DOCTOR OF PHILOSOPHY (PH.D.)

The M.S. and the Ph.D. in Biomedical Engineering are jointly offered by two academic units of The University of Texas at San Antonio: the Klesse College of Engineering and Integrated Science on the academic campus and the Graduate School of Biomedical Sciences on the health campus. The primary objective of this program is to broadly train students in the principles of biomedical engineering, so they are well prepared to participate in the development of new approaches for the diagnosis and treatment of human diseases.

As the program is multidisciplinary, the curriculum is designed to provide a synergistic combination of formal courses, seminars, teaching opportunities, interactions with clinicians, and individualized biomedical engineering research experiences in the laboratories of the biomedical engineering faculty. All students are required to take core courses in the areas of Biomaterials, Biomechanics, Bioelectronics/Imaging and Biology, Physiology, as well as Responsible Conduct of Research, and Experimental Design and Data Analysis. In addition to the basic core curriculum, students are required to take additional coursework in the area of specialization. Students have access to the bioengineering and biosciences laboratories at both the academic and health campuses. This provides a unique opportunity to have learning experiences in medical, dental, bioscience, and engineering environments.

Biomedical Engineering Admissions Requirements

Admissions requirements include: a baccalaureate or master's degree in a natural science or engineering discipline, competitive academic history (minimum GPA of 3.0/4.0), references, optional Graduate Record Exam (GRE), Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS) [international applicants only], three letters of recommendation, a statement of applicant's research experience(s) and interest in graduate study in BME. A typical successful applicant will have completed one year of calculus-based/engineering Physics, Chemistry, Biology, and Mathematics (up to Differential Equations or Engineering Analysis I). Students deficient in one or more of these will be required to take selected courses as a condition of acceptance. All facets of each applicant are considered in the admission process. Application to this joint degree program is managed through a central application process through UTSA. All applicants are required to follow UTSA's admissions requirements, and the requirements of UT Health San Antonio (background checks, GRE scores, immunizations and international transcript review/translation/certification).

Students whose native language is not English must achieve a minimum score of:

- 79 on the Internet-based version of the Test of English as a Foreign Language (TOEFL) exam under the old scoring system or a minimum score of 4.0 on all TOEFL tests taken after 1/21/26 with the new scoring system ~~exam,~~
- 550 on the paper-based version of the Test of English as a Foreign Language (TOEFL) exam, or
- 6.5 on the IELTS exam

Those who do not meet the minimum English proficiency scores may be considered for the graduate pathway.

Minimum scores are based on UTSA's minimum required scores for international applicants. English language proficiency requirements can be viewed on UTSA graduate admissions site (https://future.utsa.edu/graduate/admissions/) or UTSA international admissions site (https://future.utsa.edu/international/).

The applicant's performance on a standardized test will be considered in addition to other criteria for admission or competitive scholarship awards and will not be used as the sole criterion for consideration of an applicant.

International applicants who have completed or will complete their degree prior to matriculation at an accredited U.S. institution may be exempted from the TOEFL/IELTS requirement.

Biomedical Engineering Degree Requirements

A minimum of 82.0 credit hours and a minimum overall GPA of 3.0 are required for the Ph.D. degree in Biomedical Engineering. Undergraduate courses, general education courses, and prerequisites for graduate courses cannot be counted toward this total. For students with a master's degree, course credit allowed for transfer will be decided on a case-by-case basis by the Biomedical Engineering Committee on Graduate Studies (COGS). If recommended by the COGS, the request will then be submitted to the Dean of the Graduate School for approval. In addition, all doctoral candidates must register for the Dissertation course (BME 7099) for at least two semesters in order to graduate; only one of the terms may be a summer session. The student is required to demonstrate intellectual command of the subject area of the graduate program and capability to carry out independent and original investigation in the area. The student must successfully defend a dissertation and be recommended by their program COGS for approval of their degree to the Dean of the Graduate School of Biomedical Sciences.

Biomedical Engineering Plan of Study

*** Please note that courses with the prefix BME are taken at The University of Texas at San Antonio.**

UT Health San Antonio Course Offerings

CSAT 5095	Experimental Design And Data Analysis	3
TSCI 5070	Responsible Conduct of Research	2
BIME 6006	Human Physiology for Bioengineers	3
BIME 6004	Biology For Bioengineers	3
BIME 6071	Supervised Teaching	1
BIME 6090	Seminar	1
BIME 6097	Research	1-12
BIME 7099	Dissertation	1-12

UTSA Course Offerings

BME 6703- Biomedical Imaging

BME 6033- BME Engineering Analysis

BME 6903- Biomaterials

BME 6803- Experimental Biomechanics

BME 6021, 6022, 6023- Supervised Teaching

BME 6001- BME Seminar

BME 7951, 7952, 7953, 7956- Research

BME 7991, 7992, 7993, 7996- Doctoral Dissertation

Biomedical Engineering Objectives/ Program Outcomes

1. BME students will demonstrate their understanding of biology concepts for biomedical applications. Fundamental knowledge of biology is evaluated.
2. BME students will demonstrate their understanding of biomaterials concepts. Fundamental biomaterials knowledge and the students' ability to apply knowledge of biomaterials are evaluated.
3. BME students will demonstrate their understanding of biomechanics concepts. Fundamental knowledge of biomechanics is evaluated.
4. BME students will be able to design and carry out research experiments. Foundation of knowledge, application of knowledge, and research skills are evaluated.
5. BME students will be able to communicate research findings to diverse audiences.
6. BME students will be able to teach and disseminate knowledge.
7. BME students will conduct themselves in a professional and ethical manner in all biomedical engineering research.
8. BME students will critically evaluate scientific literature.