BIOMEDICAL ENGINEERING - Catalog Year 2026

Track 1: Bioinstrumentation and Neural Engineering

Total Credits = **120-131**

Freshman Year, Fall Semester

Course Code	Description	Cr	Grade
EGR 101	Intro. to Eng. Design & Innov. (A4)	2	
MTH 141 +	Calculus I (A1, B3)	4	
CHM 101	General Chemistry Lec I (A1)	3	
CHM 102	General Chemistry I Lab	1	
BIO 110	Fundamentals of Biology (A1)	3	
BIO 103	Principles of Biology Laboratory I (A1)	1	
	General Education Outcome(s)[1]	3	
		17	

Freshman Year, Spring Semester

Course Code	Description	Cr	Grade
EGR 106	Matlab for Engineering Applications (A4)	2	
MTH 142 +	Calculus II (A1, B3)	4	
CHM 124 +	Introduction To Organic Chemistry	3	
PHY 203	Elementary Physics I (A1)	3	
PHY 273	Elementary Physics Lab I (A1)	1	
BME 181	Biomedical Engineering Seminar I	1	
	General Education Outcome(s)[1]	3	
		17	

Sophomore Year, Fall Semester

Course Code	Description	Cr	Grade
MTH 362	Advanced Engineering Mathematics[3]	3	
BIO 220	Fundamentals of Human Anatomy and Physiology I	3	
BIO 221	Fundamentals of Human Anatomy and Physiology I Laboratory	1	
PHY 204	Elementary Physics II (A1)	3	
PHY 274	Elementary Physics Lab II (A1)	1	
BME 281	Biomedical Engineering Seminar II	1	
ELE 201	Digital Circuit Design	3	
ELE 202	Digital Circuit Design Laboratory	1	
		16	

Sophomore Year, Spring Semester

Course Code	Description	Cr	Grade
MTH 243 +	Calculus for Functions of Several Variables (A1, B3)	3	
BIO 222	Fundamentals of Human Anatomy and Physiology II	3	
BIO 223	Fundamentals of Human Anatomy and Physiology II Laboratory	1	
BME 207	Introduction to Biomechanics	3	
ELE 212 +	Linear Circuit Theory	4	
ELE 215	Linear Circuits Laboratory	1	
EGR 241	Python for Engineering Applications	4	
		19	

Junior Year, Fall Semester

Course Code	Description	Cr	Grade
BME 307	Bioelectricity	3	
BME 360	Biomeasurement	3	
BME 361	Biomeasurement Laboratory	1	
ELE 313 +	Signals and Systems I	3	
ISE 311	Probability and Statistics for Engineers[4]	3	
ECN 201	Principles of Economics: Microeconomics (A2)	3	
	General Education Outcome(s)[1]	3	
		19	

Junior Year, Spring Semester

Course Code	Description	Cr	Grade
BME 362	Biomedical Instrumentation Design	3	
BME 363	Biomedical Instrumentation Design Laboratory	1	
ELE 314	Signals and Systems II	3	
EGR 316G	Engineering Ethics (A3, C1)	3	
	General Education Outcome(s)[1]	3	
	General Education Outcome(s)[1]	3	
		16	

Senior Year, Fall Semester

Course Code	Description	Cr	Grade
BME 461	Physiological Modeling and Control	3	
BME 464	Medical Imaging	3	
BME 465	Medical Image Processing Laboratory	1	
BME 484	Biomedical Engineering Capstone Design I (D1)	3	
ELE 400	Introduction To Professional Practice	1	
	Professional Elective[2]	3-4	
		14-15	

Senior Year, Spring Semester

Course Code	Description	Cr	Grade
BME 468	Neural Engineering	3	
BME 473	Brain Signal Processing and Applications	4	
BME 485	Biomedical Engineering Capstone Design II	2	
ELE 456	Foundations of Robotics	3	
		12	

Notes:

+ Course pre-requsites include grade requirements in previous coursework, see catalog or eCampus course description for details.

1) General Education Outcomes (A1-D1): if all outcomes are satisfied in fewer spaces than provided, you must take a course(s) of your choice (Free Elective) to ensure you have earned at least 120 credits as required to earn a BS degree. A complete detailing of these requirements are listed in the college's curriculum requirements section of this catalog.

2) Professional Elective: choose (1) course from the following list that is not already required for this track: BIO 320, 341, 352, 353, 439; BME 362/363, 461, 464/465, 466, 468, 473; CHE 333, 347, 574; CMB 311, 341, 352, 353; CSC 522; EGR 404, 441, 444; ELE 314, 322, 338/339, 343/344, 435/436, 437, 438, 447/448, 456, 458/459, 470, 501, 506; ISE 304, 311, 312; KIN 370, 470, 570; MCE 341, 354, 372; MTH 442, 451, 462, 471; STA 307, 409; or, with prior approval of the Biomedical Engineering department chairperson, any other 300-, 400-, or 500-level College of Engineering course.

3) [MTH 215 and MTH 244] will be accepted in place of MTH 362.

4) STA 307 will be accepted in place of ISE 311.

EGR101 is intended for and required of all first-year engineering students. Course substitution is considered only on an exception basis for transfer students with 24 or more earned credits, or for students with unique circumstances, and requires prior approval of the Assistant Dean for Undergraduate Affairs.