Master of Science in Bioengineering

About This Program

The Biomedical Engineering Program is jointly offered by The University of Texas at Arlington and The University of Texas Southwestern Medical Center at Dallas (UT Southwestern). Research and teaching efforts of various departments in the biological, engineering, mathematical, physical, and medical sciences of both institutions are coordinated through the Committee on Graduate Studies in Biomedical Engineering. The goal of the program is to prepare students for bioengineering careers requiring skills in research, development, and teaching in a variety of settings in industry, in hospitals, in research facilities of educational and medical institutions and in government regulatory agencies. Internships are aimed to further prepare students for careers in the bioengineering industry.

The program includes coursework and research in medical imaging, biosensors, physiological control systems, biomedical signal processing, biomedical instrumentation, rehabilitation, orthopedics, biomechanics, biomaterials and tissue engineering and neurosciences. Specifically, during the first year of their studies, students in the master's and doctoral programs must select one of the concentration tracks in bioengineering:

1. Medical Imaging
2. Bioinstrumentation
3. Biomaterials/Tissue Engineering
4. Biomechanics/Medical Implant Devices
5. Nanomedicine/Nanoengineering - Drug Delivery
6. Computational Bioengineering

Competencies

1. Upon completion, students will demonstrate knowledge of bioengineering principles.
2. Upon completion, students will be able to design original research in specialty area.
3. Upon completion, students will be able to conduct original research in specialty area.
4. Upon completion, students will be able to present and to interpret results clearly in an oral presentation.
5. Upon completion, students will be able to present and to interpret results clearly in written format.

Admissions Criteria

HOW TO APPLY

Application for admission should be made at either UT Arlington or UT Southwestern. Normally, the institution through which the student applies and is admitted is the student's home institution. In addition to admission requirements of the Graduate School, the bachelor's degree held by applicants to the program may be in engineering, biological, physical, or mathematical sciences. Depending on the applicant's background, some preparatory coursework may be required, prior to admission into the program. The UT Arlington Biomedical Engineering Program uses the following guidelines in the admission review process:

UNCONDITIONAL ADMISSION

1. Minimum undergraduate GPA of 3.0 in the last 60 hours of undergraduate work in an engineering discipline or physical sciences as calculated by the Graduate School.
2. A total TOEFL score of 79 or better for Internet-based testing for international applicants whose native language is not English.

PROBATIONARY ADMISSION

1. An applicant does not meet admission criteria may be granted with probationary admission. The probationary status can be removed only with maintaining a 3.0 GPA from UTA BE courses for two successive semesters.
2. A total TOEFL score of 79 or better for Internet-based testing for international applicants whose native language is not English.

PROVISIONAL ADMISSION

An applicant who is unable to supply an official transcript may be granted provisional admission by supplying unofficial transcript for admission purpose. An official transcript must be received by the start of the first semester of admission.

DEFERRED ADMISSION

If an applicant does not present adequate evidence of meeting admission requirements, the admission decision may be deferred until admission records are complete or the requirements are met.

DENIAL OF ADMISSION

A candidate may be denied admission if he/she has less than satisfactory records in any of the admission criteria, excluding TOEFL.

Curriculum

Bioengineering Foundations		
Life Sciences		6
BE 5309	HUMAN PHYSIOLOGY IN BIOENGINEERING	
BE 5382	LABORATORY PRINCIPLES	
Select one laboratory course in bioengineering approved by the graduate advisor, such as:		3
BE 5324	BIOMEDICAL OPTICS LABORATORY	
BE 5318	MEDICAL DEVICE PROTOTYPING	
BE 5373	FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS	
Bioengineering Electives		
Select five of the following (consistent with the student's track of study and approval of the graduate advisor):		15
BE 5300	SELECTED TOPICS IN BIOENGINEERING	
BE 5310	BIOMECHANICS AND FLUID FLOW WITH COMPUTATIONAL LAB	
BE 5312	TISSUE BIOMECHANICS AND BIOENGINEERING	
BE 5314	BIOMEDICAL IMPLANTS	
BE 5315	FUNDAMENTALS OF BIOMOLECULAR ENGINEERING	
BE 5318	MEDICAL DEVICE PROTOTYPING	
BE 5324	BIOMEDICAL OPTICS LABORATORY	
BE 5325	FLUORESCENCE MICROSCOPY	
BE 5326	TISSUE ULTRASOUND OPTICAL IMAGING	
BE 5327	TISSUE OPTICS	
BE 5329	NEURAL ENGINEERING	
BE 5331	POLYMERS AND BIOCOMPATIBILITY	
BE 5333	NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTIONS	
BE 5337	TRANSPORT PHENOMENA IN BIOMEDICAL ENGINEERING	
BE 5343	IMAGE PROCESSING WITH MATLAB: APPLICATIONS IN MEDICINE AND BIOLOGY	
BE 5344	BIOINSTRUMENTATION I	
BE 5346	MEDICAL IMAGING	
BE 5352	DIGITAL PROCESSING OF BIOLOGICAL SIGNALS	
BE 5361	BIOMATERIALS AND BLOOD COMPATIBILITY	
BE 5364	TISSUE ENGINEERING	
BE 5366	PROCESS CONTROL IN BIOTECHNOLOGY	
BE 5370	BIOMATERIAL - LIVING SYSTEMS INTERACTION	
BE 5372	DRUG DELIVERY SYSTEM	
BE 5373	FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS	
BE 5382	LABORATORY PRINCIPLES	
BE 5385	STEM CELL TISSUE ENGINEERING	
BE 5386	MEDICAL PRODUCT DESIGN CONTROL AND RISK MANAGEMENT	
BE 5387	MEDICAL DEVICE PROTOTYPE DEVELOPMENT	
BE 5388	MEDICAL PRODUCT DESIGN AND DEVELOPMENT	
BE 5390	RESEARCH PROJECT	
Completion Options		
Select one of the following plans		6
Thesis Substitute Plan		
One 3-hour biostatistics course approved by the graduate advisor.		
One 3-hour life science course approved by the graduate advisor.		
Thesis Plan		

BE 5698	THESIS (at the semester in which the student expects to submit and defend the thesis)	
Total Hours		**30**

After completion, the student will receive his or her Master of Science in Biomedical Engineering.

Program Completion

The Biomedical Engineering Graduate Program has established certain policies to fulfill its responsibility to graduate highly qualified professional engineers. In addition to the requirements of the Graduate School listed in this catalog under Advanced Degrees and Requirements, each bioengineering graduate student who wants to continue in the program must:

1. Maintain at least an overall GPA of 3.0 from all coursework and satisfactory progress in graduate studies, including seminar attendance and participation.
2. Demonstrate suitability for professional engineering practice.

At such time as questions are raised by bioengineering graduate faculty regarding either of the above, the student will be notified and will be provided the opportunity to respond to the Committee on Graduate Studies in Bioengineering. The Committee on Graduate Studies will review the student's performance and make a recommendation concerning the student's eligibility to continue in the program. Appeal of a decision on continuation may be made through normal procedures outlined in the section of this catalog entitled "Grievances Other than Grades."

Advising Resources

First semester graduate students will be required to complete on online orientation prior to enrolling for classes. This online orientation will be sent to new students approximately one month prior to the start of the semester. All graduate students will also be required to attend an in-person orientation scheduled for approximately one week prior to the start of classes. Please see our website for the actual date of the orientation.

Location:

ERB 232

Email:

BE@uta.edu

Phone:

817-272-0783

Web:

To schedule an appointment (https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/bioengineering/students/)