

MASTER OF SCIENCE (M.S.)

The M.S. Degree Program in the Department of Cell Systems & Anatomy (hereinafter referred to as the Program) offers training in areas of anatomical sciences and cell and molecular biology. The curriculum prepares students seeking a Master of Science degree for a fulfilling biomedical career in academic, industrial or clinical settings. The overall mission of the Program is to prepare the next generation of life-long learners and critical thinkers, prepared to design and execute innovative basic and translational research, and to address the most important and challenging knowledge gaps in basic biology, human health and disease. There are two parallel tracks in the Program, Anatomical Sciences and Mechanisms of Health and Disease, with some overlapping requirements but distinct curricula. The program of graduate study (i.e. the track elected) leading to the master's degree will depend upon the student and the professional career for which the student is preparing. A Committee on Graduate Studies (COGS) oversees all aspects of the Program.

Cell Systems & Anatomy Admission Requirements

Students beginning graduate study ordinarily matriculate during the fall semester, which starts first week of July with classes beginning in August. The following are the basic admission criteria for the Program. On a case-by-case basis, at the discretion of the M.S. Admissions Committee and with approval of COGS and the Graduate Faculty Council (GFC), one or more admission requirement(s) may be waived.

- Completed Application forms indicating the track (Anatomical Sciences / Mechanisms of Health and Disease) to which the student seeks admission.
- Scores on the Graduate Record Examination (GRE), Medical College Admission Test (MCAT) or Dental Admission Test (DAT) taken within five years of application are optional but recommended.
- International applicants from countries where English is not the native language are also required to take one of three English proficiency tests: Test of English as a Foreign Language (TOEFL), the International English Language Testing System (IELTS: Academic module only) or Duolingo within two years of application to the program. The minimum required scores for the TOEFL is 84 for the internet-based test (iBT). The minimum required score for the academic International English Language Testing System (IELTS) is 7.0. The minimum required score for the Duolingo English Test is 115.
- Certified transcripts of all college and/or postgraduate work: A baccalaureate degree in a natural science, biomedical engineering, and/or any other discipline from an accredited institution in the United States or proof of an equivalent degree from a foreign institution is required. A cumulative grade point average (GPA) no lower than "B" (3.0 on a scale of 4.0) on undergraduate-level studies undertaken previously is required.
- Essays: An essay describing prior research and/or teaching experiences that evoked an interest in research, long-term career goals, and rationale for applying to the Cell Systems & Anatomy graduate program.
- Letters of recommendation (3) from faculty and/or individuals with similar professional credentials who served as instructor, advisor or supervisor to the applicant are required.

The admission committee uses a holistic approach in making its decision. Consideration is given to a candidate's research experience,

grade point average, essay, letters of recommendations, GRE/MCAT/DAT score (if provided), interviews, and the overall ranking of the applicant compared to other qualified applicants.

Application deadline (<https://www.uthscsa.edu/academics/biomedical-sciences/programs/cell-systems-anatomy-ms/>) dates are found on the admission program website. All supporting material such as GRE scores and letters of recommendation must be received before May 1. Spring semester admission (January start date) will not be considered except in very unusual circumstances. Applicants will be notified of the admission decision.

Cell Systems & Anatomy Degree Requirements

Course Requirements

All students require a minimum of 30 semester credit hours (SCH) to graduate with a M.S. degree. See attached Academic Plans of Study - **Attachment C** (Anatomical Sciences track) and **Attachment D** (Mechanisms of Health and Disease track) for details of coursework.

Grade Requirements

A student must maintain an overall cumulative grade point average (GPA) of ≥ 3.0 ("B" average) each semester to continue in good academic standing. For the required courses, the student must make at least a "B" and/or receive a satisfactory in courses graded Satisfactory, "S"/Unsatisfactory, "U".

If a student receives a grade that is worse than a "C" in one course, final grades of "C" in more than one course in the curriculum, or gets a "U" in two consecutive semesters, he/she shall be recommended for dismissal from the Program unless an appeal from the student is approved by COGS. If the cumulative GPA drops below 3.0, the student shall be placed on academic probation. While on probation, a student must maintain a "B" average in all courses in which he/she is enrolled. If the GPA drops below 3.0 in any semester during the probationary period or remains below 3.0 for one calendar year, the student shall be recommended for dismissal from the Program unless an appeal from the student is approved by COGS.

If remediation of a course is agreed upon by a course director and COGS, the director(s) of a required course will determine the mechanism for remediation. However, course directors are not required to remediate students. Situations that involve potential remediation will be resolved on a case-by-case basis. A student who is not required to remediate a required course may not engage in the remediation process with the intent of improving her/his original grade. This policy will be reviewed annually.

Anatomical Sciences Track

First Year

Fall		Credit Hours
CSAT 5041	Neuroanatomy	2.5
TSCI 5070	Responsible Conduct of Research	2
CSAT 5074	Introduction to Research	0.5
CSAT 7014	Gross Anatomy & Embryology I	4.5
Total Credit Hours:		9.5

First Year		
Spring		Credit Hours
CSAT 5060	Human Histology	2.5
CSAT 6100	Anatomy Practicum	2.0
CSAT 6060	Anatomical Sciences Thesis	1-8
CSAT 8010	Gross Anatomy & Embryology II	1.5
CSAT 6071	Supervised Teaching(Gross Anatomy for PT/OT or Clinical Anatomy for PA students)	1-12
Total Credit Hours:		8.0-26.0

Second Year		
Fall		Credit Hours
CSAT 6072	Presentation Skills	1.0
CSAT 6071	Supervised Teaching(Medical or Dental Gross Anatomy) *must be taken in the 2nd year in either semester: 0 - 6 SCH	1-12
CSAT 6060	Anatomical Sciences Thesis *to total up to 8 SCH: 1.5 - 7.5 SCH	1-8
Total Credit Hours:		3.0-21.0

Second Year		
Spring		Credit Hours
CSAT 6071	Supervised Teaching(Medical Form & Function, Clinically-Oriented Anatomy, or Anatomy Practicum) *must be taken in the 2nd year in either semester: 0-3 SCH	variable
CSAT 6060	Anatomical Sciences Thesis *to total up to 4.5 SCH: 4 or 1	4
Total Credit Hours:		4.0

Mechanisms of Health and Diseases Track

First Year		
Fall		Credit Hours
CSAT 6077	Eucaryotic Cell Biology	2
CSAT 6076	Eucaryotic Molecular Biology	2
CSAT 6096	Research Rotations	2
CSAT 5007	Methods In Cell Biology	1
TSCI 5070	Responsible Conduct of Research	2
CSAT 5074	Introduction to Research	0.5
Total Credit Hours:		9.5

First Year		
Spring		Credit Hours
CSAT 6097	Research	5
CSAT 5095	Experimental Design And Data Analysis	3
Total Credit Hours:		8.0

Second Year		
Fall		Credit Hours
CSAT 6097	Research	7.5
CSAT 6005	Rigor & Reproducibility	1
CSAT 6072	Presentation Skills	1.0
Total Credit Hours:		9.5

Second Year		
Spring		Credit Hours
CSAT 6098	Thesis	3
Total Credit Hours:		3.0

Cell Systems & Anatomy Objectives/Program Outcomes

Anatomical Sciences Track

Students will have the ability to review, interpret and critically evaluate scientific literature related to areas of biomedical science relevant to the anatomical sciences in general and specifically to their project. Students will be trained to review and interpret original scientific literature through coursework and in their examination of the literature.

Students will have the ability to communicate effectively in written and verbal presentations. Students will learn to effectively communicate ideas in written format via coursework, examinations and their research and to communicate ideas/concepts in verbal presentations during progress report seminars, research advisory committee meetings, oral examinations/thesis defenses, and participation in scientific meetings.

Students will demonstrate foundational knowledge and expertise in a select area appropriate to the project. Students will be able to define, explain, and apply key concepts and fundamental principles related to the areas of anatomical science.

Students will demonstrate fundamental knowledge of ethics in biomedical research. Students will be able to recognize ethical dilemmas and behave in accordance with ethical standards of conduct in the design, implementation, analysis and dissemination of scientific research.

Students will have the ability to teach human anatomy in the health professions environment. Students will be able to teach human gross anatomy, histology and/or neuroanatomy at the graduate level.

Mechanisms of Health and Disease Track

Students will have the ability to review, interpret and critically evaluate scientific literature related to areas of biomedical sciences, relevant to cellular and molecular biology in general and specifically to their project. Students will be trained to review and interpret original scientific literature through coursework and in their research.

Students will have the ability to conduct original biomedical research. Students in the program will be able to analyze, plan, organize and conduct high quality biomedical research under the direction of supervising professors and guidance of research advisory (thesis) committees as appropriate.

Students will have the ability to communicate effectively in written and verbal presentations. Students will learn to effectively communicate ideas in written format via coursework, examinations and their research

and to communicate ideas/concepts in verbal presentations during progress report seminars, research advisory committee meetings, oral examinations/thesis defenses, and participation in scientific meetings.

Students will demonstrate foundational knowledge and expertise in a select area appropriate to the research project. Students will be able to define, explain, and apply key concepts and fundamental principles related to the areas of biomedical science relevant to their track and to their specific research projects.

Students will demonstrate fundamental knowledge of ethics in biomedical research. Students will be able to recognize ethical dilemmas and behave in accordance with ethical standards of conduct in the design, implementation, analysis and dissemination of scientific research.