South Carolina

Christensen, Mark A. (Emeritus), Ph.D...................Kansas

Coleman, Laurence J., Ph.D..............Kent State

Davis, A. R., Ph.D...................Ohio State

Davis-Wiley, Patricia, Ed.D..............Houston

Hargis, Charles H. (Liaison), Ed.D...............Colorado State

Harris, G. A., J. (Emeritus), Ph.D...........Michigan

Hatch, J. Amos, Ph.D....................Florida

Huff, P. (Emeritus), Ph.D...............Ohio State

Hull, Howard N. (Emeritus), Ed.S...........Peabody

Jost, Karl J., Ed.D....................Ohio State

Knight, Lester N., Ph.D..................Texas

Lindsey, LaVerne B., Ed.D.............Mississippi State

Long, Vena M., Ph.D..............Missouri (Columbia)

Rowell, C. Glenn, Ed.D............George Peabody

Schindler, W. Jean, Ph.D..............Kent State

Turner, T. N., Ed.D..............Penn State

Watkins, J. Paul (Emeritus), M.S........Tennessee

Associate Professors:

Barclay, McLaughlin, Ph.D...............Michigan

Cagle, Lynn C., Ed.D..................Georgia

Chance, Charles A., Ph.D...............Ohio State

Gilrane, Colleen P., Ph.D.............Illinois

Hannum, Michael C...................Indiana

Hodge, R. L., Ph.D...............Northern Colorado

Judge, Hanson L., Ph.D...............California (Santa Barbara)

Melear, Claudia T., Ph.D...............Ohio State

Puckett, Kathleen S., Ph.D...........Tennessee

Assistant Professors:

Bell, Sherry M., Ph.D..................Tennessee
The Department of Theory and Practice in Teacher Education offers graduate programs leading to degrees, majors, and concentrations in:

**Master of Science**

**Education**
- Track 1-art education
- Track 1-elementary education
- Track 1-English education
- Track 1-foreign language/ESL education
- Track 1-mathematics education
- Track 1-modified and comprehensive special education
- Track 1-reading education
- Track 1-science education
- Track 1-social science education
- Track 1-special education: early childhood
- Track 2-art education
- Track 2-elementary teaching
- Track 2-modified and comprehensive special education
- Track 2-secondary teaching
- Track 2-special education: early childhood

**Education Specialist**

**Education**
- Elementary education
- English education
- Foreign language/ESL education
- Mathematics education
- Reading education
- Science education
- Social science education

**Doctor of Education**

**Education**
- Literacy, language education, and ESL education
- Teacher education

**Doctor of Philosophy**

**Education**
- Early childhood education
- Literacy, language education, and ESL education
- Teacher education

**Early Childhood Education**

**GRADUATE COURSES**


471 Early Childhood Special Education (6) Assessment, curriculum planning and development and teaching approaches used in early childhood special education. Prereq: Admission to early childhood education. F

515 Seminar (1-3) Curriculum, instructional technology, elementary education, secondary education, or social foundations as related to goals of students’ programs. May be repeated. Maximum 6 hrs. S/NC only. E

544 Assessment in Early Childhood Special Education (3) Development of knowledge and skills in appropriate formal and informal assessment of handicapped infants and young children: screening, identification, diagnosis, placement and programming assessment issues. Prereq: 553 or consent of instructor. F

554 Curriculum for Early Childhood Education (K-3) (3) Theoretical foundations and current research in content and skill areas of curriculum for kindergarten, grades 1-3; application to local school setting. Prereq: Consent of instructor. May be repeated. Maximum 9 hrs. Sp, Su.

587 Application of Theory in Early Childhood Education (K-3) (3) Principles and practices from selected theoretical orientations. Prereq: Course in early childhood education or consent of instructor. May be repeated. Maximum 6 hrs. F, Su.

588 Early Childhood Special Education: Theories and Interventions (3) Theoretical perspectives of early childhood special education; exploration of programmatic models, family-focused concepts and curricular development.


650 Advanced Studies in Early Childhood Education (3) Prereq: 2 graduate courses in early childhood education and consent of instructor. May be repeated. Maximum 6 hrs. S/NC only. E

**Elementary Education**

Note: See Mathematics, Reading, Science, and Social Science Education for additional Elementary Education courses.

**GRADUATE COURSES**

421 Elementary and Middle School Science and Social Studies Instruction (3) Pedagogies and materials for teaching science and social studies. Development of functional relationships and entities of two fields. Not open to students with recent course or background in teaching science and/or social studies. Prereq: Admission to teacher education. F, Sp.

429 Language Arts/Reading Instruction in Elementary and Middle Schools (3) Language and language development as applied to teaching of mastery (listening-speaking) and aspects of literacy (reading process/readiness and writing). Not open to students with recent course in language arts methods. Prereq: Admission to teacher education. F, Sp.

504 Studies and Theory in Language Development (3) Studies and theory of language development in children. Prereq: 1 elementary school language arts course or consent of instructor. F

555 Elementary and Middle School Teaching Methods II (6) Applied methods of teaching reading, arithmetic, science, social studies and mathematics; accommodation strategies for students with diverse needs. Prereq: Elementary and Middle School Teaching Methods I. Coreq: 575. F

523 Diagnosis and Correction of Children's Difficulties in Learning Mathematics (3) Children's difficulties in learning mathematics and procedures for helping classroom teachers correct difficulties. Prereq: 522 or equivalent or consent of instructor. Sp.

524 Teaching for Creative Thinking and Expression (3) Creativity of the teacher and student in the creative potential across academic curriculum. Creative problem-solving methods for development of creative potential. Su

527 Elementary School Curriculum (3) Examination, evaluation, and application of curriculum designs in elementary school. Trends and issues which affect elementary education. Prereq: Consent of instructor. F, Su.

528 Teaching Language Arts Elementary and Middle School (6) Recent trends and current materials and methods in teaching English as a second language (ESL). Prereq: Courses in language arts or consent of instructor. Sp, Su.

529 Practicum in Diagnosis and Remediation of Difficulties in Learning Mathematics (3) Practicum experience with children having difficulties in learning elementary school mathematics. Prereq: 523 or consent of instructor. Su.

530 Assessment and Correction of Language Arts Difficulties (3) Procedures and materials for diagnosing and correcting language arts difficulties; analysis of child's work. Prereq: At least one language arts course or consent of instructor. Su

606 Research in Elementary Education (3) Analysis of research in elementary education with application to classroom teaching. Prereq: Research course. Su
English Education

**Graduate Courses**


460 Teaching Reading and Literature In the Secondary School (3) Approaches for teaching basic reading skills and ways of teaching literature. Sp.

461 Developing Reading Skills in Content Fields (3) Techniques for teaching reading and study skills in content areas of school program. Extensive assessment of textbooks. Middle school and high school. E.

507 Teaching Poetry Grades 7-12 (3) Research and theory in application to teaching of poetry. Design of strategies and models for teaching and reading of poetry. Review of texts and materials. F.

508 Teaching Composition in the Secondary School (3) Teaching narration, description, exposition, and argumentation; writing process and marking of student papers. Sp.

569 Teaching Fiction in the Secondary School (3) Teaching of novels and short stories. F.

521 Interdisciplinary Aesthetics (3) Discussions, visual and audio presentations concerned with aesthetic considerations of areas of study: geography, history, physics, literature, languages, music, visual arts, and drama.

533 Reading in Community College: Research and Theory (3) Analysis of components of effective community college reading programs. Attention to research and theoretical bases. Prereq: Course in reading education or consent of instructor. Su.


592 Linguistics and the Teaching of English (3) Grammar, usage, semantics, dialectology, history of language, and lexicography. Su.

597 Teaching Drama Grades 7-12 (3) Strategies and materials for teaching creative dramatics, enacting and writing of plays, reading of scripts. Sp.

598 Developing Speaking and Listening Skills, Grades 7-12 (3) Teaching approaches to nonverbal communication, interpersonal and group communication, public address and listening. Review of tests and materials. Sp.

601 Studies in English Education (3) Issues and research in teaching of English. Su.

605 Organizing and Administering Reading Programs (3) Analyzing and synthesizing instructional, learning, and materials components into classroom and school programs. Prereq: 2 500-level courses in reading education or consent of instructor. Su.

Foreign Language/ESL Education

**Graduate Courses**

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

555 Foreign Language in the Elementary Schools Practicum (3) Experiences designing, implementing and assessing second language instruction in elementary school setting. Prereq: 557 or consent of instructor.

556 English as a Second Language Practicum (3) Experiences designing, implementing and assessing English instruction to non-native English speakers. Required course and use of microcomputer. Prereq: 576 or consent of instructor.


576 Advanced Studies in English as a Second Language (3) Research, curricula, assessment, trends and issues in English as a second language. Prereq: 575 or consent of instructor.

587 Advanced Studies in Foreign Language Education (3) Research, curricula, assessment, trends and issues in foreign language education. Prereq: 587 or consent of instructor.

Mathematics Education

**Graduate Courses**

485 Teaching Mathematics, Grades 7-12 (3) Preparation of teaching plans, evaluation, materials for teaching mathematics; teaching simulation and directed observation in schools. Prereq: Admission to teacher education.

522 Programs and Materials in Elementary School Mathematics (3) Examination, development and use of materials for creating an active learning environment for learning mathematics in elementary and middle schools. Prereq: 530, 543, or equivalent. Su.

530 Teaching Mathematics to Young Children: K-3 (3) Unit planning, daily planning, grouping and other strategies of teaching mathematics. For those with little preparation in teaching elementary school mathematics. F.

543 Teaching Mathematics in Middle School: 5-8 (3) Unit planning, daily planning, grouping and other strategies of teaching mathematics. For those with little preparation in teaching middle school mathematics. Sp.

581 Seminar in Mathematics Education (3) Current issues influencing instruction in mathematics in schools, elementary through college. Related teaching methodologies. Opportunities for work on special problems. Prereq: 465 or equivalent. F-Su.

582 Teaching Enrichment Mathematics in Middle and Junior High Schools (3) Topics to enrich middle and/or junior high mathematics. Geometrical, topological, and problem solving activities. Special attention to metric system. Opportunities for individual projects. Prereq: 465 or equivalent.

583 Teaching Mathematics in Senior High Schools and Community Colleges (3) Topics appropriate for high school and community/junior college mathematics curriculum. Special problems related to enrichment, problem solving, and use of microcomputers. Opportunities for special projects. Prereq: 485 or equivalent.

586 Teaching Probability & Statistics (3) Teaching of probability and statistics in schools, elementary through college. Probabilities and statistical experiments, demonstrations, and applications. Prereq: 485 or equivalent.

587 Advanced Studies in Mathematics Education (3) Analysis of current research in mathematics education and implications of research for classroom practice. Prereq: Two graduate courses in mathematics education.

Science Education

**Graduate Courses**

496 Teaching Science Grades 7-12 (3) Methods, materials, recent trends in science and environmental education programs for secondary schools. Prereq: Admission to teacher education.

506 Science Education Studies in Natural Environments (3) Systematic study of nature for K-12 classrooms. Group and individual observational and experimental studies. Web-based lesson plans designed upon return to campus.

531 Teaching Science in Elementary and Middle Schools (3) Recent trends in methods, materials and content in teaching elementary school science. Prereq:
Course in teaching elementary school science or consent of instructor. Su,F

565 Instructional Trends and Issues in Science Education (3) Analysis of current trends in science instruction, instructional issues facing elementary, secondary, and community college science teachers, and application of learning theory to teaching biological, physical, and environmental sciences. Prereq: 496, teaching methods, or equivalent. Su

572 Nature of Mathematics and Science Education (3) Teaching and assessment of mathematics and science based upon student conceptions of nature of mathematics and science. Su

596 Curriculum Trends in Science Education (3) Analysis of elementary and secondary curriculum projects for biological, physical and environmental sciences. Impact of current learning theories on future curriculum development projects. Prereq: 496, or Early Childhood Education 422 Early Childhood Teaching Methods, or equivalent. Prereq or coreq: 565 or consent of instructor. Sp

628 Advanced Studies in Science Education (3) Analysis of current research in science education and implications of research for classroom practice. Prereq: 596. May be repeated. Maximum 6 hrs. Sp,A

696 Research Trends in Science Education (3) Analysis of current research trends in science education and relationship of trends to broader educational community. Prereq: 628. Sp,A

Social Science Education

GRADUATE COURSES

454 Teaching Strategies and Issues in Social Studies Education (3) Goals, objectives, techniques, materials, and evaluation; directed observation in public school classrooms and preparation of teaching plans and materials; simulated teaching experiences. Prereq: Admission to teacher education.

521 Teaching Social Studies in Elementary and Middle Schools (3) Planning and techniques. Trends in curriculum development, concepts and generalizations, integration of social sciences. Prereq: Course in teaching of social studies or consent of instructor. Sp

525 Strategies, Programs and Materials for Teaching Elementary Social Studies (3) Analysis of new and innovative social studies program materials and techniques. Exploration of current trends in social studies education. Prereq: Previous course in teaching of social studies or consent of instructor. Sp

585 Teaching Secondary School Social Studies (3) Strategies, projects, materials, and programs in social studies. Prereq: Undergraduate course in teaching of social studies. Su

599 Seminar in Social Studies Education (3) Research, trends, and issues in secondary social studies. Su

621 Seminar in Social Studies Research and Theory (3) Status of research and theory. Needed research, related research from other fields, and application of research. Prereq: Research courses in teaching of social studies or consent of instructor. E

Special Education

GRADUATE COURSES

419 Psychology and Education of Students with Mild Disabilities (6) Nature and characteristics of persons with mild handicaps and educational strategies appropriate for these persons. Prereq: Special Education Principles, Special Education Strategies, and admission to teacher education program. Coreq: 420. F

420 Field Experience in Modified Programs (3) Practicum in teaching in modified programs; planning, developing, implementing and evaluating instruction. Prereq: Special Education Principles, Special Education Strategies, and admission to teacher education program. Coreq: 420. SINC only. F

431 Field Experience in Comprehensive Programs (3) Prereq: Special Education Principles, Special Education Strategies, and admission to teacher education program. Coreq: 430. SINC only.

432 Psychology and Education of Students with Moderate/Severe Disabilities (6) Nature and characteristics of persons with moderate/severe disabilities and educational strategies appropriate for those persons. Prereq: Special Education Principles, Special Education Strategies, and admission to teacher education program. Sp

454 Education of the Gifted and Talented Children (3) Orientation to psychometric and behavioral studies of giftedness. Analysis of past and present school practices in reference to curriculum and program implementation. Sp

456 Speech and Language Basis of Learning Disabilities in the Classroom (3) Normal communication development; understanding of speech and language impairments in school-age students; integration of evaluation skills into existing curriculum, especially for high incidence special education students.

470 Psychology of the Exceptional Child (3) Varieties of exceptional children; general characteristics and educational implications for those with mild, moderate, and severe deviations from the norm. Opportunity to study particularly exceptional. Enrollment limited to non-social education majors.

504 Clinical Experience in Teaching and Supervision of Exceptional Children (3-9) Placement in educational settings. May be repeated. Maximum 9 hrs. SINC or letter grade. (Same as Rehabilitation and Deafness 504.)

553 Assessment of Exceptional Students (3) Current issues related to assessment; advanced study of evaluation models for special education; dynamic and other innovative assessment approaches; advanced study of application to educational programming; basic statistics and application in assessment.

555 Characteristics of Affective/Motivational Functioning in Children with Disabilities (3) Definition, methods, identification and symptoms of children with affective/motivational difficulties. Comparison of normal development and that of children labeled disturbed or behavior disordered.

556 Instructional Systems for Affective/Motivational Education for Children with Disabilities (3) Educational strategies and models of instruction; simulation, demonstration, and media. Teaching techniques, materials, and teacher/pupil/family interactions. Therapeutic forms of education through art, music, role play, property, puppetry, and group interactions. Prereq or coreq: 555 or consent of instructor.

557 Positive Preventive Discipline (3) Instructional, classroom, and administrative curriculums for the maintenance and development of healthy discipline behavior in classrooms. Research on how curriculum can encourage appropriate interactions of children and youth. Prereq: Admission to graduate program.

558 Neuromuscular and Health Disorders: Educational Implications (3) Neurological impairments, physical disabilities and special health conditions, autism. Investigation of instructional techniques and adaptations.

564 Psychosocial Development of Gifted and Talented Children (3) Phenomena of talent development in context of home, school, and society. Implications of misadjustment. Practices for promoting social and emotional development. Prereq: 451 and 452 or equivalent or consent of instructor.

565 Instructional Systems for the Gifted and Talented (3) Instructional methods and systems evaluated in terms of effectiveness in various educational environments. Prereq or coreq: 564 or consent of instructor.

575 Creative Problem-Solving Strategies for Special Educators (3) Techniques for solving problems encountered by special educators in any setting.

586 Seminar in Research Techniques in Special Education (3) Evaluation of appropriate research methodologies with handicapped populations.

587 Seminar: Issues and Theories in the Education of the Exceptional Child (3) Analysis of current trends and theoretical issues. Prereq: Research course or consent of instructor.

590 Application of Microcomputer Technology in Special Education and Vocational Rehabilitation (3) Application of microcomputer technology with all categories of exceptionalities and across all chronological and functioning age ranges. Microcomputer adaptive software, special switch access, authoring programs, telecommunications, and strategies for cognitive development.

620 Internship in Research in Special Education and Rehabilitation (3-9) Placement with professional engaged in theoretically-based research: public school, institutions, agencies or university settings. Prereq: 9 hrs in statistical and research methods. May be repeated. Maximum 9 hrs. SINC only.

630 Internship in Institutional Leadership in Special Education and Rehabilitation (3-9) Advanced level field experiences under supervision of practitioners. Prereq: Consent of Instructor. May be repeated. Maximum 9 hrs. SINC only.

Theory and Practice in Teacher Education

GRADUATE COURSES

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 when student uses University facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. SINC only. E

503 Problems in Lieu of Thesis (2-3) May be repeated. Maximum 9 hrs. SINC only. E

517 Seminar in Theory and Practice in Teacher Education (3) Curriculum, instructional technology, elementary education, secondary education, or social foundations as related to goals of students' programs. May be repeated. Maximum 6 hrs. SINC or letter grade. E

518 Educational Specialist Research and Thesis (3) May be repeated. P/NP only. E

526 Drama and Story Telling in Teaching (3) Use of techniques of drama and storytelling to improve impact of teaching and to teach more effectively. Prereq: Classroom experience or admission to teacher education program.

550 Action Research and Practical Inquiry in Education (3) Principles of action research and practical inquiry for practitioners in early childhood and school settings and methods for conducting such inquiries in professional roles. Prereq: Admission to graduate program.

593 Independent Study (1-3) May be repeated. SINC or letter grade. E

594 Supervised Readings (1-3) May be repeated. SINC or letter grade. E

596 Special Topics (1-3) May be repeated. SINC or letter grade. E

596 Clinical Experience in Assessment and Instruction (3) Academic remediation applied in lab/field setting; tasks related to: assessment, prepara-
Urban and Regional Planning

(College of Arts and Sciences)

MAJOR

DEGREE

Planning .................................. M.S.P.

C. W. Minkel, Head

Professors:

Johnson, David A. (Emeritus), Ph.D. ... Cornell
Kenney, Kenneth B. (Emeritus),
Ph.D. ...................................... North Carolina
Minkel, C. W., Ph.D. .................... Syracuse
Prochaska, J. M. (Emeritus),
M.U.P. ..................................... Michigan State
Shousa, Walter L. (Emeritus), M.C.P. Harvard
Spencer, James A. ( Liaison) ,
M.C.P. ..................................... Ohio State

Associate Professors:

Bowen, George E., M.A. George Washington
Tonn, Bruce, Ph.D. ...................... Northwestern

Assistant Professors:

Shupp, Teresa, M.S.P. .................... Tennessee
Zanetta, Maria C., Ph.D. ............... Ohio State

The Department of Urban and Regional Planning offers a program of studies leading to the professional degree of Master of Science in Planning. The degree is the normal route for entry into professional positions in urban and regional planning or related fields. Graduates are candidates for positions in regional, city, county, and metropolitan planning agencies; in local, state, and federal agencies concerned with physical, economic, and administrative planning; in private business and organizations dealing with development problems; and in private consulting.

The Master of Science in Planning program is accredited by the Planning Accreditation Board, a joint undertaking of the American Institute of Certified Planners (AICP), this requirement provides an additional capstone experience as well as preparation for meeting AICP professional certification requirements.

Student academic progress is monitored by the faculty. A student failing to maintain an acceptable grade-point average may be placed on probation or dismissed from the program.

MINOR IN ENVIRONMENTAL POLICY

An agreement among southern states for sharing graduate programs allows legal residents of some states to enroll in certain programs at UT on an in-state tuition basis. The M.S.P. program is available to residents of the states of Arkansas, Virginia, or West Virginia. Additional information may be obtained from the Admissions Specialist in the Office of Graduate Student Services.

GRADUATE COURSES

401 The City in the U.S. (3) Development and character of U.S. cities. Contemporary issues and selected case studies. (Same as Urban Studies 401.)


446 Housing (3) Nature and demand for housing in U.S. and abroad. U.S. experience in development, private construction, and public influences. Problems of change in household supply, impact of new technology, and governmental programs to improve supply and quality of housing.

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

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 degree is completed. May not be used toward degree requirements. May be repeated. S/NC only.

510 Fundamentals of Planning (3) History of planning, structure and development of urban areas, operations of contemporary planning, trends and issues.

515 Theory of Planning (3) Analysis of planning problems; role of planner and planning function in public decision-making. Prereq: 510 or consent of instructor.

520 Planning Research Methods (3) Overall structure of urban and regional planning research; familiarity with structure of planning literature; concepts, systematic retrieval techniques, processes and tools, practice in posing research questions relevant to planning.

521 Information Systems and Networks in Planning (3) Use and impact of computer-based information systems and global networks in planning and public
Admission Procedures

Admission of new students is for the fall semester, with first priority given to residents of Tennessee. The College of Veterinary Medicine utilizes the Veterinary Medical College Application Service (VMCAS) for all applicants. Forms and instructions for making application for admission may be obtained beginning June 1, 2001 from the Office of the Associate Dean, The University of Tennessee, College of Veterinary Medicine, P.O. Box 1071, Knoxville, TN 37901-1071.

Note: The deadline for receipt of the completed application materials is November 1.

**NON-TENNESSEE APPLICANTS MUST HAVE A MINIMUM CUMULATIVE GRADE-POINT AVERAGE OF 3.2 ON A 4.0 SCALE FOR APPLICATION TO BE CONSIDERED.** Applications are accepted only from U.S. citizens or permanent residents of the U.S.

**D.V.M. 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 generally follow the traditional fall and spring semesters with the summer break following years one and two. The final year of the professional curriculum begins immediately following semester six and is a continuous clinical rotation experience extending over 54 weeks.

Development of a strong basic science foundation is emphasized in the first year. Courses consist mostly of preclinical subjects of anatomy (gross and microscopic), physiology, immunology, bacteriology, virology and parasitology. Also included in the first year are clinical subjects of physical diagnosis and epidemiology.

Considerable integration of subject matter is incorporated during this year. The second and third years include the study of diseases, their causes, diagnosis, treatment and prevention, and courses are team-taught on an organ system basis. The final year (three semesters) is devoted to intensive education in solving animal disease problems involving extensive clinical experience in the Veterinary Teaching Hospital. Each student will participate exclusively in clinical rotations in the Veterinary Teaching Hospital and in required externships (preferably off-campus).

Innovative features of this curriculum include: eight weeks of student centered, small group, applied learning exercises in semesters one through six; three weeks of dedicated clinical experiences in the Veterinary Teaching Hospital in semesters three through five; and two weeks of dedicated clerkship involving extensive clinical experience in small animal medicine in semesters four, five and six which allow students to focus on individual educational/career goals. Students enrolled in the D.V.M. program may register for up to 10 credit hours of graduate courses without enrolling in The Graduate School and these hours will be credited toward the D.V.M. degree. Elective study offers a unique educational alternative for students in the CVM and is intended to enhance professional growth, concentration in an area of interest and career opportunities.

In addition to education in the science and art of veterinary medicine, students receive instruction in paramedical subjects such as **Environment Planning (3)** Role of planners and economic development in developing countries.

**Economic Development Planning (3)** Planning for economic change in cities and regions. Institutional and organizational problems. Economic development planning process. Prereq: 510 or consent of instructor.

**Planning Policy Analysis (3)** Basic methods of policy analysis and planning. Economic factors underlying the dynamics of change in cities and regions. Coreq: 520 or consent of instructor.

**Land Use Analysis (3)** Concept and framework for land-use analysis. Population, employment, economic-base studies and forecasting techniques.

**Planning Methods (4)** Preparation of comprehensive plans for urban areas or regions. Development of baseline data and forecasts, formulation of alternative plans and strategies, and development of plan implementation programs. Extensive laboratory experience. Prereq: 510, 512, 520, 530 and 531 or consent of instructor.

**Planning and Transportation (3)** (Same as Civil Engineering 558.)

**Urban and Site Design (3-6)** Principles of design of residential subdivisions and some components of physical community, shopping centers, institutional complexes, central business districts. Problems of reviewing alternative designs against each other or written regulations. Extensive laboratory experience.

**Planning for Historic Preservation (3)** Planning for preservation, restoration, and conservation of historic buildings, areas and sites as related to comprehensive planning process. National, state, and local government role in preservation, designation of sites, legislative needs, financing and administrative organizations.

**Legal Aspects of Planning (3)** Legal basis for planning and guiding community development. Legal tools of planning. Prereq: 510 or consent of instructor.

**Cultural Resources Planning (3)** Cultural characteristics creating identity and spirit of place; role in environmental and land-use planning; use in protection of natural environment and cultural heritage. Cultural components of National Environmental Protection Act and case studies.

**Planning and Property Development (2)** Process of urban physical growth and change; functioning of private sector real estate development and its relationship to planning. Partnership roles of public and private sectors in urban development and redevelopment. Prereq: 510 or consent of instructor.

**Negotiation (1)** Methods, strategies, techniques and skills useful to planners in mediation, negotiation, and dispute resolution concerning urban planning and development.

**Tourism Planning (3)** Planning of tourist resources and programs within a geographic region. Tourism planning models. Relationships among tourists, tourism developments and planning of tourist attractions and services. Application of techniques in selected areas.


**Development Planning in the Third World (3)** Seminar on urban and regional development in Third World nations. Population, use of public and private systems, economic development, land framework of integrated resource management. (Same as Ecology and Evolutionary Biology 552.)

**International Planning (3)** Alternative development models. Comparative analysis of planning practices and policies around world. Population growth, urbanization, environmental degradation, and economic development in developing countries.

**Environmental Planning (3)** Role of planners and planning in maintenance of balance between natural and built environment. (Same as Ecology and Evolutionary Biology 555.)

**Futures Planning (3)** Overview of world and community futures literature. Skills in trends assessment, scenario writing, and other futures planning techniques.

**Strategic Planning & Policy Development (3)** Models of strategic planning and process of policy development in applied decision making. Qualitative approaches, program evaluation and impact assessment.

**Practicum (3)** Prereq: Consent of instructor. S/NC or letter grade.

**Special Topics (1-3)** Prereq: Consent of instructor.

**Readings in Planning (1-3)** Prereq: Consent of instructor. May be repeated.

**Problems in Planning (1-3)** Prereq: Consent of instructor. 635 Environmental Assessment and Sustainable Development in Third World Countries (3) (Same as Ecology and Evolutionary Biology 635 and Botany 635.)

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**VETERINARY MEDICINE**

**College of Veterinary Medicine**

**MAJOR**

**DEGREE**

**Veterinary Medicine**.............................. D.V.M.

**Comparative and Experimental Medicine**........... M.S., Ph.D.

**THE PROFESSIONAL PROGRAM**

Admission Requirements

To qualify for admission to the professional program of the College of Veterinary Medicine, a candidate must have completed at least the minimum preveterinary course requirements listed below. These may be completed at any accredited college or university that offers courses equivalent to those at The University of Tennessee.

Preveterinary course requirements must be completed by the end of spring term of the year in which the student intends to enroll. Biochemistry requirements must have been satisfactorily completed within five years of the time the applicant wishes to enter the program.

**Subject Area**  
**Semester Hours**

<table>
<thead>
<tr>
<th>English</th>
<th>6</th>
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<tbody>
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<td>Humanities and Social Sciences</td>
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<tr>
<td>Physics</td>
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<td>Biochemistry**</td>
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<td>General Biology</td>
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<tr>
<td>Genetics</td>
<td>3</td>
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<tr>
<td>Cellular Biology**</td>
<td>3</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>66</strong></td>
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</tbody>
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**Biochemistry requirements must have been satisfactorily completed within five years of the time the applicant wishes to enter the program.**

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**Applications are accepted only from U.S. citizens or permanent residents of the U.S.**

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**Innovative features of this curriculum include: eight weeks of student centered, small group, applied learning exercises in semesters one through six; three weeks of dedicated clinical experiences in the Veterinary Teaching Hospital in semesters three through five; and two weeks of dedicated clerkship involving extensive clinical experience in small animal medicine in semesters four, five and six which allow students to focus on individual educational/career goals. Students enrolled in the D.V.M. program may register for up to 10 credit hours of graduate courses without enrolling in The Graduate School and these hours will be credited toward the D.V.M. degree. Elective study offers a unique educational alternative for students in the CVM and is intended to enhance professional growth, concentration in an area of interest and career opportunities. In addition to education in the science and art of veterinary medicine, students receive instruction in paramedical subjects such as**
animal behavior, medical communication, professional ethics, jurisprudence, economics, and practice management.

The curriculum requires successful completion of 163 semester credits.

THE GRADUATE PROGRAM

The College also administers a graduate program involving all departments which leads to the Master of Science and the Doctor of Philosophy degrees. 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 (nutrition, physiology, genetics and animal management), Microbiology (bacteriology, virology and immunology), Ecology and Evolutionary Biology (environmental toxicology), Public Health, and Comparative and Experimental Medicine. (Refer to other sections of this catalog for a full description of these programs.) The majority of the graduate students and graduate faculty of the College of Veterinary Medicine are involved in the Comparative and Experimental Medicine program. This program provides a wide spectrum of interdisciplinary training that prepares graduates for teaching and/or research careers in the health sciences.

PROFESSIONAL COURSES

801-02-03 Application Based Learning Exercise (ABLE I, II, III (2,2,1) Small group, student-centered learning facilitated by self discovery. Total contact time is 90 minutes. Small group, student-centered learning sessions. This course prepares students for self discovery of new information. Week-long sessions based on specific clinical case or problem, and integration of basic science and clinical material. S/N only.

804-05-06 Application Based Learning Exercise (ABLE II) and Clinical Exposure I, II, III (2,2,2) Week-long small group, student-centered learning sessions with faculty facilitator for self discovery of new information based on specific clinical case or problem; integration of basic science and clinical material. One week of clinical experience per quarter. S/N only.

811 Infection and Immunity II—Bacteriology and Mycology (3) Fundamental aspects of microbiology and cell biology relative to pathogenesis of bacterial and fungal disease—antibacterial actions and mechanisms of bacterial resistance. General approaches to diagnosis, treatment and prevention.

813 Infection and Immunity III—Immunology (2) Basic biology and practical aspects of immunology: tissue injury, immune function and dysfunction, immunopathogenesis, diagnostic testing and specific diseases involving immune system.

814-16 Clinical Correlations and Ethics I, II, III (1,2) Correlations between basic science material from concurrent courses and practical aspects of veterinary medicine. Thought-provoking, problem-oriented discussions based on current veterinary ethical issues. S/N only.


821-22 Veterinary Anatomy I, II (6,6) Integrated approach to study of developmental, macroscopic (fracture), and microscopic anatomy of common domestic animals. Dissection of embedded specimens of common domestic species for comparative purposes. Microscopy relates structure with function. Study of developmental anatomy related to normal anatomy to inherited anomalies.

823-24 Physiology I, II (4,4) Introduction to concepts and problems in physiology which form basis for clinical applications and for formal training in pharmacology, medicine, pathology, and surgery. Cellular, neural, cardiovascular, renal, respiratory, digestive, endocrine, and reproductive physiology.

827 Special Problems in Animal Science (1-8) Extramural and specially designed study for students interested in select topics in anatomy, histology, and physiology.

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 anesthesia: pharmacology of anesthetic agents, and introduction to anesthetic techniques in veterinary medicine.

833 Epidemiology and Evidence Based Medicine (2) Study of occurrence and distribution of diseases in animal populations. Use of knowledge (evidence) gained from management of clinical patients in past to improve future clinical decision making processes.

834 Hematopoietic System (2) Pathophysiology and diagnosis of disorders involving bone marrow and blood cells, platelets, and blood coagulation in domestic animals; interpretation of laboratory test results using illustrative clinical cases.

835 Principles and Practice of Surgery (2) Principles of veterinary surgical technique, patient and surgeon preparation, control of surgical hemorrhage and infection, and general operating room procedures. Proper methods of tissue handling, surgical instrumentation, and selection of suture materials and suturing patterns. Pathophysiology of surgical and accidental wounds; wound healing and management.

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

837 Food Hygiene and Zoonoses (2) Host-agent relationships, public health aspects of veterinary medicine and role of veterinarians in ecology and food hygiene.

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

841 Reproductive System (4) Pathophysiology, special pathology, medicine and surgery of diseases of male and female reproductive systems and mammary glands.

842 Alimentary System (4) Pathophysiology, special pathology, medicine and surgery of diseases of alimentary system.

843 Musculoskeletal System I (3) Pathophysiology, clinical description and basic treatment modalities of common diseases and conditions of skeletal system of small animals; development of basic diagnostic and treatment skills.

844 Musculoskeletal System II (3) Pathophysiology, special pathology, medicine and surgery of diseases of muscular and skeletal systems. Advanced principles, radiographic interpretation and surgical procedures.

845 Veterinary Nutrition (2) Principles of nutrition, and nutrition of animals in health and disease. Applied nutrition relating to individual small or large animal patient or to herd situations.

846 Multispecies Medicine (4) Anatomy, pathophysiology, medicine, and surgery of avian species, laboratory and zoo animals and reptiles. Species and diseases seen by practicing veterinarian. Current topics on foreign animal diseases.

851 Urinary System (3) Pathophysiology, special pathology, medicine, and surgery of diseases of urinary system. Urinary system in health and disease.

852 Cardiovascular System (2) Pathophysiology, special pathology, medicine and surgery of diseases of cardiovascular system. Anatomic, physiologic and pharmacologic principles which provide basis for treatment.

853 Endocrine System (2) Pathophysiology, medicine and surgery of diseases of endocrine system.

Mechanisms of endocrine and metabolic diseases: therapy and prevention.

854 Respiratory System (3) Pathophysiology, special pathology, medicine and surgery of diseases of respiratory system. Upper and lower respiratory systems: infectious and noninfectious diseases.

855 Radiology (3) Basic, advanced and special techniques in radiology with interpretation and use of radiologic and related techniques in diagnosis and treatment of animal diseases.

856 Special Senses (2) Pathophysiology, special pathology, medicine and surgery of diseases of visual and auditory systems.

857 Nervous System (3) Pathophysiology, special pathology, medicine and surgery of diseases of nervous system: clinical neurology and neuropathology.

858 Neurology/Ophthalmology (4) Clinical training in specialty services: ophthalmology and neurology. Direct responsibility for diagnosis, patient care, and treatment of patients in both Large Animal and Small Animal Clinical Sciences.

861 Pharmacology I (2) Principles of pharmacokinetics and pharmacodynamic properties of veterinary drugs: mode of action and pharmacologic effects including important metabolic aspects, chemical and physical properties, side effects (toxicities) and clinical application.

862 Pharmacology II (2) Continuation of 861: modes of action, pharmacologic effects, and clinical application of drugs to control specific disease conditions.

864 Infectious Diseases (2) Pathogenesis and clinical findings of major viral, bacterial and fungal infectious diseases of domestic animals: cattle, horses, swine, sheep, goats, dogs and cats; relevant case-based presentations.

865 Clinical Rotation I in Comparative Medicine (2) Clinical rotation in avian medicine, laboratory animal and zoo animal medicine, epidemiology, public health, and other related disciplines.

867 Special Problems in Comparative Medicine (1-8) Extramural and specially designed study for students interested in select topics in avian medicine, laboratory animal medicine, zoology and other related disciplines.

869 Special Problems in Pathology (1-8) Extramural and specially designed study for students interested in select topics in morphologic pathology, clinical pathology, and veterinary microbiology.

870 Anesthesiology (4) Clinical training in sedation and anesthesia of companion animals, food animals and horses. Direct responsibility for diagnosis, care and treatment of clinical patients.

871 General Pathology I (3) Principles of histopathology: causes of disease, disturbances of cell growth and inflammation.

872 Infection and Immunity IV—Parasitology (3) Principles of parasitology: protozoology, helminthology, and entomology and relationship to diseases in animals.

874 Oncology (2) Fundamental aspects of cell biology and pathology relevant to oncology and understanding of various neoplasms in animals; general approaches to diagnosis, treatment and prevention of neoplasia.

877 Special Problems in Pathology (1-8) Extramural and specially designed study for students interested in select topics in morphologic pathology, clinical pathology, veterinary microbiology and parasitology.

878-79 Elective Clinical Rotation I, II (2,2) Special rotations in applied clinical education in Small Animal Clinical Sciences, Large Animal Clinical Sciences, Comparative Medicine and Pathology. Novel experience not associated with required clinical rotations may be arranged.

881 Clinical Rotations in Small Animal Clinical Sciences I (4) Clinical training in medicine, surgery and specialty disciplines for companion animals. Direct responsibility for diagnosis, care, and treatment of clinical patients.
Clinical Rotations in Small Animal Clinical Sciences II (4) Clinical training in medicine, surgery and specialty disciplines for companion animals. Direct responsibility for diagnosis, care, and treatment of clinical patients.

Clinical Rotations in Small Animal Clinical Sciences III (4) Clinical training in medicine, surgery and specialty disciplines for companion animals. Direct responsibility for diagnosis, care, and treatment of clinical patients.

Clinical Rotation in Radiology and Pathology I, II (4,4) Two weeks in each discipline. Clinical training in radiographic techniques and interpretation, including ultrasonography. Post-mortem examination and laboratory diagnostics: clinical pathology and introductory histopathology of biopsy specimens.

Special Problems in Small Animal Clinical Sciences (1-8) Extramural and specially designed study for students interested in select topics in medicine, surgery, anesthesiology, radiology and medical specialties of small (companion) animals.

Transition and Accreditation Seminars (2) Discussion of USDA, state, and local animal laws and regulations: preparation of animal movement forms, veterinary ethics, jurisprudence, basic practice management, and other topics involved in practice of veterinary medicine.

Clinical Rotations in Large Animal Clinical Sciences I (4) Clinical training in medicine, surgery, specialty disciplines and herd health of food animals and horses. Direct responsibility for diagnosis, care and treatment of clinical patients.

Clinical Rotations in Large Animal Clinical Sciences II (4) Clinical training in medicine, surgery, specialty disciplines and herd health of food animals and horses. Direct responsibility for diagnosis, care and treatment of clinical patients.

Clinical Rotations in Large Animal Clinical Sciences III (4) Clinical training in medicine, surgery, specialty disciplines and herd health of food animals and horses. Direct responsibility for diagnosis, care and treatment of clinical patients.

Special Problems in Large Animal Clinical Sciences (1-8) Extramural and specially designed study for students interested in select topics in medicine, surgery, herd health, reproduction, radiology and medical specialties of large animals.

Externship I, II (2,2) Educational experiences in private practice, research facility, zoological preserve, aquarium, or other veterinary-related facility outside Veterinary Teaching Hospital; to provide experiences not frequently available in large referral veterinary teaching hospitals.
FACILITIES FOR RESEARCH AND SERVICE
Facilities for Research and Service

Bureau of Evaluation, Research, and Service
(College of Education)

Ian R. H. Rockett, Director

The Bureau is responsible for the coordination of research and evaluation activities and for the development of college research and service activities based in external funding. In addition, it may be called upon to provide brokering services to connect faculty expertise with needs for consultant services, technical assistance, and possible professional development activities. The Bureau directly coordinates select development of research proposals, as well as college grant and contract review, administration, and fiscal processes. The Bureau also provides the administrative home for the Appalachian Rural Systemic Initiative, Center for Literary Studies, Center on Deafness, Institute for Assessment and Evaluation, LRE for Life Project, Off-campus Program, Regional Rehabilitation Continuing Education Program, Southeastern High School Equivalency Program (Migrant Education), and Teacher Internship Program.

Center for Business and Economic Research
(College of Business Administration)

William Fox, Director

In its economic research endeavors, CBER today has the same basic mission determined at its inception over 60 years ago at the request of the Tennessee Legislature—produce and disseminate new information in the field of economic research and in the specific areas of regional economic development and fiscal policy. The mission has also expanded to include influencing decision quality in the public and private sectors and integrating departmental research through cooperative ventures in the international arena. In addition to the annual Economic Report to the Governor and the biennial Tennessee Statistical Abstract, the Center publishes research on a wide range of socioeconomic and policy issues, including taxes, banking, telecommunications, environmental concerns, and employment prospects.

While its core mission remains little changed, the scope of the CBER unit has expanded from a largely individualistic fiscal assistance program to a regional economic research, policy analysis, and communications technology arm of the College of Business Administration. With a staff of three senior research faculty and a support staff in areas of research, information technology and information dissemination, CBER is located at 100 Glocker.

Center for Executive Education
(College of Business Administration)

John E. Riblett, Director

The College of Business Administration's executive/management education efforts are facilitated through the Center for Executive Education, 708 Stokely Management Center. The Center is a major outreach activity of the University of Tennessee and a key link between the business community and the College of Business Administration. Through short-and long-term business relationships, the Center partners with companies to provide continuing education for managers, carry out research, and exchange leading edge ideas.

The non-degree programs provided to the business community include general management programs, programs for process improvement, programs in lean enterprise practices and programs in supply chain management. They range in length from one week to four weeks.

A prominent feature of the programs is their applied nature. Through projects, assignments and workshops, participants use courses to analyze their organizations and implement immediate changes. Much of the Center's work is customized to the needs of individual companies and provided at their sites in the U.S. or abroad. These custom programs range from a few days to extensive assistance with on-site change implementation that is structured over many months.

Additional information about the Center for Executive Education can be found at http://TheCenter.utk.edu.

Center for Information Studies
(School of Information Sciences)

The Center for Information Studies (CIS) was established in June 1989 to be a focal point for research related to information systems and services. The Center, located at 304 Temple Court, has performed research for the federal government, state and local governments, and business and industry. Projects have ranged from strategic planning efforts to information system and service evaluations, to modeling of scientific and technical communication. Staff of the Center have been actively involved in proposal development and project performance with faculty and staff in other centers and departments at the University.

Areas of interest to the Center include information systems design, information organization and retrieval in very large databases, directories and locator tools in a networked environment, design of regional library and information system networks, new technology applications, information system support for educational reform, modeling of information processes, development of measures and methods for evaluating information system performance and effectiveness.
Center for Literacy Studies

(College of Education)

The Center for Literacy Studies was founded in 1988. The Center's purpose is to integrate scientific research, education, and practical applications of exercise and health science in a manner that enhances health, fitness, performance, and quality of life. The Center is a service-oriented organization designed to educate the UT and Knoxville communities about the benefits of regular physical activity as well as warn about the serious potential consequences of a sedentary existence.

The Center focuses its efforts in four main areas: training future leaders in exercise promotion, providing exercise opportunities for members of the UT community, promoting exercise within the UT and Knoxville communities, and providing exercise testing and assessment.

For additional information about services, contact Dr. Dixie L. Thompson at (865) 974-1271 or via e-mail at dixielee@utk.edu.

Center for Physical Activity and Health

(College of Education)

The mission of the Center for Physical Activity and Health is to integrate scientific research, education, and practical applications of exercise and health science in a manner that enhances health, fitness, performance, and quality of life. The Center is a service-oriented organization designed to educate the UT and Knoxville communities about the benefits of regular physical activity as well as warn about the serious potential health outcomes of leading a sedentary existence.

The Center focuses its efforts in four main areas: training future leaders in exercise promotion, providing exercise opportunities for members of the UT community, promoting exercise within the UT and Knoxville communities, and providing exercise testing and assessment.

For additional information about services, contact Dr. Dixie L. Thompson at (865) 974-1271 or via e-mail at dixielee@utk.edu.

Center for Transportation Research

(Office of Research)

Stephen H. Richards, Executive Director

The Center for Transportation Research, formerly the Transportation Center, was created in 1970 to foster and facilitate interdisciplinary research, public service, and outreach 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, 600 Henley St., Suite 309, is a University-level organization administratively positioned within the Office of Research at UT. The Center's multidisciplinary staff includes over 120 full-time researchers and technicians augmented with numerous faculty and students. The Center is presently organized into four major divisions: Logistics and Systems Analysis; Infrastructure and Environment; Safety and Traffic Operations; and Mobility Services and Policy.

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

Center of Excellence for Materials Processing

The Center for Materials Processing is one of the "Centers of Excellence" created by the State of Tennessee. It has an interdisciplinary program designed to bring together individuals with appropriate expertise to solve important materials processing problems. It emphasizes (1) the development of desirable materials properties through the control of composition, molecular structure, and microstructure, (2) measurement of process variables, and (3) control of those variables to ensure proper processing. The Center conducts basic research and teaching in materials processing and carries out research to improve existing processing technologies and transfer of research results to private industry. A major aspect of the Center is student participation in industry-sponsored research programs.

The Center is located in 513 East Stadium Hall, 974-0816. For further information, contact Dr. C. J. McHargue, 974-7680.

Centers and Chairs 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 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. Now four of the University's 10 Centers of Excellence are sponsored by UT or located in 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. Chairholders are noted within their respective academic units. The Chairs of Excellence are:

Knoxville
Bernadotte E. Schmitt Chair of Excellence of History
Bernard Blasigame Chair of Excellence in Agricultural Policy
Chair of Excellence in Science, Technology and Medical Writing
Clayton Homes Chair of Excellence in Finance
College of Business Administration Chair of Excellence of Policy Studies
Condra Chair of Excellence in Computer Integrated Engineering and Manufacturing
Condra Chair of Excellence in Power Electronics Applications
Goodrich Chair of Excellence in Waste Management and Environmental Engineering
Hodges Chair of Excellence of English
J. Fred Holly Chair of Excellence in Political Economy
Nancy Gore Hurley Chair of Excellence in Environmental Studies
UT Willis Lincoln Chair of Excellence in Physics
Pilot Chair of Excellence in Management
Ivan Racheff Chair of Excellence of Ornamental Horticulture
Ivan Racheff Chair of Excellence in Materials Science and Engineering
Forrest & Patsy Shumway Chair of Excellence in Romance Languages

Memphis
Maury W. Bronstein Chair of Excellence in Cardiovascular Physiology
Crippled Children's Hospital Foundation Chair of Excellence in Biomedical Engineering
William and Dorothy Dunavant Chair of Excellence in Pediatrics
Faculty Chair of Excellence in Obstetrics and Gynecology
Federal Express Chair of Excellence in Pediatrics
First Tennessee Chair of Excellence in Clinical Pharmacy
Thomas A. Gerwin Chair of Excellence in Physics
Goodman Chair of Excellence in Medicine
J. R. Hyde Chair of Excellence in Rehabilitation Engineering
Le Bonheur Chair of Excellence in Neurology
Plough Foundation Chair of Excellence in Pediatrics
Second Le Bonheur Chair of Excellence in Pediatrics
Semmes-Murphey Chair of Excellence in Neurology
Mark S. Sorway Chair of Excellence in Urology
Harriet S. Van Vleet Chair of Excellence in Biochemistry
Harriet S. Van Vleet Chair of Excellence in Microbiology and Immunology
Harriet S. Van Vleet Chair of Excellence in Pathology
Harriet S. Van Vleet Chair of Excellence in Pharmacology