

Bachelor of Science Degree in Biomedical Engineering

The fundamental goal of the undergraduate program in Biomedical Engineering is to offer a high-quality education, designed to achieve the following specific educational objectives:

EDUCATIONAL OBJECTIVES

Within a few years of graduation, Biomedical Engineering graduates are expected to attain:

1. Increasing responsibility beyond that in their entry-level description in job functions within Biomedical Engineering or related employment, and/or
2. Successful progress within graduate degree programs in Biomedical Engineering or other professional degrees such as other Engineering, Medicine, Business or Law, and
3. Continued successful professional development and adaptation to evolving technologies within their chosen field.

The program also offers a pre-med specialization for students who wish to pursue a degree in medicine after graduation.

Employment opportunities cover the spectrum of engineering activities, ranging from research and development, to systems analysis, automation, manufacturing, customer service and support, marketing and sales.

The SIU Capstone Option is available to students who have earned an Associate in Engineering Sciences (AES) degree with a minimum cumulative 2.0/4.0 GPA on all accredited coursework prior to the completion of the AES, as calculated by SIU. The Capstone Option reduces the University Core Curriculum requirements from 39 to 30 hours, therefore reducing the time to degree completion. Students interested in the Capstone Option should contact the College of Engineering Advisement Office to develop a personal coursework pathway to degree completion.

Degree Requirements	Credit Hours	
University Core Curriculum Requirements		39
Foundation Skills	13	
CMST 101	3	
ENGL 101, ENGL 102	6	
MATH 150 (4)	3	
UNIV 101	1	
Disciplinary Studies	23	
Fine Arts	3	
BIO 211(4)	2	
Humanities ⁴	6	
PHYS 205A	3	
PHYS 205B	3	
Social Science ⁵	6	
Integrative Studies (Multicultural/Diversity)	3	
Requirements for BME major		87
Basic Science		
PHYS 205A,B, 255A,B	(6)+2	2
BIO 211(4)	(2)	2
PHSL 201		3
Mathematics		
MATH 150,240, 251, 305	(3)+11	11
BME Required Courses		39
BME 101-3, BME 337-3, BME 338-2, BME 338L-2, BME 495A-3, BME 495B-3	16	
ECE 222-3, ECE 235-3, ECE 235L-1, ECE 296-2, ECE 296L-2,B ECE 355-3, ECE 355L-1, ECE 315-4, ECE 327-4	23	
Technical Electives ^{2,3}		24
General Technical Electives ⁵		6
TOTAL		126

¹ At least 5 courses from: BME 417, BME 418, BME 485, BME 435, ECE 438, ECE 467, ECE 494, ECE 498, BME 521, BME 531, BME 540.

² Other eligible Technical Electives: ECE 356, ECE 356L, ECE 458, ECE 468, ECE 469, ECE 475.

³ Department approved ECE, Mathematics, Physics, Physiology, or Computer Science Courses.

⁴ Recommended courses: PHIL 105-3, PHIL 104-3

⁵ Recommended courses: PSYC 102-3, PSYC 302-3, ECON 240-3, ECON 241-3

B.S BIOMEDICAL ENGINEERING

Semester 1		Semester 2	
BME 101 Intro to BME	3	MATH 250 Calculus II	4
ENGL 101 Composition 1	3	ENGL 102 Composition II	3
MATH 150 Calculus I	4	PHYS 205A/255A Univ Physics/Lab	4
UNIV 101U Saluki Success	1	CMST 101 Intro Oral Communication	3
BIOL 211a	4	ECE 222 Intro to Digital Computation	3
	15		17
Semester 3		Semester 4	
MATH 251, Calculus III	3	MATH 305, Intro Differential Equations	3
PHYS 205B/255B, University Physics/Lab	4	BME 337, Bioelectricity	3
PHSL 201 Human Physiology	3	BME 338 Biomedical Measurement	4
ECE 235/235L, Electric Circuits I/Lab	4	ECE 296/296L, Intro to Software Tools/Lab	4
UCC Humanities ³	3	UCC Social Science ³	3
	17		17
Semester 5		Semester 6	
ECE 355/355L, Signals & Systems/Lab	4	BME Technical Elective ¹	3
ECE 327 Dig Circ Desn HDL/Lab	4	BME Technical Elective ¹	3
ECE 315, Math Methods	4	BME Technical Elective ¹	3
BME Technical Elective ¹	3	BME Technical Elective ¹	3
		UCC Humanities ³	3
	15		15
Semester 7		Semester 8	
BME 495A Senior Design I	3	BME 495B Senior Design II	3
BME Technical Elective ¹	3	BME Technical Elective ¹	3
BME Technical Elective ¹	3	BME Technical Elective ¹	3
UCC Fine Arts ⁴	3	BME Technical Elective ¹	3
UCC Social Science ²	3	UCC Multicultural ⁵	3
	15		15

TOTAL HOURS: 126

Academic policies as well as degree and major-specific requirements can be found at catalog.siu.edu. All students are encouraged to meet with the academic advisor on a regular basis to ensure timely progress to degree.

University Core Curriculum (UCC) is satisfied with the transfer of an Associate of Art or Sciences (AA or AS) degree or the completion of the Illinois Articulation Initiative-General Education Core Curriculum (IAI-GECC) from an Illinois community college.

¹BME Technical Electives: choose at least 5 courses from: BME 417-3 Neuroengineering, BME 418-3 Biomedical Electronics and Biosensors, BME 435-3 Computational Methods in BME, ECE 438-3 Medical Instrumentation, BME 485-3 Cellular and Molecular Biomechanics, ECE 467-4 Modern Biomedical Imaging, ECE 494-3 Biomedical Ultrasound, ECE498-3 Biomedical Signal Analysis, BME 521-3 Neuromodulation, , BME 531-3 Biophotonics, BME 540-3 Tissue Mechanics.

Other eligible technical electives: ECE 458-3 Digital Image Processing, ECE 468-4 Digital Signal Processing, ECE 469-3 Machine Learning, ECE 475-3 Digital Health Cyber Systems, 3-credits of Department approved ECE, Mathematics, Physics, or Computer Science Courses.

²UCC Social Science: recommended courses - PSYC 102-3 Intro to Psychology, PSYC 302-3 Intro to Neuroscience, ECON 240-3 Intro to Microeconomics, ECON 241-3 Intro to Macroeconomics.

³UCC Humanities: recommend courses - PHIL 105-3 Elementary Logic, PHIL 104-3 Ethics

⁴UCC Fine Arts: select from: <https://corecurriculum.siu.edu/program-overview/disciplinary/finearts.php>

⁵UCC Multicultural: ENGR 304i-3 History of American Tech