



STUDENT **HANDBOOK**



THE UNIVERSITY OF
TENNESSEE
HEALTH SCIENCE CENTER.

PHARMACEUTICAL
SCIENCES
GRADUATE PROGRAM



WELCOME TO THE PHARMACEUTICAL SCIENCES GRADUATE PROGRAM



Dear New or Prospective Graduate Student,

Welcome to the Graduate Program in Pharmaceutical Sciences at the University of Tennessee Health Science Center (UT Health Science Center). Our program has a long and well-recognized tradition in providing excellence in graduate education in the Pharmaceutical Sciences. Our graduates are well-prepared for a life-long journey of research and investigation in biomedical sciences with the ultimate goal to develop new and optimize current medications for treating unmet medical needs and to improve global health. Many of our alumni hold leading positions throughout the pharmaceutical industry, renowned academic institutions, and government agencies in North American and beyond.

The Pharmaceutical Sciences Graduate Program is based in the UT Health Science Center College of Pharmacy under the administrative umbrella of the College of Graduate Health Sciences. Graduate faculty members are affiliated with the UT Health Science Center Colleges of Pharmacy and Medicine, St. Jude Children's Research Hospital, UT Knoxville and several other research entities. The scientific scope of the program comprises all aspects of the pharmaceutical sciences, from molecular biology, target identification and physiology over drug discovery, medicinal chemistry, structural biology, material sciences and drug delivery to pharmaceuticals, pharmacometrics, biomarker research, bioanalysis and drug product development. The curriculum has recently been redesigned to provide high flexibility so that students can tailor their program of study and course work according to their individual interests and needs in order to obtain the optimal graduate learning experience.

Please explore and familiarize yourself with this handbook as it provides a comprehensive overview over the Pharmaceutical Sciences program including its curriculum and policies. Please do not hesitate to contact our Graduate Program Director, Dr. Hassan Almoazen (901.448.2239; halmoaze@uthsc.edu) or myself if you have questions or wish to learn more about our program.

I am looking forward to your contributions to pharmaceutical research in the UT Health Science Center Graduate Program in Pharmaceutical Sciences!

Bernd Meibohm, PhD, FCP, FAAPS
Distinguished Professor, Chair and Associate Dean for Research and Graduate Studies



Dear New Graduate Student,

We are excited that you have decided to join us in the Pharmaceutical Sciences PhD Program. We have a great group of faculty, post doctoral fellows and outstanding graduate students. I am confident your time here at UT Health Science Center will amplify your potential and grow your passion for science into a bright and successful career. I will be the person who works with you, your mentor and your committee to keep your academic achievements and your progression moving in the right direction. For any questions about the program or our academics, please free to contact me at 901.448.2239 or by email at halmoaze@uthsc.edu. We look forward to working with you and being part of your journey at UT Health Science Center.

Hassan Almoazen, PhD
Associate Professor and Program Director



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GRADUATE FACULTY

WITH FULL-TIME APPOINTMENT
IN THE COLLEGE OF PHARMACY

Hassan Almoazen, PhD, Associate Professor

Sarka Beranova, PhD, Associate Professor

Daniel Collier, PhD, Assistant Professor

Theodore Cory, PharmD, PhD, Associate Professor

Isaac O. Donkor, PhD, Professor

Jarrod Fortwendel, PhD, Professor

Francesco Giorgianni, PhD, Associate Professor

Maxwell Gyamfi, PhD, Assistant Professor

Kirk Hevener, PharmD, PhD, Associate Professor

Camaron Hole, PhD, Assistant Professor

Jianxiong Jiang, PhD, Associate Professor

Santosh Kumar PhD, Professor

Michio Kurosu, PhD, Professor

S. Casey Laizure, PharmD, Professor

Wei Li, PhD, Distinguished Professor

Bernd Meibohm, PhD, Distinguished Professor

Duane Miller, PhD, Professor Emeritus

Bob M. Moore II, PhD, Professor

Glen E. Palmer, PhD, Associate Professor

Frank Park, PhD, Associate Professor

Brian Peters, PhD, Professor

Sudeshna Roy, Ph.D, Associate Professor

Udai Singh, PhD, Associate Professor

Bhupesh Singla, PhD, Assistant Professor

Chalet Tan, PhD, Professor

Chao-Yie Yang, PhD, Associate Professor

GRADUATE FACULTY

WITH PRIMARY APPOINTMENTS IN
OTHER UT HEALTH SCIENCE CENTER UNITS

Monica Jablonski, PhD, Professor, Ophthalmology

Harry Kochat, PhD, Director, Plough Center

Nawajes Mandal, PhD, Professor, Ophthalmology

Liza Makowski, PhD, Professor, Oncology Hematology

D. Neil Hayes, PhD, Professor, Oncology Hematology

Ramesh Narayanan, Professor

Maria Gomes-Solecki, PhD, Professor, Immunology

Weikuan Gu, PhD, Professor, Orthopedic Surgery

GRADUATE FACULTY

WITH PRIMARY APPOINTMENTS AT
ST. JUDE CHILDREN'S RESEARCH HOSPITAL

Aseem Z. Ansari, PhD, Professor

Daniel J. Blair, PhD, Assistant Professor

Taosheng Chen, PhD, Professor

Tommaso Cupido, PhD, Assistant Professor

Marcus Fischer, PhD, Assistant Professor

Markos Leggas, PhD, Professor

Richard E. Lee, PhD, Professor

Peijun Ma, PhD, Assistant Professor

Carl Panetta, PhD, Assistant Professor

P. David Rogers, PharmD, PhD, Professor

Daniel Savic, PhD, Associate Professor

John D. Schuetz, PhD, Professor

Jun J. Yang, PhD, Professor

OBJECTIVES OF THE GRADUATE PROGRAM

The objective of the graduate program in Pharmaceutical Sciences is to provide graduate students at the PhD level with expertise in the area broadly defined as the pharmaceutical sciences, with emphasis in bioanalytical chemistry, medicinal chemistry, pharmacometrics, drug delivery and translational sciences. The particular area chosen by the graduate student for a research topic receives special emphasis. Students are expected to demonstrate proficiency, knowledge, and research capabilities in their chosen specialty, in addition to a fundamental appreciation of all those areas encompassed by the pharmaceutical sciences.

PHD STUDENT CURRICULUM

POLICY ON COURSE SCHEDULING AND COURSEWORK REQUIREMENTS

COURSE SCHEDULING

All students are required to take at least 9.0 credits during the Fall and Spring semesters. Each Fall and Spring semester students must register for either: PHAC 900 (or MEDC 900), Doctoral dissertation (after completion of Qualifying Exams). At least 1.0 credit in these courses is required each semester, and sufficient credit in these courses must be taken to meet the requirement of 9.0 credits each semester.

All students in the program are required to enroll each semester in either PHAC 819/919 or MEDC 819/919 Seminars in Pharmaceutical Sciences. Please see the POLICY ON ENROLLMENT, PARTICIPATION, AND GRADING IN THE PHARMACEUTICAL SCIENCES SEMINAR SERIES for details. After completing course work (approximately two years) many students will be ready to take the comprehensive Candidacy exam.

COURSEWORK REQUIREMENTS

Regular students must register for a minimum of nine credit hours per semester to be considered full time.



PHD CURRICULUM IN PHARMACEUTICAL SCIENCES

All graduate students are required to earn a minimum of 24 credits of didactic courses to qualify for the PhD degree. Students must select courses according to the following categories:

CATEGORY A: COURSES REQUIRED FOR ALL GRADUATE STUDENTS (5 credits)

- BIOE 811 Biostatistics I 4 (4-0)
- IP 801 Integrity in the Conduct of Scientific Research 1 (1-0)

CATEGORY B: LIST OF SELECTIVE COURSES

Students must select *at least* 10 credits from this category, more credits from this category can be taken if the student wants upon mentor's approval. All courses taken in this category will be counted towards the total of 24 minimum didactic course credits:

- BIOE 821 Biostatistics II 3 (3-0)
- CMED 711 Essentials of Animal Experimentation 2 (2-0)
- IP 806 Biochemistry 3 (3-0)
- IP 845 Grant Writing in Biomedical Sciences 3 (3-0)
- MEDC 810 Organic Medicinal Chemistry I 3 (3-0)
- MEDC 812 Advanced Medicinal Chemistry 3 (3-0)
- MEDC 813 Research Techniques in Medicinal Chemistry I 3 (3-0)
- MEDC 820 Organic Medicinal Chemistry II 3 (3-0)
- MEDC 821 Computer-Aided Molecular Design in the Development of Chemotherapeutic Agents I 3 (3-0)
- MEDC 830 Scientific Communication 2 (2-0)
- MSCI 934 Techniques I-Biochemical and Cellular Methods 2 (2-0)
- MSCI 935 Techniques II-Methods for Nucleic Acid 2 (2-0)
- PHAC 810 Research Techniques in Pharmaceutics 3(0-3)
- PHAC 813 Pharmacokinetics, Pharmacodynamics and Drug Development 4 (4-0) (Advanced Pharmacokinetics)
- PHAC 817 Drug Metabolism 3 (3-0)
- PHAC 821 Advanced Pharmaceutics & Drug Stability 3 (3-0)
- PHAC 826 Pharmaceutical Analysis 3 (3-0)
- PHAC 827 Pharmacokinetics and Dose Optimization 4 (3-2)
- PHAC 832 Entrepreneurship in Pharmaceutical and Biomedical Sciences 2 (2-0)
- PHAC 833 Neurotherapeutics 2 (2-0)

CATEGORY C: ELECTIVE COURSES

Additional credits to fulfill the total of 24 minimum didactic credit hours

Students can select additional courses in this category of elective courses to fulfill the requirement of 24 minimum didactic course credits. Graduate courses offered at UT Health Science Center or the University of Memphis are available to be taken. Students will require permission of their mentor or their PhD committee to register for these elective courses.

SEMINAR PROGRAM

Attending weekly departmental seminars is mandatory for all PhD students in the pharmaceutical sciences program. PhD students in the program need to register for the 1 credit 819 course (the departmental journal club) every semester. Once a student is ready to share his/her research with others then the student will register for 919 instead of 819. Every student needs 3 credits of 919 in order to graduate. The credits accrued in 819 and 919 will not count toward the 24 didactic credit hours required for a PhD.

- MEDC 819 Seminar in Medicinal (presentation not required) 1 (1-0)
- MEDC 919 Seminar in Medicinal Chemistry (presentation required three times) 3 (1-0)
- PHAC 819 Seminar in Medicinal (presentation not required) 1 (1-0)
- PHAC 919 Seminar in Medicinal Chemistry (presentation required three times) 3 (1-0)

All graduate students must earn a minimum of 24 dissertation credits (PHAC 900 or MEDC 900) for the PhD degree.

POLICY: ENROLLMENT, PARTICIPATION, AND GRADING OF THE PHARMACEUTICAL SCIENCES SEMINAR SERIES

1. Seminar and Journal Club participation is an integral parts of the Graduate Program in Pharmaceutical Sciences. This comprises the Pharmaceutical Sciences Seminar Series, as well as Graduate Student Journal Clubs in Pharmaceutical Sciences.
2. Graduate students in the Pharmaceutical Sciences Graduate Program shall be enrolled each semester in either PHAC819/MEDC819 or PHAC919/MEDC919.
3. Enrollment in PHAC819/MEDC819 requires graduate students to regularly attend seminar presentations and actively participate in discussions and Q&A sessions. Enrollment in PHAC819/MEDC819 also requires graduate students to attend and present in the respective Graduate Student Journal Club. PHAC819/MEDC819 will be graded as "PASS/FAIL". Unexcused absences of more than 20% of the monitored seminar presentations or 20% of the Graduate Student Journal Clubs will result in a "FAIL" grade. Graduate students whose primary research lab is off-site from the UT Health Science Center campus may attend seminar and journal club remotely via Zoom, except when they are presenting. The requirements for attendance and active participation in discussions and Q&A sessions equally apply to these students. To fulfill these requirements, students have to have their camera switched on and need to be visible in Zoom for the duration of the session.
4. Enrollment in PHAC919/MEDC919 requires graduate students, in addition to the requirements for PHAC819/MEDC819, to give a research presentation in the Pharmaceutical Sciences Seminar Series during the semester of enrollment. PHAC919/MEDC919 will be graded with a letter grade. Students shall be enrolled in PHAC919/MEDC919 for at least three semesters as a prerequisite for graduation.
5. Attendance of the Pharmaceutical Sciences Seminar Series is mandatory for all PharmD/PhD students during the PharmD section of the curriculum.
6. Non-participation of graduate students in the Department of Pharmaceutical Sciences Seminar Series requires permission by the Program Director.
 - Each graduate student will give three (3) seminars during their course of study in the Pharmaceutical Sciences Graduate Program.
 - The seminars will be 25-minute presentations with 5 minutes Q&A.
 - The third seminar will be the last seminar before the student presents his/her final defense.

POLICY:

ASSESSMENT, PERFORMANCE, AND PROGRESS OF GRADUATE STUDENTS

1. Research Advisor

A new graduate student must have a Research Advisor before the beginning studies in the Pharmaceutical Sciences Graduate Program. For students admitted through the committee based admission pathway, a Research Advisor needs to be selected within the first semester of enrollment. The student's Faculty Committee should be formed and approved by the Program Director of the Department and the Dean of the Graduate College during the second year of study. The Faculty Committee shall consist of at least five members from the Graduate Faculty, with at least one member coming from outside the program and representing the elective field(s) of study included in the student's program. At least one member of the committee, other than the Research Advisor, must be a full-time faculty member in the College of Pharmacy. The CenterScope UT Health Science Center Student Handbook should be consulted for a full statement of the requirements of the College of Graduate Health Sciences.

Each student must report to a research advisor who is responsible for assigning a Dissertation Research Project and assigning grades in research courses PHAC900 or MEDC900.

The research advisor also chairs the student's Comprehensive Candidacy Examination Committee and Defense of Dissertation Committee.

2. Progress Toward Degree

Each student must have a formal meeting with their Research Advisor within four weeks of the end of the Fall and Spring semesters.

The purposes of the meetings are to ensure that the student is achieving satisfactory grades in course work, to ensure that the course requirements and other requirements for the program are being met, to assess progress toward formulating and completing the Dissertation, and to determine whether any extra- service work or other activities are interfering with progress in the program. At the end of the meeting, the Faculty Advisor will complete the Graduate Student Semester Assessment Form and send a copy to the Director of Graduate Programs for his signature.

Once formed, the Faculty Committee will be periodically convened (not less than once per year) to assess and guide the student's progress. By June 30th of each year a report that briefly summarizes the student's progress is submitted to the Director of Graduate Programs for submission to the Graduate College.

Graduating students must also complete the "GRADUATE STUDENT SUMMARY" form and the EXIT INTERVIEW QUESTIONNAIRE" form after their final examination (i.e., dissertation defense) and submit it to the Director of Graduate Programs.

3. Forms can be found on uthsc.edu/graduate-health-sciences/students/forms.php

POLICY:

EXAMINATIONS

PRELIMINARY EXAMINATION

Candidacy examination is scheduled after discussion with the student's committee and after the student has fulfilled his/her required and some elective courses.

1. Written Examination

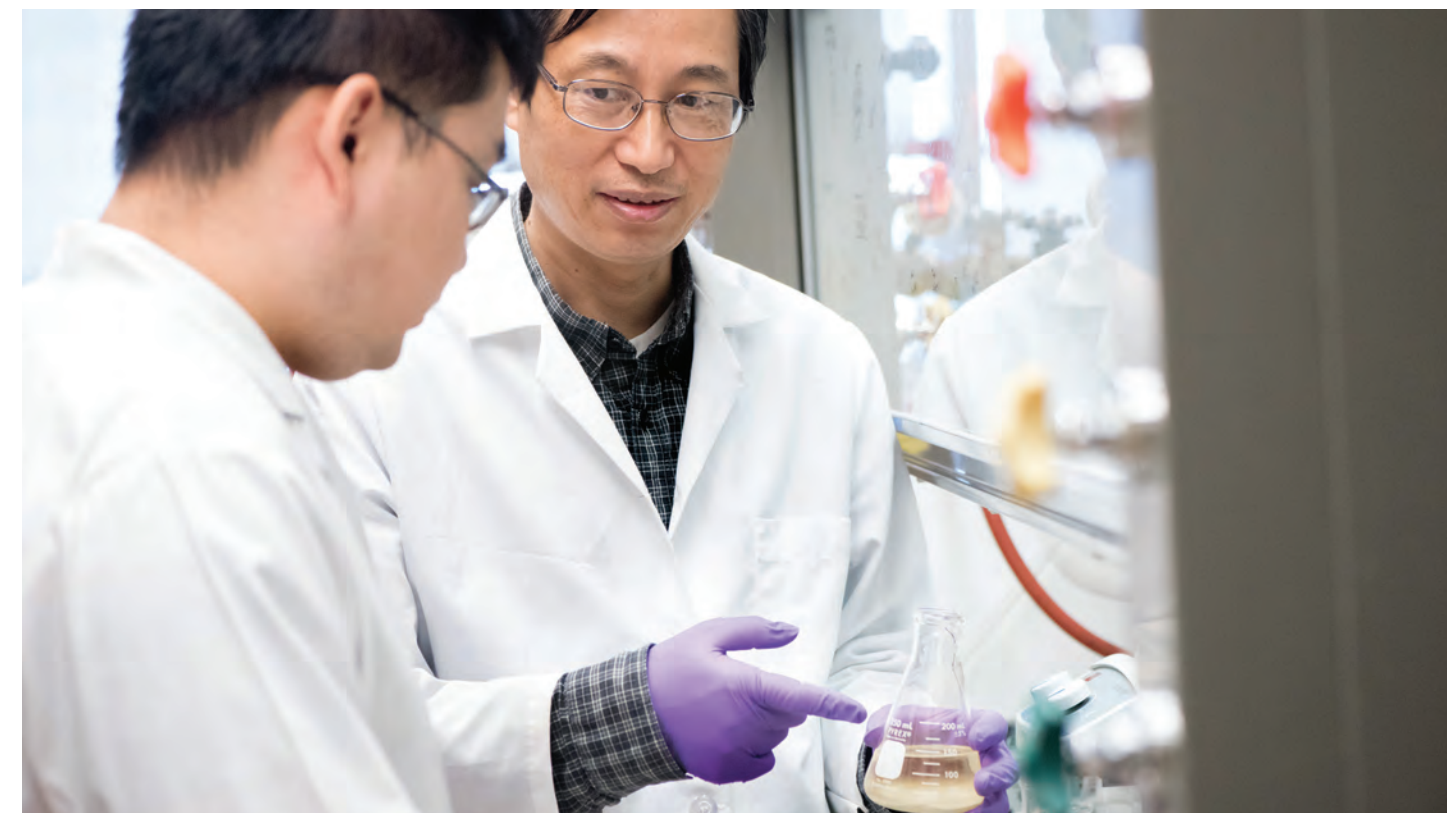
The written part will be a NIH-style grant proposal (in R21 style). The student will develop a specific aims page which is reviewed and approved by all committee members before the student embarks on developing the full grant proposal. If the student fails parts or all of the written exam, the student's committee decides which part needs to be rewritten.

2. Oral Examination

All students must successfully complete an oral exam prior to admission to candidacy. The oral exam is the actual defense of the written NIH proposal (R21) that the student has prepared. The successful completion of the oral examination will be decided by a vote of the Committee, with no more than one member voting against passing. In the event of failure, the Committee will decide when to schedule the reexamination. The Committee can add stipulations upon the student that needs to be fulfilled prior to reexamination. The result of the second examination is final. If the student fails on the second attempt, the student is dismissed from the program.

FINAL DEFENSE

A final oral examination on the student's dissertation will be administered after all course requirements have been completed and the program chair has certified the student that all requirements have been met. The examination must be announced with a minimum of two weeks prior to the exam date. The final defense will be open to the public, and questions will be permitted from the audience after the candidate has made his/her presentation. The audience will then be excused but the Faculty Committee will remain for further questioning and deliberations.



POLICY:

EXTRA-SERVICE PAY AND OUTSIDE WORK FOR GRADUATE STUDENTS

BACKGROUND

The policy of the College of Graduate Health Sciences concerning outside work by graduate students is stated in the CenterScope UT Health Science Center Student Handbook. The Pharmaceutical Sciences Program Policy listed below provides additional, program-specific requirements.

PROGRAM POLICY

Full-time graduate students in the Pharmaceutical Sciences Graduate Program, who are receiving a stipend and waiver of tuition, are discouraged from working for pay. Outside employment, either within or outside the University, may affect performance in course work, will decrease the time the student is able to devote to their research, and can extend the time required to complete the degree requirements.

Full-time students who assist faculty in a project that is unrelated to the objectives of their research, may receive extra-service pay. Such activities should not occur on a regular basis, and should not exceed an average total of 30 hours per semester. Faculty who employ students in this manner should be certain the student's Faculty Advisor approves of the activity.

Students are required to disclose their work schedule, and the type of work they have done during the semester to their mentor, at the time of their scheduled progress assessment at the end of each semester.

A student who is not making adequate progress will be required to restrict or eliminate outside employment, or risk possible dismissal from the program. Students are also advised that the Department may only contribute toward a stipend for a maximum of 5 years after entering the PhD program as a full-time student. A student may receive a stipend after 5 years from his/her Faculty Advisor, provided that the Advisor has funds available to support the student, and agrees to provide the support. Hardship cases, or delays due to extenuating circumstances may be appealed to the Associate Dean for Research and Graduate Studies at the College of Pharmacy.

POLICY:

ANNUAL LEAVE

1. Graduate students are granted five working days of paid Annual Leave for each spring and fall semester completed.
2. Annual Leave can be carried forward to subsequent semesters.
3. Graduate students can take their Annual Leave only in agreement with their Major Advisor, and the request for leave must be put in writing, with inclusive dates of the requested leave. Consideration should be given to academic standing and progress of the student, ongoing research projects and teaching commitments of the student, Visa procedures, and the personal situation of the student.
4. No Annual Leave can be taken before successful completion of the first semester.
5. This policy also applies to PharmD/PhD Students during the PhD curriculum of their program.
6. CGHS policies can be found at uthsc.edu/graduate-health-sciences/about/policies.php

POLICY:

ACADEMIC DUE PROCESS

The College of Graduate Health Services policy concerning Academic Due Process is enforced within the Pharmaceutical Sciences Graduate Program. To see the policy, please visit catalog.uthsc.edu/content.php?catoid=45&navoid=4702

ALL POLICIES LISTED WITHIN THIS HANDBOOK ARE SUBJECT TO CGHS BYLAWS AND GUIDELINES.

SAFETY REGULATIONS

LABORATORY SAFETY

Mandatory laboratory safety training is needed prior to initiation any lab work and annually thereafter. Please contact the Office of Research Safety Affairs for details.

ADMINISTRATIVE SUPPORT

Each lab has a support person that will assist the lab with administrative duties. You are responsible for typing your own resumes, reports and dissertations. Each student has keys issued for their building and for the laboratories and instrument rooms. These are for your use only and are not to be loaned to others. If lost the replacement fee is \$10 per key.

EQUIPMENT USAGE

Each user of research equipment is responsible for its proper operations. It is expected that even in proper and careful use equipment will occasionally break or malfunction. It is the responsibility of each user to note such malfunction in the logbook and to inform the person responsible for that instrument.

The purpose of this regulation is to assure that the equipment is restored to proper function - not to assign blame.

For more information, please contact Dr. Dejian Ma (901.448.7376, dma6@uthsc.edu).

RESEARCH WITH ANIMALS

Before doing any work involving animals each student is required to attend an orientation and training session offered by the Animal Care Unit and all planned work needs to be reviewed and approved by the Institutional Animal Care and Use Committee.

WORK HOURS

When students need to do laboratory work after 6:00 pm on weekdays or during the weekend, they should arrange to have at least one other person in the laboratory. Telephones have been provided for safety purposes. If it is unavoidable that the graduate students or postdocs be in the laboratory alone, at least one person should know where he/she is and approximately, when they will return. Telephone contact should be made periodically.

STUDENT LIFE

Founded in 1928, The College of Graduate Health Sciences (CGHS) is one of the six colleges in our dynamic University of Tennessee Health Science Center. UT Health Science Center is fully accredited by the Southern Association of Colleges and Schools. Our mission is to improve the knowledge about human health through education, research, and public service, with an emphasis on improving the health of Tennesseans. The CGHS mission is part of the overall mission of The University of Tennessee and UT Health Science Center.

UT Health Science Center Provides co-curricular growth opportunities for students through planned social, cultural and entertainment activities such as “5 O’clock Friday” and “Coffee Break” social gatherings and the annual “Student Appreciation Day.” UT Health Science Center recognizes student leadership through the Imhotep Society and Excellence in Teaching Awards.

The Student Government Association Executive Council (SGAEC) serves as the official liaison between the Administration and students and is responsible for acting on student-related matters. The SGAEC has responsibility for the planning and administration of the Student Activities Fee, and is responsible for making student appointments to university committees.

The SGAEC is composed of the presidents of each of the six UT Health Science Center college student government associations, and one person who serves as president of the council. The president of the SGAEC is elected from one of the colleges on a rotational basis and represents all students on the UT Health Science Center campus in a variety of capacities.

MEMPHIS LIFE

The Memphis story is a beautiful one of pain, triumph, strength, innovation and fortitude. From Civil Rights icons like Dr. Martin Luther King Jr. to the unique blues melodies that captivated the world and started a genre - history and culture are the same in Memphis. Memphis is a growing city with opportunities to be seized. A fun city with so much to enjoy.

There is passion for our Grizzlies, Cardinals, music, food, and people throughout. While you will be studying, there will be opportunities for play. From the Memphis in May concerts and BBQ contest to Shelby Farms, to the Cooper Young Festival, Graceland, & the Memphis Zoo, you can find something to do for anyone. We have a vibrant arts scene with seven performing arts centers, an Indie Movie festival, Brooks Museum of Art, Dixon Gallery & Gardens, & the Metal Museum.





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