

B.S. IN BIOMEDICAL ENGINEERING

CATALOG YEAR 2016-2017

Below is the *advised sequence* of courses for this degree program and prerequisites as of 02/10/16. The official degree requirements and prerequisites can be found in the University General Catalog and the prerequisites are subject to change.

COURSE NUMBER AND TITLE	UNITS	PREREQUISITES
1ST SEMESTER		
MATH 122A/B OR MATH 125 Calculus I with Applications	5/3	Appropriate Math Placement
CHEM 151 General Chemistry I OR CHEM 105A/106A	4	
ENGL 101 OR 107 OR 109H First-Year Composition	3	
ENGR 102A/B Introduction to Engineering OR ENGR 102	3	Concurrent enrollment or completion of MATH 122B or MATH 125
Tier I General Education	3	
2ND SEMESTER		
MATH 129 Calculus II	3	MATH 122B or 125 with C or better
CHEM 152 General Chemistry II OR CHEM 105B/106B	4	CHEM 151 or CHEM 105A/106A
PHYS 141 Introductory Mechanics OR PHYS 161H	4	MATH 122B or MATH 125; Concurrent enrollment or completion of MATH 129
ENGL 102 OR 108 OR 109H First-Year Composition	3	ENGL 101, ENGL 107
BME 295C Challenges in Biomedical Engineering (Spring only)	1	
ECE 175 Intro Computer Programming	3	Concurrent enrollment or completion of MATH 122B or MATH 125
3RD SEMESTER		
ABE 284 Biosystems Thermal Engineering (fall only) OR AME 230 Thermodynamics (supports ME minor)	3	For ABE 284: MATH 129; PHYS 141; For AME 230: Concurrent enrollment or completion of MATH 223
BME 214 Introduction Biomechanics OR CE 214 Statics	3	For both: PHYS 141; MATH 129;
MATH 223 Vector Calculus	4	MATH 129 with C or better
MCB 181 R Introductory Biology I AND MCB 181 L Biotechnology Laboratory	3 1	
Tier I General Education	3	
4TH SEMESTER		
BME 210 Intermediate BME Design	3	ECE 175
MATH 254 Intro to Ordinary Differential Equations	3	MATH 129 or 223 with C or better
PHYS 241 Introductory Electricity and Magnetism OR PHYS 261H	4	PHYS 141 or PHYS 161H; MATH 129
PSIO 201 Human Anatomy and Physiology I	4	
Tier I General Education	3	

TECHNOLOGY AND DEVICES TRACK

COURSE NUMBER AND TITLE

UNITS

CURRENT PREREQUISITES FOR UPPER DIVISION COURSES CAN BE FOUND IN THE UA GENERAL CATALOG

ADVANCED STANDING IS REQUIRED FOR 3XX AND 4XX COURSES (SEE ADVISOR FOR REQUIREMENTS)

5TH SEMESTER

BME 447 Sensors and Controls 3

PSIO 202 Human Anatomy and Physiology II **OR**
ECOL 182 R/L Introductory Biology II and Laboratory 4

Technical Elective- See major Advisor for approval 3

AME 301 Engineering Analysis **OR**
MATH 322 Engineering Analysis **OR**
ECE 330A Computational Techniques 3

Tier I General Education 3

6TH SEMESTER

BME 330 Biomedical Instrumentation (Spring Only) 4

SIE 305 Introduction to Engineering Probability and Statistics **OR**
Math 363 Introduction to Statistical Methods 3

BME 480 Translational Biomedical Engineering (Spring only) 3

Technical Elective – See major advisor for course approval 3

Tier II General Education 3

7TH SEMESTER

ENGR 498A Cross-disciplinary Design 3

BME 497G Clinical Rotation (Fall Only) 1

BME 485 Nanoscience and Nanotechnology for BME (Fall only) 3

AME 489A Fabrication Tech. for Micro-and Nano-devices (Fall only) 3

BME 486 Biomaterial-Tissue Interactions **OR**
BME 461 Biological and Synthetic Materials (Fall Only) 3

Technical Elective – See major advisor for course approval 3

8TH SEMESTER

ENGR 498B Cross-disciplinary Design 3

BME 416 Biomedical Imaging (Spring only) 3

Technical Elective – See major advisor for course approval 3

Tier II General Education 3

*Tier I and II General Education Courses must meet University general education requirements. One course must be recognized by the university as meeting the Diversity Requirement.

BIOMECHANICS TRACK

COURSE NUMBER AND TITLE

UNITS

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ADVANCED STANDING IS REQUIRED FOR 3XX AND 4XX COURSES (SEE ADVISOR FOR REQUIREMENTS)

5TH SEMESTER

BME 447 Sensors and Controls (Fall only)	3
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PSIO 202 Human Anatomy and Physiology II OR ECOL 182 R/L Introductory Biology II and Laboratory	4
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BME 331 Introduction to Fluid Mechanics	3
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AME 301 Engineering Analysis (Fall Only)	3
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Tier I General Education	3
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6TH SEMESTER

BME 330 Biomedical Instrumentation (Spring Only)	4
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SIE 305 Introduction to Engineering Probability and Statistics OR Math 363 Introduction to Statistical Methods	3
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AME 324A Mechanical Behavior of Engineering Materials OR MSE 331R Fundamentals of Materials for Engineers	3
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BME 480 Translational Biomedical Engineering (Spring only)	3
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Tier II General Education	3
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7TH SEMESTER

ENGR 498A Cross-disciplinary Design	3
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BME 497G Clinical Rotation (Fall Only)	1
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BME 466 Biomechanical Engineering (Fall only)	3
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AME 302 Numerical Methods	3
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Technical Elective – See major advisor for course approval	3
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8TH SEMESTER

ENGR 498B Cross-disciplinary Design	3
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BME 483 Micro Biomechanics (Spring only)	3
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Technical Elective – See major advisor for course approval	3
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Technical Elective – See major advisor for course approval	3
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Tier II General Education	3
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BIOMATERIALS TRACK

COURSE NUMBER AND TITLE

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5TH SEMESTER

BME 447 Sensors and Controls (Fall only) 3

PSIO 202 Human Anatomy and Physiology II **OR**
ECOL 182 R/L Introductory Biology II and Laboratory 4

BME 331 Introduction to Fluid Mechanics 3

AME 301 Engineering Analysis **OR**
MATH 322 Engineering Analysis **OR**
ECE 330A Computational Techniques 3

Tier I General Education 3

6TH SEMESTER

BME 330 Biomedical Instrumentation (Spring Only) 4

SIE 305 Introduction to Engineering Probability and Statistics **OR**
Math 363 Introduction to Statistical Methods 3

BME 480 Translational Biomedical Engineering (Spring only) 3

CHEM 241A Lectures in Organic Chemistry **AND**
CHEM 243A Organic Chemistry Laboratory I 4

Tier II General Education 3

7TH SEMESTER

ENGR 498A Cross-disciplinary Design 3

BME 497G Clinical Rotation (Fall Only) 1

BME 461 Biological and Synthetic Materials (Fall Only) 3

BME 486 Biomaterial-Tissue Interactions (Fall Only) 3

BME 485 Nanoscience and Nanotechnology for BME (Fall only) 3

8TH SEMESTER

ENGR 498B Cross-disciplinary Design 3

BME 481B Cell and Tissue Engineering (Spring Only) 3

Technical Elective – See major advisor for course approval 3

Technical Elective – See major advisor for course approval 2

Tier II General Education 3

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PRE-HEALTH TRACK

COURSE NUMBER AND TITLE

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5TH SEMESTER

BME 447 Sensors and Controls (Fall only) 3

CHEM 241A Lectures in Organic Chemistry **AND**
CHEM 243A Organic Chemistry Laboratory I 4

BME 331 Introduction to Fluid Mechanics 3

AME 301 Engineering Analysis **OR**
MATH 322 Engineering Analysis **OR**
ECE 330A Computational Techniques 3

Tier I General Education 3

6TH SEMESTER

BME 330 Biomedical Instrumentation (Spring Only) 4

SIE 305 Introduction to Engineering Probability and Statistics **OR**
Math 363 Introduction to Statistical Methods 3

ECOL 182 R/L Introductory Biology II and Laboratory 4

BME 480 Translational Biomedical Engineering (Spring only) 3

BIOC 385 Metabolic Chemistry 3

7TH SEMESTER

ENGR 498A Cross-disciplinary Design 3

BME 497G Clinical Rotation (Fall Only) 1

BME 486 Biomaterial-Tissue Interactions (Fall Only) (Lab) **OR**
BME 461 Biological and Synthetic Materials (Fall Only) 3

CHEM 241B Lectures in Organic Chemistry **AND**
CHEM 243B Organic Chemistry Laboratory II 4

Tier II General Education 3

8TH SEMESTER

ENGR 498B Cross-disciplinary Design 3

BME 481B Cell and Tissue Engineering (Spring Only) 3

BME 416 Biomedical Imaging (Spring only) 3

Technical Elective – See major advisor for course approval 1

Tier II General Education 3

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