

# BACHELOR OF SCIENCE IN BIOMEDICAL ENGINEERING

## 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 2022 salary survey produced by Payscale.com found that new biomedical engineering graduates earned an average base salary of \$69,209.

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

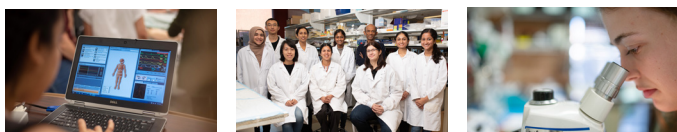
### ACADEMICS

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 four emphasis areas: biomedical imaging, bionanoscience, neural & rehabilitation engineering and pre-medicine.

Learn more at [www.bme.uh.edu/undergraduate](http://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](http://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](http://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](http://www.bme.uh.edu/links/bme)

### BME FAST FACTS

**280** Total Undergrad Students in Department

**146** Total Faculty in Cullen College

**\$69,209** Average Salary

**22:1** Student-to-Faculty Ratio Across the University



Cullen College of Engineering  
UNIVERSITY OF HOUSTON

## YEAR 1

SEMESTER 1			SEMESTER 2			Total
ENGI 1100	Introduction to Engineering	1	ENGI 1331	Computing for Engineers	3	
BIOL 1306	Biology for Science Majors I*	3	BIOL 1307	Biology for Science Majors II	3	
BIOL 1106	Biology for Science Majors I (lab)	1	BIOL 1107	Biology for Science Majors II (lab)	1	
ENGL 1301	First Year Writing I*	3	PHYS 2325	University Physics I	3	
CHEM 1311	Fundamentals of Chemistry*	3	CHEM 1312	Fundamentals of Chemistry 2	3	
CHEM 1111	Fundamentals of Chemistry Lab	1	CHEM 1112	Fundamentals of Chemistry Lab	1	
MATH 2413	Calculus I*	4	MATH 2414	Calculus II*	4	
		<b>Semester Hours 16</b>			<b>Semester Hours 18</b>	<b>34</b>

### \*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

### Pre-medicine Track

*\*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 2323	Organic Chemistry I	3	BIOE 2331	Biomedical Processes	3	
CHEM 2123	Organic Chemistry Lab I	1	BCHS 3304	General Biochemistry I	3	
Math 2415	Calculus III	4	MATH 3321	Engineering Mathematics	3	
PHYS 2326	University Physics II	3	CORE	Social and Behavioral Sciences*	3	
ENGL 1302	First year Writing II*	3	CORE	Creative Arts*	3	
		<b>Semester Hours 15</b>			<b>Semester Hours 17</b>	<b>32</b>

## YEAR 3

SEMESTER 1			SEMESTER 2			Total
GOVT 2306	U.S. & TX Constitution & Politics*	3	BIOE 3341	Biothermodynamics	3	
MECE 3400	Intro to Mechanics	4	BIOE 4302	Numerical Analysis for BIOE	3	
INDE 2333	Engineering Statistics I	3	BIOE Elect	BIOE Technical Elective	3	
ENGI 2304	Technical Communications*	3	BIOE 3340	Quantitative Physiology	3	
HIST 1301	The United States to 1877*	3	BIOE 3140	Quantitative Physiology Lab	1	
			HIST 1302	The United States Since 1877*	3	
		<b>Semester Hours 16</b>			<b>Semester Hours 16</b>	<b>32</b>

## 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 4350	Genomic and Proteomic Engineering	3	
BIOE 4115	Intro to Bioinstrumentation Lab	1	BIOE 4150	Genomic & Proteomic Engineering Lab	1	
BIOE ELEC	BIOE Technical Elective	3	BIOE ELEC	BIOE Technical Elective	3	
BIOE ELEC	BIOE Technical Elective	3	BIOE ELEC	BIOE Technical Elective	3	
GOVT 2305	U.S. Government*	3	CORE	Language, Philosophy & Culture*	3	
		<b>Semester Hours 16</b>			<b>Semester Hours 16</b>	<b>31</b>
					<b>TOTAL SEMESTER HOURS</b>	<b>130</b>

## FOR MORE INFORMATION

Biomedical Engineering Department: [www.bme.uh.edu](http://www.bme.uh.edu)  
 Undergraduate Program: [www.bme.uh.edu/undergraduate](http://www.bme.uh.edu/undergraduate) | Email: [jboatwri@central.uh.edu](mailto:jboatwri@central.uh.edu)

UH Department of Biomedical Engineering | Science and Engineering Research Center  
 3517 Cullen Blvd., Suite 2027 | Houston, Texas 77204-5060 | 832.842.8813

