Bachelor of Science in Biomedical Engineering†

Department of Biomedical Engineering

Mapping of Courses and Activities to Program Outcomes

The courses with "O" mark those with specific outcome assessment for ABET accreditation. Our tracks are Biomaterials/Tissue Engineering (MAT), Biomechanics (MECH), Pre-Health (PREH) and Technology and Devices (TECH). All = all tracks, ELECT = Electives.

			Student Outcomes													
Track	**COURSE**	**Description**	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**	**1**	**2**	**3**	**4**
All	ENGR 102	Introduction to Engineering				X		X			X						
All	ECE 175	Computer Programming for Engineering Applications	X		X		X						X				
All	CHEM 151	Gen Chem I	X											X			
All	CHEM 152	Gen Chem II	X											X			
All	PHYS 141	Introductory Mechanics	X											X			
All	PHYS 241	Introductory Electricity and Magnetism	X											X			
All	MCB 181 & 181L	Intro Biology I	X											X			
All	PSIO 201	Human Ana and Physio I	X											X			
All	PSIO 202 | ECOL 182	Human Ana and Physio II | Intro Biol II	X											X			
All	BME 210	Intermdediate Design			X	X					X		X			X	
All	MATH 254	Intro ODE	X											X			
ELECT	BME 299 / 299H	Indepdent Study (P/F)															
All	SIE 305 | MATH 363	Statistics	X											X			
All	AME 230 | ABE 284	Thermodynamics | Biosys Thermal Engr	X				X							X			
All	AME 301 | ABE 423 | MATH 322 | ECE 330A	Engineering Analysis	X											X			

†During AY 2016-17 will be evaluated by the Engineering Accreditation Commission of ABET, http://www.abet.org.

			Student Outcomes													
Track	**COURSE**	**Description**	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**	**1**	**2**	**3**	**4**
MAT	MSE 461	Biological and Synth Materials							X				X				
PREH MAT	CHEM 241A & 243A	Organic Chem and Lab	X														
MECH	AME 302	Numerical Methods	X											X			
MECH	AME 324 | MSE 331R	Mech Behavior of Engr Mat | Funda of Mat for Engr	X											X			
PREH	BIOC 385	Metabolic Chemistry	X														
TECH	AME 489A	Fabr Techn for Micro and Nano Techn	X														
TECH	AME 488	Micro and Nanotransd Physics and Design	X														
ELECT	BME 477	Intro Biomed Informatics	X	X			X	X		X		X	X	X			
ELECT	BME 417	Meas & Data Analysis BME	X	X	X				X				X	X	X	X	X
ELECT	BME 492	Directed Research															
ELECT	BME 499	Indepdent Study (P/F)															
Courses used for ABET Outcome Assessment																	
All	BME 295C	Challenges in BME						**O**		**O**		X					
All	BME 214	Intro Biomechanics	**O**								**O**		X	X		X	
All	BME 330	Biomed Instrument	**O**	X									X	X	X		**O**
All	AME/BME 331	Intro Fluiddynamics	**O**				**O**		X				X	**O**			
All	ABE/BME 447	Sensors and Control	X	**O**	X	X	X		X			X	**O**	X	**O**	X	
All	BME 480	Translational BME						X	**O**	**O**	X	**O**	X		X	X	
All	BME 497G	Clinical Rotation						**O**			**O**				X		
All	ENGR 498A	Cross-Disciplinary Design	X	**O**	**O**	**O**	X		**O**				**O**			**O**	
All	ENGR 498B	Cross-Disciplinary Design	X	**O**	**O**	**O**	X		**O**				**O**			**O**	
MECH	AME/BME 466	Biomechanical Engr	**O**	X			**O**					X	X	**O**	X	X	
MECH	AME/BME 483	Micro Biomechanics	**O**	X			**O**		X				**O**	X	X		
PREH MAT	ABE/BME 481B	Cell and Tissue Engineering	X						X			**O**		X		X	X
PREH MAT	ABE/BME 486	Biomat Tissue Interaction	X		X	X	X		X			**O**	X	X	**O**		
PREH TECH	BME 416	Biomed Imaging	X		X		X					X	X	X		**O**	
TECH	BME 485	Nanosci & Nanotech	X		X	X	**O**		X				X	**O**	X		

Student Outcomes

a) an ability to apply knowledge of mathematics, science and engineering
b) an ability to design and conduct experiments, as well as to analyze and interpret data
c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d) an ability to function multi-disciplinary teams
e) an ability to identify, formulate and solve engineering problems
f) an understanding of professional and ethical responsibility
g) an ability to communicate effectively
h) the broad education necessary to understand the impact of engineering solutions in a global, economic environment, and societal context
i) a recognition of the need for and an ability to engage in life-long learning
j) a knowledge of contemporary issues
k) an ability to use technique, skills, and modern engineering tools necessary for engineering practice

1. applying principles of engineering, biology, human physiology, chemistry, calculus based physics, mathematics (through Differential Equations) and statistics
2. solving bio/biomedical engineering problems, including those associated with the interaction between living and non-living systems
3. analyzing, modeling, designing and realizing bio/biomedical engineering devices, systems, components or processes
4. making measurement on and interpreting data from living system