

BIOMEDICAL ENGINEERING:

ENGINEERING THE FUTURE OF HEALTHCARE



WHAT IS BIOMEDICAL ENGINEERING?

Biomedical engineers solve problems in biology and medicine, playing a central role in advancing healthcare, medicine and patient care. At the University of Houston Cullen College of Engineering, biomedical engineering students and faculty members are researching new methods for diagnosing diseases, improving therapies for treatment of diseases and developing cutting-edge medical technologies that are being implemented in hospitals and clinics across the country.

CAREERS IN BIOMEDICAL ENGINEERING

Biomedical engineering students at the UH Cullen College of Engineering will be prepared for careers in the biomedical technology industry, graduate school or professional programs such as engineering, medicine, business and law. The Cullen College has a dedicated Engineering Career Center which connects hundreds of engineering students each year to internships and full-time positions throughout the region. A 2017 salary survey produced by the National Association of Colleges and Employers found that new biomedical engineering graduates earned an average starting salary of \$67,250.

WHY EARN YOUR BIOMEDICAL ENGINEERING DEGREE AT THE UNIVERSITY OF HOUSTON?

ACADEMICS

Biomedical engineering undergraduate students in the UH Cullen College of Engineering are taught by the world's leading experts and researchers in the biomedical engineering field. The biomedical engineering undergraduate program prepares students for a huge range of career opportunities, and places an emphasis on exposing students to cutting-edge technologies through such courses as "Biomedical Microdevices" and "Regenerative Medicine and Stem Cell Engineering." The courses lead up to a one-year Capstone senior design course that explores regulatory and business development issues in the fall and segues into the project design component with the start of the spring semester.

The biomedical engineering undergraduate program requires a working knowledge of life sciences and engineering tools and logic. The interdisciplinary curriculum incorporates math, physics, chemistry and biology with mechanical, electrical and chemical engineering.

Prior to the beginning of your junior year, you will have the option of customizing your biomedical engineering curriculum by choosing one of three emphasis areas: biomedical imaging, bionanoscience, or neural & rehabilitation engineering.

Learn more at www.bme.uh.edu/undergraduate



RESEARCH

The biomedical engineering department at the UH Cullen College of Engineering is home to some of the world's most advanced biomedical research, touching on areas from neural and rehabilitation engineering to biomedical imaging and bionanoscience. Even during your freshman year at the Cullen College, you will be exposed to ongoing biomedical engineering research through classroom lessons and projects and will have opportunities to join faculty-led research groups across campus.

The University of Houston is conveniently located five miles from the Texas Medical Center (TMC), the largest medical complex in the world. Research opportunities for biomedical engineering undergraduates are endless, and all students are strongly encouraged to get hands-on experience working in either a research lab on campus, at TMC or at a local biotech company.

Learn more at www.bme.uh.edu/research/undergrad

SCHOLARSHIPS

The department funds undergraduate research fellowships for qualified, top-performing upperclassmen. Merit-based scholarships are also awarded by the Cullen College of Engineering.

Scholarships are also offered by the UH Office of Scholarships and Financial Aid. Additionally, the university's co-op program offers students the opportunity to receive career training while financing their education.

Learn more at www.egr.uh.edu/academics/scholarships

STUDENT ORGANIZATIONS

Students are encouraged to join academic and professional organizations to build leadership, communication and networking skills. Members of student organizations receive career guidance from engineering professionals and participate in activities that promote engineering.

The UH Biomedical Engineering Society is a highly active organization. Members have opportunities to explore fascinating technology in medicine through talks by experts in the field, and the organization provides an environment for social interaction and exchange of ideas between all levels of undergraduate students, graduate students and faculty.

Learn more at www.bme.uh.edu/links/bme

FOR MORE INFORMATION

Biomedical Engineering Department: www.bme.uh.edu
Undergraduate Program: www.bme.uh.edu/undergraduate
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UNIVERSITY of HOUSTON | ENGINEERING

BACHELOR OF SCIENCE IN BIOMEDICAL ENGINEERING

FOUR-YEAR ACADEMIC MAP 2018-2019

YEAR 1

SEMESTER 1			SEMESTER 2			Total
ENGI 1100	Introduction to Engineering	1	ENGI 1331	Computing for Engineers	3	
BIOL 1361	Intro to Biological Science	3	BIOL 1362	Intro to Biological Science	3	
BIOL 1161	Intro to Biological Science Lab	1	BIOL 1162	Intro to Biological Science Lab	1	
CHEM 1331	Fundamentals of Chemistry	3	CHEM 1332	Fundamentals of Chemistry II	3	
CHEM 1111	Fundamentals of Chemistry Lab	1	CHEM 1112	Fundamentals of Chemistry Lab II	1	
MATH 1431	Calculus I	4	MATH 1432	Calculus II	4	
ENGL 1303	First Year Writing I	3	PHYS 1321	University Physics I	3	
Semester Hours 16			Semester Hours 18			34

*CHOOSE ONE TRACK:

Bionanoscience Track:
Genomic & Proteomic Engineering, Numerical Analysis, Biomedical Microdevices, Introduction to Regenerative Medicine & Stem Cell Engineering, Transport Phenomena in Biosystems, Biomolecular Engineering Fundamentals, Advanced Biofluid Dynamics, Introduction to Global Healthcare, Intelligent Design & Drug Delivery, Bionanotechnology, Introduction to Biomaterials, Introduction to Diseases

Neural, Cognitive, & Rehabilitation Engineering Track: Genomic & Proteomic Engineering, Numerical Analysis, Biomedical Signal Processing, Neuromaterials, Introduction to Neurocomputing, Introduction to Bioelectromagnetic Imaging, Introduction to Global Healthcare, Brain-Machine Interface

Biomedical Imaging Track: Genomic & Proteomic Engineering, Numerical Analysis, Introduction to Biomedical Imaging, Introduction to Optical Imaging, Biomedical Signal Processing, Introduction to Bioelectromagnetic Imaging, Introduction to Global Healthcare, Biostatistics

*Track courses are samples of what may be offered for each track, and are not yet finalized. Each track may have some required courses and some elective courses upon finalization, and course names may differ from samples provided above. Students should meet with their academic advisor to formulate their own plan.

YEAR 2

SEMESTER 1			SEMESTER 2			Total
BIOE 2100	Intro to Biomedical Engineering	1	ECE 2201	Circuit Analysis I	2	
CHEM 3331	Organic Chemistry	3	BIOE 2331	Biomedical Processes	3	
CHEM 3221	Organic Chemistry Lab	2	BCHS 3304	General Biochemistry I	3	
MATH 2433	Calculus III	4	MATH 3321	Engineering Mathematics	3	
PHYS 1322	University Physics II	3	CORE	Social and Behavioral Sciences	3	
ENGL 1304	First Year Writing II	3	CORE	Creative Arts	3	
Semester Hours 16			Semester Hours 17			33

YEAR 3

SEMESTER 1			SEMESTER 2			Total
BIOE 3340	Quantitative Physiology	3	BIOE 3341	Biothermodynamics	3	
BIOE 3140	Quantitative Physiology Lab	1	BIOE Elect	BIOE Technical Elective*	4	
MECE 3400	Intro to Mechanics	4	BIOE Elect	BIOE Technical Elective*	3	
INDE 2333	Engineering Statistics I	3	HIST 1378/79	The United States Since 1877	3	
ENGI 2304	Technical Communications	3	POLS 1336	U.S. & Texas Constitutions & Politics	3	
HIST 1376/77	The United States to 1877	3				
Semester Hours 17			Semester Hours 16			33

YEAR 4

SEMESTER 1			SEMESTER 2			Total
BIOE 4335	Capstone Design I	3	BIOE 4336	Capstone Design II	3	
BIOE 4315	Intro to Bioinstrumentation	3	BIOE Elect	BIOE Technical Elective*	3	
BIOE 4115	Intro to Bioinstrumentation Lab	1	BIOE Elect	BIOE Technical Elective*	3	
BIOE Elect	BIOE Technical Elective*	3	BIOE Elect	BIOE Technical Elective*	3	
BIOE Elect	BIOE Technical Elective*	3	CORE	Language, Philosophy & Culture	3	
POLS 1337	U.S. Government	3				
Semester Hours 16			Semester Hours 15			31
			TOTAL SEMESTER HOURS			131

FAST
FACTS

234

TOTAL UNDERGRAD STUDENTS IN BME DEPARTMENT

\$67,250

AVG. STARTING SALARY WITH B.S. IN BIOMEDICAL ENGINEERING

21

TOTAL FACULTY IN BME DEPARTMENT

138

TOTAL FACULTY IN CULLEN COLLEGE

22:1

STUDENT-TO-FACULTY RATIO ACROSS THE UNIVERSITY