

# BIOMEDICAL ENGINEERING INTERDISCIPLINARY MINOR

## Requirements Effective Fall 2024

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Courses may only be used to fulfill requirements in one core or elective area; courses may not be double-counted in multiple sections.

Code	Title	Credits
<b>Core Courses</b>		
BIOM 100	Overview of Biomedical Engineering	1
Choose one course from the following:		2-3
BIOM 200	Fundamentals of Biomedical Engineering	
CBE 205	Fundamentals of Biological Engineering	
Choose one course from the following:		4-5
BMS 300	Principles of Human Physiology	
BMS 301	Human Gross Anatomy	
BMS 360	Fundamentals of Physiology	
Choose one course from the following:		3-4
BIOM 300	Problem-Based Learning Biomedical Engr Lab	
BIOM 421	Transport Phenomena in Biomedical Engineering	
BIOM 422	Quantitative Systems and Synthetic Biology	
BIOM 431/ ECE 431	Biomedical Signal and Image Processing	
BIOM 441	Biomechanics and Biomaterials	
<b>Electives</b>		<b>11</b>
Engineering and Related Courses Elective List – Select a minimum of 5 credits		
Science, Engineering, Animal Research, Bioethics, and Entrepreneurship Elective List – Select a minimum of 6 credits		
<b>Program Total Credits:</b>		<b>21-24</b>

### Engineering and Related Courses Elective List (Select a minimum of 5 credits from this list.)

Code	Title	Credits
BIOM 300	Problem-Based Learning Biomedical Engr Lab	4
BIOM 350A	Study Abroad–Ecuador: Prosthetics	1-3
BIOM 421	Transport Phenomena in Biomedical Engineering	3
BIOM 422	Quantitative Systems and Synthetic Biology	3
BIOM 431/ECE 431	Biomedical Signal and Image Processing	3
BIOM 441	Biomechanics and Biomaterials	3
BIOM 525/MECH 525	Cell and Tissue Engineering	3

BIOM 533/CIVE 533	Biomolecular Tools for Engineers	3
BIOM 572/MECH 572	Regenerative Bioengineering with Stem Cells	3
BIOM 573/MECH 573	Structure and Function of Biomaterials	3
BIOM 574/MECH 574	Bio-Inspired Surfaces	3
CBE 201	Material and Energy Balances	3
CBE 210	Thermodynamic Process Analysis	3
CBE 320	Chemical and Biological Reactor Design	3
CBE 331	Momentum Transfer and Mechanical Separations	3
CBE 332	Heat and Mass Transfer Fundamentals	3
CBE 406	Introduction to Transport Phenomena	3
CBE 430	Process Control and Instrumentation	3
CIVE 260	Engineering Mechanics-Statics	3
CIVE 261	Engineering Mechanics-Dynamics	3
ECE 202	Circuit Theory Applications	4
ECE 204	Introduction to Electrical Engineering	3
ECE 331	Electronics Principles I	4
ECE 341	Electromagnetic Fields and Devices I	3
MECH 237	Introduction to Thermal Sciences	3
MECH 262	Engineering Mechanics	4
MECH 307	Mechatronics and Measurement Systems	4
MECH 331	Introduction to Engineering Materials	4
MECH 342	Fluid Mechanics for Mechanical Engineers	3
A maximum of 1 course may be selected from the following non-engineering and independent study/practicum courses; a maximum of 3 credits of BIOM 495 may be counted toward the minor.		
BIOM 476	Biomedical Engineering Clinical Practicum	
BIOM 495	Independent Study	
ECE 303/ STAT 303	Introduction to Communications Principles	
MATH 340	Intro to Ordinary Differential Equations	
PH 245	Introduction to Electronics	
STAT 315	Intro to Theory and Practice of Statistics	

### Science, Engineering, Animal Research, Bioethics, and Entrepreneurship Courses Elective List (Select a minimum of 6 credits from this list.)

Code	Title	Credits
BC 351	Principles of Biochemistry	4
BIOM 300	Problem-Based Learning Biomedical Engr Lab	4
BIOM 421	Transport Phenomena in Biomedical Engineering	3
BIOM 422	Quantitative Systems and Synthetic Biology	3
BIOM 431/ECE 431	Biomedical Signal and Image Processing	3
BIOM 441	Biomechanics and Biomaterials	3
BIOM 476	Biomedical Engineering Clinical Practicum	1-3
BIOM 495	Independent Study	1-6
BIOM 525/MECH 525	Cell and Tissue Engineering	3
BIOM 533/CIVE 533	Biomolecular Tools for Engineers	3

BIOM 572/MECH 572	Regenerative Bioengineering with Stem Cells	3
BIOM 573/MECH 573	Structure and Function of Biomaterials	3
BIOM 574/MECH 574	Bio-Inspired Surfaces	3
BMS 300	Principles of Human Physiology	4
BMS 301	Human Gross Anatomy	5
BMS 325	Cellular Neurobiology	3
BMS 345	Functional Neuroanatomy	4
BMS 360	Fundamentals of Physiology	4
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BMS 420	Cardiopulmonary Physiology	3
BMS 430	Endocrinology	3
BZ 310	Cell Biology	4
CHEM 113	General Chemistry II	3
CHEM 245	Fundamentals of Organic Chemistry	4
CHEM 341 or CHEM 345	Modern Organic Chemistry I Organic Chemistry I	3 or 4
CHEM 344	Modern Organic Chemistry Laboratory	2
HES 207	Anatomical Kinesiology	4
HES 307	Biomechanical Principles of Human Movement	3
HES 403	Physiology of Exercise	3
HES 420	Electrocardiography and Exercise Management	3
HES 476	Exercise and Chronic Disease	3
LIFE 102	Attributes of Living Systems (GT-SC1)	4
LIFE 103	Biology of Organisms-Animals and Plants (GT-SC1)	4
LIFE 210	Introductory Eukaryotic Cell Biology	3
MIP 300	General Microbiology	3
OT 215	Medical Terminology	1
PSY 456	Sensation and Perception	3
PSY 457	Sensation and Perception Laboratory	2

A maximum of one course (3 credits) may be selected from the following non-technical courses:

BUS 205	Legal and Ethical Issues in Business
MGT 420	New Venture Creation
MGT 440	New Venture Management
PHIL 205	Introduction to Ethics