



**2021–2022 PROGRAMS OF STUDY**



THE UNIVERSITY OF  
**TENNESSEE**  
HEALTH SCIENCE CENTER.

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COLLEGE OF GRADUATE  
HEALTH SCIENCES



The College of Graduate Health Sciences of the University of Tennessee Health Science Center (UTHSC) offers graduate instruction leading to the Doctor of Philosophy, Master of Science, Master of Dental Sciences degrees and Certificates in one of the following:

**Biomedical Engineering**

**Biomedical Sciences**

**Certificate in Clinical Investigation**

**Certificate in Health Care Quality Improvement**

**Dental Sciences**

**Epidemiology**

**Health Outcomes and Policy Research**

**Laboratory Research and Management**

**Nursing Science**

**Pharmaceutical Sciences**

**Pharmacology**

**Speech and Hearing Science**

Combined DDS/PhD, MD/PhD, DNP/PhD, and PharmD/MS or PhD curricula in the colleges of Dentistry, Medicine, Nursing, and Pharmacy are available for exceptionally qualified students.

The principal aim of these graduate programs is to provide specialized education beyond the baccalaureate level through advanced study and research training that prepare students for research careers in academia, industry, and government.

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## APPLICATION DEADLINES

### JANUARY 15

Speech and Hearing Science

### FEBRUARY 1

Nursing Science

### MARCH 1

Biomedical Sciences

### MARCH 15

Health Outcomes and Policy Research (PhD)  
Pharmaceutical Sciences

### APRIL 15

Dental Sciences  
Epidemiology  
Health Outcomes and Policy Research (MS)

### MAY 15

Biomedical Engineering  
Certificate in Clinical Investigation  
Certificate in Health Care Quality Improvement

### JUNE 1

Pharmacology  
Laboratory Research and Management

## Research Facilities and Support Services

Laboratory facilities at The University of Tennessee Health Science Center (UTHSC), including research areas at St. Jude Children's Research Hospital, The Regional Medical Center, Le Bonheur Children's Medical Center, Methodist University Hospital, and Department of Veterans Affairs Medical Center, under the direction of individual faculty investigators, are fully equipped with instrumentation necessary for modern biomedical and pharmaceutical research. The Health Sciences Library has a collection of books, current print and electronic periodicals, and numerous electronic databases. Additionally, our graduate training activities benefit from the approximately \$100 million in grants and contracts generated annually by the research faculty at UTHSC. The graduate programs are also enhanced by the Molecular Resource Center of Excellence, The Regional Biocontainment Laboratory, Center for Integrated and Translational Genomics, Neuroscience Center of Excellence, Vascular Biology Center, and the UT Ophthalmology Institute.

## The University

Established in 1911, UTHSC is one of the four major campuses within the statewide University of Tennessee System (others are at Chattanooga, Knoxville, and Martin). UTHSC comprises one of the most complete groupings of health science programs offered in the country and is worldwide in scope. UTHSC includes six colleges: Dentistry, Graduate Health Sciences, Health Professions, Medicine, Nursing, and Pharmacy. All are dedicated to overall excellence in teaching, research, and service. More than 2000 students are enrolled on the UTHSC campus, including more than 300 students in PhD, MS, or MDS programs in the College of Graduate Health Sciences.

## Biomedical Engineering (MS or PhD)

**CHAIR:** William Mihalko, MD, PhD | 901.448.2666

**PROGRAM DIRECTOR:** Dr. Richard A. Smith | 901.448.5254 | [rsmith@uthsc.edu](mailto:rsmith@uthsc.edu)

The University of Memphis/UTHSC Joint Graduate Program offers MS (thesis or project) and PhD degrees in biomedical engineering that stress the application of engineering and physical science to biomedical problems, including research and development of new medical technologies, and improved experimental and theoretical characterization of physiological phenomena. The program's faculty are divided between the two campuses, offer academic and research specialization in four major subdisciplines: (1) Biomechanics, Movement Science and Rehabilitation; (2) Biomaterials and regenerative technology; (3) Biosensors; and (4) Electrophysiology.

Core subjects, composed of about half of the graduate curriculum, stress mathematical methods, instrumentation and measurements, and life sciences that are useful for understanding, analyzing, and solving biomedical problems and developing instrumentation and devices. The remaining part of the curriculum is devoted to a particular area and is chosen with the advice and consent of the student's faculty committee. Courses are selected from applicable offerings of the University of Memphis and the UTHSC.

**Requirements:** Bachelor degree with a grade-point average of at least 3.0 from an accredited college or university, a combined score (verbal and quantitative) of at least 300 on the revised Graduate Record Examination, a score of at least 213/79 on the computer-based/Internet-based TOEFL or evidence of proficiency in English for students whose native language is not English, and three letters of recommendation. We reserve the right, however, to set higher cutoffs, especially for PhD candidates. **Deadline: May 15.**

**MORE INFO:** [uthsc.edu/bme](http://uthsc.edu/bme)

# Biomedical Sciences (PhD)

**CHAIR:** Elizabeth A. Fitzpatrick, PhD | 901.448.5405

The Biomedical Sciences Program (aka Integrated Biomedical Sciences (IBS)) is a research-oriented graduate program that involves faculty from UTHSC and affiliate faculty from nearby St. Jude Children's Research Hospital and the Veterans Affairs Medical Center. Students apply directly to the IBS Program, but choose among seven research tracks: Cancer Developmental Biology; Molecular and Translational Physiology;; Genetics, Genomics and Informatics; Microbiology, Immunology, and Biochemistry; Molecular and Systems Pharmacology; Neuroscience, and Rehabilitation Sciences. Students in the IBS Program choose from a menu of courses to fulfill core and elective curricular requirements, a process that allows them to tailor their curriculum to their educational and research needs. Course selection is only one of several flexible features of the IBS Program designed to enable students to gain an edge in today's competitive research environment. Most students choose to identify a research track before enrolling in the IBS Program, while others may consider more than one track, and are free to switch tracks during their first year. All students participate in laboratory rotations before selecting a research mentor, allowing the student to thoroughly explore their dissertation research options. The world class research environment at UTHSC and St. Jude along with the flexibility of the program and an extremely high faculty to student ratio make the UTHSC Integrated Biomedical Sciences Program ideal for the student looking for a personalized, high-powered PhD program that will launch them into a top notch biomedical sciences career.

**Requirements:** Bachelor degree with a grade-point average of at least 3.0 from an accredited college or university, a score of at least 213/79 on the computer-based/Internet-based TOEFL or evidence of proficiency in English for students whose native language is not English, and three letters of recommendation. The Graduate Record Examination (GRE) is not required. **Priority deadline: December 1; final deadline: March 1.**

## PROGRAM INQUIRIES:

901.448.7030 | [IBS@uthsc.edu](mailto:IBS@uthsc.edu)

## TRACK HEADS:

### CANCER AND DEVELOPMENTAL BIOLOGY

**Dr. Susan A. Miranda** | 901.448.1136 | [smirand5@uthsc.edu](mailto:smirand5@uthsc.edu)

**Dr. Larry Pfeffer** | 901.448.7855 | [lpfeffer@uthsc.edu](mailto:lpfeffer@uthsc.edu)

### MOLECULAR AND TRANSLATIONAL PHYSIOLOGY

**Dr. Kaushik Parthasarathi**

901.448.2682 | [kparthas@uthsc.edu](mailto:kparthas@uthsc.edu)

### GENETICS, GENOMICS AND INFORMATICS

**Dr. Byron Jones** | 901.448.2814 | [bjone129@uthsc.edu](mailto:bjone129@uthsc.edu)

**Dr. Athena Davenport** | 901.448.3085 | [astarlar@uthsc.edu](mailto:astarlar@uthsc.edu)

### MICROBIOLOGY, IMMUNOLOGY, AND BIOCHEMISTRY

**Dr. David Nelson** | 901.448.8303 | [dnelson@uthsc.edu](mailto:dnelson@uthsc.edu)

### MOLECULAR AND SYSTEMS PHARMACOLOGY

**Dr. Steven Tavalin** | 901.448.3007 | [stavalin@uthsc.edu](mailto:stavalin@uthsc.edu)

**Dr. Fuming Zhou** | 901.448.1779 | [fzhou3@uthsc.edu](mailto:fzhou3@uthsc.edu)

### NEUROSCIENCE

**Dr. Max Fletcher** | 901.448.2212 | [mfletch4@uthsc.edu](mailto:mfletch4@uthsc.edu)

### REHABILITATION SCIENCE

[uthsc.edu/health-professions/research/rs-phd.php](http://uthsc.edu/health-professions/research/rs-phd.php)

**Dr. James Carson** | 901.448.5588 | [jcarso16@uthsc.edu](mailto:jcarso16@uthsc.edu)

## CHAIRS OF PARTICIPATING DEPARTMENTS:

### ANATOMY AND NEUROBIOLOGY

**Dr. Matthew Ennis**

### GENETICS, GENOMICS, AND INFORMATICS

**Dr. Robert W. Williams**

### MICROBIOLOGY, IMMUNOLOGY, AND BIOCHEMISTRY

**Dr. Matthew Ennis (Interim Chair)**

### PATHOLOGY

**Dr. Abdallah Azouz (Interim Chair)**

### PHARMACOLOGY

**Dr. Alex Dopico**

### PHYSIOLOGY

**Dr. Zhongjie Sun**

### ST. JUDE CHILDREN'S RESEARCH HOSPITAL LIAISON:

**Dr. Gerard Zambetti**

901.595.6028 | [gerard.zambetti@stjude.org](mailto:gerard.zambetti@stjude.org)

**MORE INFO:** [grad.uthsc.edu/IBS](http://grad.uthsc.edu/IBS)

# Certificate in Clinical Investigation

**CHAIR AND PROGRAM DIRECTOR:** **Simonne S. Nouer, MD, PhD** | 901.448.5189 | [snouer@uthsc.edu](mailto:snouer@uthsc.edu)

The Certificate in Clinical Investigation is a 12-credit hour online non-degree program designed to provide initial clinical research skills and training to healthcare professionals. The program is designed for junior faculty, fellows, other healthcare professionals and research-oriented individuals, who are not in a degree program but are seeking initial training in the methods and skills of conducting clinical investigation, with additional training in one of the following areas: Health Disparities or, Health Behavior Intervention. All coursework is provided online, with self-paced courses that are moderated by experienced research scholars within the College of Graduate Health Sciences' academic year schedule of fall and spring terms. Students will need at least two semesters to earn a certificate if they follow the recommended plan for two courses in the fall semester and two courses in the spring semester. The minimum cumulative GPA needed for successful completion of the Clinical Investigation Certificate program may be no lower than a GPA of 3.0.

**Requirements:** Health professional degree or a bachelor degree, with a grade point average of at least 3.0 from an accredited college or university; official transcripts; and two letters of recommendation. In addition, applicants must have sufficient computer literacy, English-language literacy, and technical skills to participate in web-based, graduate-level courses. A command of written and spoken English is essential. If there is cause to doubt the student's proficiency in English, the program may, at its discretion, require additional examinations and/or other evidence of proficiency prior to registration. **Deadline: May 15.**

**MORE INFO:** [uthsc.edu/preventive-medicine/certificate.php](http://uthsc.edu/preventive-medicine/certificate.php)

# Dental Sciences (MDS)

**CHAIR:** **Sidney H. Stein, DMD, MS, PhD** | 901.448.6441

The Master of Dental Science degree is designed to provide contemporary research experience in oral sciences to dentists enrolled in clinical specialty programs in the UTHSC College of Dentistry. Courses and research requirements for the Master of Dental Science provide appreciation of the role of research in the clinical management of orofacial abnormalities and diseases and the restoration of orofacial health and function. The goal of the program is to train dental specialists to pursue a career that can include specialty practice, research, or teaching, with an expanded comprehension of the interrelationships between clinical dentistry, basic science, and research. The program is offered in five concentration areas: endodontics, orthodontics, pediatric dentistry, periodontology, and prosthodontics. The Master of Dental Science degree is awarded upon completion of requirements set forth by the UTHSC College of Graduate Health Sciences and the UTHSC College of Dentistry.

**Requirements:** Eligible candidates must have a DDS, DMD, or equivalent foreign degree and acceptance by an advanced education program in the UTHSC College of Dentistry for specialty training in endodontics, orthodontics, pediatric dentistry, periodontology, and prosthodontics. **Deadline: April 15.**

## PROGRAM DIRECTORS:

### ENDODONTICS

**Dr. George Huang** | 901.448.1490 | [ghuang4@uthsc.edu](mailto:ghuang4@uthsc.edu)

### ORTHODONTICS

**Dr. Richard Williams** | 901.448.1893 | [rwillia9@uthsc.edu](mailto:rwillia9@uthsc.edu)

### PEDIATRIC DENTISTRY

**Dr. Martha H. Wells** | 901.448.6260 | [mwells18@uthsc.edu](mailto:mwells18@uthsc.edu)

### PERIODONTOLOGY

**Dr. Doug Dixon** | 901.448.6920 | [ddixon27@uthsc.edu](mailto:ddixon27@uthsc.edu)

### PROSTHODONTICS

**Dr. David R. Cagna** | 901.448.6930 | [dcagna@uthsc.edu](mailto:dcagna@uthsc.edu)

**MORE INFO:** [uthsc.edu/dentistry/Grad/msdp.php](http://uthsc.edu/dentistry/Grad/msdp.php)

## Epidemiology (MS)

**CHAIR AND PROGRAM DIRECTOR:** **Simonne S. Nouer, MD, PhD** | 901.448.5189 | [snouer@uthsc.edu](mailto:snouer@uthsc.edu)

The Master of Science in Epidemiology program is a 36 credit hour degree program designed to provide the necessary methodological skills for students/ clinicians/healthcare professionals to be able to independently conduct research and acquire grants in a chosen field of study. As part of this program, students receive training in epidemiology, biostatistics, health research methods, health behavior, and health promotion. The program is offered to qualified applicants holding a bachelor's, master's, or professional degree in a variety of disciplines including physical, biological, and social sciences, health and medical sciences. The program emphasizes training for current health professionals to develop and enhance their research design and data analysis skills. The program offers three distinct tracks: Clinical Investigation; Biostatistics; and Data Science. All core courses (biostatistics, epidemiology, and SAS) are offered online. The program offers up to three credit hours of professional development credit for those individuals meeting defined criteria. Students may opt for a nonthesis track in which students prepare a quantitatively-based research article, approved by the student's committee, which must be suitable for submission and possible publication in a professional peer-reviewed journal. Students must present their thesis or research project and associated manuscript in an announced forum with the student's committee.

**Requirements:** Bachelor's degree with a GPA of at least 3.0 from an accredited college or university; official transcripts; letter of intent (200-word minimum) describing the applicant's specific area of epidemiological interest; a score of at least 213/79 on the computer-based or Internet-based TOEFL or evidence of proficiency in English for students whose native language is not English; and two letters of recommendation. **Deadline: April 15.**

**MORE INFO:** [uthsc.edu/preventive-medicine/epidemiology/index.php](http://uthsc.edu/preventive-medicine/epidemiology/index.php)

## Health Outcomes and Policy Research (MS)

**CHAIR AND PROGRAM DIRECTOR:** **Simonne S. Nouer, MD, PhD** | 901.448.5189 | [snouer@uthsc.edu](mailto:snouer@uthsc.edu)

The Master of Science in Health Outcomes and Policy Research degree offered by the Institute of Health Outcomes and Policy Research is designed for students interested in studying healthcare delivery, health policy, and outcomes. As part of this program, students receive training in epidemiology, biostatistics, health research methods, health care systems and public policy. The program is offered to qualified applicants holding a bachelor's, master's, or professional degree in a variety of disciplines including but not limited to physical, biological, and social sciences, health and medical sciences.

**Requirements:** Bachelor's degree with a grade-point average of at least 3.0 from an accredited college or university; official transcripts; letter of intent describing the applicant's specific area of interest (200-word minimum); a score of at least 213/79 on the computer-based/ Internet-based TOEFL or evidence of proficiency in English for students whose native language is not English; and two letters of recommendation. **Deadline: May 15.**

**MORE INFO:** [uthsc.edu/ihop](http://uthsc.edu/ihop)

## Health Outcomes and Policy Research (PhD)

**CHAIR AND PROGRAM DIRECTOR:** **Simonne S. Nouer, MD, PhD** | 901.448.5189 | [snouer@uthsc.edu](mailto:snouer@uthsc.edu)

Health Outcomes and Policy Research is focused primarily on pharmacy and the medication use process, health disparities, and policies related to health care systems that impact access and economics.

Specifically, we engage in health outcomes, policy, and community-based participatory research that pertains to pharmacy systems, health systems, e-health systems, legal and regulatory systems, and community social capital. Our research includes studies of the cost of illness, cost effectiveness, cost-benefit, medication errors, patient perceptions of providers,

cost of care-giving, and economic impacts. Our unique areas of strength within this body of research are medication therapy management outcomes, health disparities, and translational research. We approach these three areas of study both individually and collectively by engaging the interdisciplinary skills of our faculty and students.

**Health Policy** – This concentration of the Health Outcomes and Policy Research program is designed to provide an intense, academic foundation for students pursuing careers in research, teaching, and health administration.

The formal curriculum provides a comprehensive understanding of the methods used for health services research, health policy research, and health policy analysis. Required courses include extensive experiences in quantitative and qualitative research methods, health economics, health systems functions, and health care policy formulation and analysis.

**Pharmacoeconomics** – The program in Health Outcomes and Policy Research, with a concentration in pharmacoeconomics, is designed to develop the knowledge and skills necessary for evaluating the economic, clinical, and humanistic outcomes of medical treatment. Topics addressed include the use of pharmaceuticals, appropriateness and quality of care, patient outcomes, large database analysis, patient satisfaction with care, costs of both appropriate and inappropriate medication use, public policies related to health care, and pharmacoepidemiological considerations. The course of study examines the respective roles and behaviors of healthcare professionals (e.g., physicians, pharmacists, nurses, allied health workers) involved in patient care and the influence of healthcare-related organizations (e.g., managed care, health maintenance organizations, public and private insurance, and pharmaceutical manufacturers) on health outcomes. Very important to the medication use process and the understanding of health disparities is the role of the patient.

**Health Informatics** – This area of research is timely in that health systems are now substantially reliant on information management systems and increasingly vulnerable to damage due to improper management of these systems. The Department of Health Informatics and Information Management offers most of the doctoral level courses. Graduates of this program will have a specific area of expertise in health outcomes and policy as well as a core of interdisciplinary knowledge. They will become researchers, scholars, teachers, thinkers, and planners in the demanding and changing field of health informatics and information management.

**Requirements:** Bachelor degree or health-related degree, with a grade-point average of at least 3.0 from an accredited college or university (health profession degree or health-related degree preferred); official transcripts; letter of intent describing the applicant's specific area of interest (200-word minimum); a combined score (verbal and quantitative) of at least 300 on the revised Graduate Record Examination, and minimum score of 3.5 on the analytical writing section; a score of at least 213/79 on the computer-based/ Internet-based TOEFL or evidence of proficiency in English for students whose native language is not English; and three letters of recommendation. **Deadline: March 15.**

**MORE INFO:** [uthsc.edu/ihop](http://uthsc.edu/ihop)

## Certificate in Health Care Quality Improvement

**CHAIR AND PROGRAM DIRECTOR:** **Simonne S. Nouer, MD, PhD** | 901.448.5189 | [snouer@uthsc.edu](mailto:snouer@uthsc.edu)

The Institute for Health Outcomes and Policy (IHOP)'s Graduate Certificate in Health Care Quality Improvement meets the growing need for health care quality and outcomes and population health specialists who can grow and sustain a culture of continuous improvement. This 12-credit certificate program prepares professionals in healthcare to implement quality improvement initiatives and to manage populations of patients to optimize efficiency and effectiveness of care and services. Participants learn to use the techniques of statistical process control, selected tools from operations research and quality improvement, information management technology, and qualitative decision-making applications to ultimately improve clinical health outcomes for patients and communities.

The distance-based format allows healthcare professionals to advance their education while working full-time, and also provides students with a rigorous curriculum and access to the resources and experts at UTHSC. Courses are offered in fall and spring semesters.

**Requirements:** Bachelor degree or health-related degree, with a grade-point average of at least 3.0 from an accredited college or university (health profession degree or health-related degree preferred); official transcripts; letter of intent describing the applicant's specific area of interest (200-word minimum); a score of at least 213/79 on the computer-based/ Internet-based TOEFL or evidence of proficiency in English for students whose native language is not English; and two letters of recommendation. **Deadline: March 15.**

**MORE INFO:** [uthsc.edu/ihop](http://uthsc.edu/ihop)



## Laboratory Research and Management (MS)

**CHAIR AND PROGRAM DIRECTOR:** Meiyun Fan, PhD | 901.448.4192 | [mfan2@uthsc.edu](mailto:mfan2@uthsc.edu)

The College of Graduate Health Sciences offers a 16-month 35-credit program leading to the degree of Master of Biomedical Science with a concentration in Laboratory Research and Management. The mission of this program is to train qualified individuals in the advanced technical, managerial, and administrative skills required to be a Senior Research Assistant/Lab Manager in basic and translational biomedical research laboratories in the academic, government and private biotech sectors. Candidates in this three-semester program will receive training in four integrated components: Basic Science, Technical, Administrative, and Practical.

**Requirements:** General requirements are a Bachelor degree with a grade-point average of at least 3.0 from an accredited college or university and a combined score totaling at least 300 for the verbal and quantitative sections of the revised Graduate Record Examination. Individuals with a professional or graduate degree in science from an accredited US/Canadian institution, or with scores from other commonly recognized standardized graduate admissions exams, may petition for an exception. Any applicant to the graduate program whose first language is not English and who has earned neither a bachelor's nor a master's degree from a college or university in an English-speaking country must have achieved a TOEFL score of at least 213/79 on the computer-based/Internet-based exam or an IELTS score of 6.5 (earned within 2 years prior to application). In addition, two letters of recommendation should be provided. Students will be accepted into the program on a rolling admissions basis ending June 1.

**MORE INFO:** [uthsc.edu/grad/Programs/index.php?page=LRM](http://uthsc.edu/grad/Programs/index.php?page=LRM)

## Nursing Science (PhD)

**CHAIR:** Wendy M. Likes, PhD, DNSc | 901.448.6144

**PROGRAM DIRECTOR:** Dr. Carolyn Graff | 901.448.3066 | [jgraff@uthsc.edu](mailto:jgraff@uthsc.edu)

The College of Graduate Health Sciences offers the Nursing Science PhD program, a research-focused doctoral nursing degree, to individuals with a Bachelor's degree or a master's degree in nursing. The mission of this program is to prepare nurse scientists for collaborative and socially responsible inquiry that improves and promotes health today and for the future. This mission is achieved through an educational program that emphasizes developing and testing theories and models of nursing care; clinical and biological nursing research; and social, ethical, political, legal, and economic implications of health care policies and practices. The program was designed to educate nurse scientists who will use research-based knowledge, theories, and interventions in their roles as researchers, educators, and administrators.

Students work closely throughout their program of study with a faculty advisor or mentor with whom they share a common interest. The areas of faculty research concentration are self-management, neurobehavior, risk identification and management, and relational health. Faculty members have established local, regional, national, and international reputations for their contributions to nursing scholarship and leadership and have been successful at securing funding for their research. In addition to NIH funding, faculty have been awarded significant funding from private and public foundations and corporations. Interested individuals should carefully examine the programs of research of faculty to determine which program best fits the student's future goals as a scientist. The PhD program is a rigorous, mentored program of three to five years. Matching with a research mentor with similar interests is critical to success. Although nursing faculty teach most courses included within the curriculum, students have the opportunity to learn and network with faculty and doctoral students in other disciplines while enrolled in biostatistics, health policy, and medical ethics courses. Students may enroll in full-time or part-time study.

**Requirements:** Bachelor degree with a grade point average of at least 3.0 from an accredited college or university, an RN license, a score of at least 213/79 on the computer-based/Internet-based Test of English as a Foreign Language (TOEFL) or 6.5 on the IELTS or evidence of proficiency in English for students whose native language is not English, and three letters of recommendation. Graduate Record Examination (GRE) scores are not required but may be provided by applicants. **Deadline: February 1.**

**MORE INFO:** [uthsc.edu/nursing/phd.php](http://uthsc.edu/nursing/phd.php)

# Pharmaceutical Sciences (PhD)

**PROGRAM DIRECTOR:** Dr. Hassan Almoazen | 901.448.2239 | [halmoaze@uthsc.edu](mailto:halmoaze@uthsc.edu)

The Pharmaceutical Sciences program is a research intensive graduate program with faculty from UTHSC and affiliate faculty from St. Jude Children's Research Hospital. The program offers the PhD degree in Pharmaceutical Sciences, with emphasis in bioanalytical and medicinal chemistry, pharmacometrics, drug delivery and translational biological sciences. This comprises research in target and drug discovery and development, including neuropharmacology, bacterial, fungal and viral infectious diseases, cancer therapy, urinary/bladder biological responses, structural biology, cardiovascular and metabolic disorders, and immunology.

**Bioanalysis** – Faculty research includes the development and application of state-of-the-art analytical technologies to detect and quantify molecular entities of biological and pharmaceutical interest, such as drugs and biomarkers.

**Biological, Clinical and Translational Sciences** – Faculty research activities are related to the identification of drug targets and the characterization of biological response to-drug related interventions. This includes research projects in neuroinflammation, chemical neuroscience, traumatic brain injury and neuropharmacological actions; urinary/bladder biological responses; acute kidney injury; ion channel research; cardiovascular and metabolic diseases; immune mediated disorders; bacterial and fungal infections and related drug resistance and pathogenesis; and signal transduction research. A breadth of biochemical, electrophysiologic, and molecular pharmacology methodologies and analytical approaches are applied in this context, including *in vitro*, cell-based and *in vivo* assessments.

**Biopharmaceutics and Drug Delivery** – Faculty research includes studies designed to examine the physicochemical factors that influence drug permeability, the formulation into novel drug delivery systems, and the discovery and validation of novel delivery systems for targeted release of drugs.

**Medicinal Chemistry** – Faculty research activities are targeted at finding specific and selectively acting drug molecules. The efforts include design, synthesis, characterization, and bioassays of molecules for prophylactic and therapeutic use in disorders of the endocrine, cardiovascular, and central and peripheral nervous systems, as well as in cancer and infectious diseases. Computer-aided molecular design, combined with traditional and asymmetric organic synthesis, and mass and NMR spectroscopic techniques are used in the drug discovery process.

**Pharmacometrics** – Faculty research includes the quantitative assessment of drug disposition (pharmacokinetics) and effects (pharmacodynamics) using mathematical models based on biology, physiology, pharmacology and disease.

**Requirements:** Health profession degree or a bachelor degree, with a grade-point average of at least 3.0 from an accredited college or university; official transcripts; letter of intent describing the applicant's specific area of interest (200-word minimum); a combined score (verbal and quantitative) of at least 300 on the revised Graduate Record Examination and minimum score of 3.5 on the analytical writing section; a score of at least 213/79 on the computer-based/internet-based TOEFL or evidence of proficiency in English for students whose native language is not English; and three letters of recommendation. Deadline: March 15.

**MORE INFO:** [uthsc.edu/pharmacy/dps/phd.php](http://uthsc.edu/pharmacy/dps/phd.php)

# Pharmacology (MS)

**CHAIR:** Alex Dopico, MD, PhD | 901.448.3822

**PROGRAM DIRECTOR:** Dr. Edwards Park | 901.448.4779 | [epark@uthsc.edu](mailto:epark@uthsc.edu)

The department of Pharmacology offers an 11 month, 34 credit, accelerated program leading to the award of a Master of Science degree. The program is designed to provide the student with a comprehensive background in medical pharmacology, basic biochemistry and the physiologic and pathophysiologic basis for drug therapy. Successful completion of this program will fully prepare a student for additional medical, dental or basic research training.

**Requirements:** Bachelor degrees with a grade-point average of at least 3.0 from an accredited college or university. Applicants may submit competitive MCAT or DAT scores or a revised Graduate Record Examination combined scores (verbal and quantitative) of at least 300. In addition three letters of recommendation should be provided. Students will be accepted into the program on a rolling admission basis ending June 1.

**MORE INFO:** [uthsc.edu/grad/Programs/index.php?page=PharmacologyMS](http://uthsc.edu/grad/Programs/index.php?page=PharmacologyMS)

# Speech and Hearing Science (PhD)

**CHAIR:** Ashley Harkrider, PhD | 865.974.1810

**PROGRAM DIRECTOR:** Dr. James Lewis | 865.974.0354 | [jdlewis@uthsc.edu](mailto:jdlewis@uthsc.edu)

The Department of Audiology and Speech Pathology on the Knoxville campus offers a PhD program that seeks to develop individuals for professional careers in a variety of positions including research and college teaching in the concentration areas of speech and language pathology, audiology, speech-language science or hearing science. The degree program is research oriented with primary emphasis on processes involved in normal, or disordered speech, language and hearing. Students will be expected to demonstrate their knowledge in areas related to the concentrated field of study. These areas include: 1) Basic speech, hearing, or language processes; 2) Basic speech, hearing, or language disorders or differences; 3) Related disciplines providing insight into human communication processes; 4) Technical skills in instrumentation and experimental design which enable the student to investigate problems pertaining to speech and hearing processes.

Requirements: Bachelor degree with a grade-point average of at least 3.0 from an accredited college or university, either a combined score (verbal and quantitative) of at least 300 on the revised Graduate Record Examination or demonstrated excellence in graduate-level work, a personal statement, and three letters of recommendation. Students whose native language is not English are also required to score at least 213/79 on the computer-based/Internet-based TOEFL. **Deadline: January 15.**

**MORE INFO:** [uthsc.edu/asp/programs/phd/index.php](http://uthsc.edu/asp/programs/phd/index.php)

## Fellowships

A number of research assistantships, predoctoral fellowships, and traineeships with competitive stipends are available to full-time graduate students. In some programs, additional scholarships of up to \$3000 may be available for individuals who have exceptional academic records and have graduated from universities within the United States. Tuition for fellowships is normally waived. There are also several government student loan options through the Financial Aid Office.

## Admission

General requirements are a bachelor's degree with a grade-point average of at least 3.0 from an accredited college or university, a combined score (verbal and quantitative) of at least 1000/300 on the old/revised Graduate Record Examination, a score of at least 213/79 on the computer-based/Internet-based TOEFL or 6.5 on the IELTS or evidence of proficiency in English for students whose native language is not English, and three letters of recommendation. Some programs in the college may have additional or more stringent requirements.

Students must apply over the web ([grad.uthsc.edu](http://grad.uthsc.edu)). There is no application fee. Successful applicants are required to complete a criminal background check.

Application documents from any non-U.S. institution must be sent to and verified by World Education Services ([wes.org](http://wes.org)) or other international transcript verification service that is a member of the National Association of Credential Evaluation Services (NACES). Transcript verification services charge a fee for the evaluation.

Official test scores and three letters of recommendation should be sent directly from the contributing source and not by the student to:

Office of Enrollment Services  
University of Tennessee Health Science Center  
910 Madison Avenue, Suite 525  
Memphis, TN 38163

FOUNDED IN **1928**

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**TOP THIRD**

RANKING IN GRADUATE SCHOOLS IN THE BIOLOGICAL SCIENCES  
(U.S. NEWS & WORLD REPORT)

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**18,412** READS FROM **1,775** INSTITUTIONS IN **147** COUNTRIES -  
THESES AND DISSERTATIONS FROM THE COLLEGE LOGGED IN 2018 (DIGITAL COMMONS)

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**TOP TEN**

POSTDOCTORAL OFFICE RANKING IN THE U.S. (NATIONAL POSTDOCTORAL ASSOCIATION)

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**60%**

OF DOCTORAL GRADUATES HAVE NO GRADUATE OR UNDERGRADUATE DEBT, COMPARED  
TO 50% NATIONWIDE AT SIMILAR INSTITUTIONS (SURVEY OF EARNED DOCTORATES)

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**561**

CREDENTIALLED FACULTY - GREATEST FACULTY-TO-TRAINEE RATIO AT UTHSC

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**1,500+** ALUMNI

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**\$84.3 MILLION**

IN GRANT EXPENDITURES BENEFITING GRADUATE TRAINING



THE UNIVERSITY OF  
**TENNESSEE**  
HEALTH SCIENCE CENTER.

COLLEGE OF GRADUATE  
HEALTH SCIENCES

920 Madison Ave., Suite 807 | Memphis, TN 38163