

BME Concentrations

- Biomechanics related courses
- Instrumentation & Imaging related courses
- Molecular, Cellular & Tissue Engineering related courses

Core Classes

All courses required

Foundation Core

BIOG 140, 141, 142		BIME 407 - Medical Device Engineering	
BIME 200 - Intro to Biomechanics		BIME 440 - Signals & Systems	
BIME 250 - Biosystem Process Analysis	 	BIME 450 - Numerical Analysis	
BIME 320 - Fluid Mechanics	 	BIME 460 - Systems Dynamics & Control	
BIME 370 - Biomaterials	 	BIME 491 - Quant Phys Signal Analysis Lab	
BIME 391 - Biomechanics/Biomaterials Lab	 	BIME 492 - Sys Phys Ctrl Dynamics Lab	

System Physiology Core

BIME 410 - Systems Physiology I
BIME 411 - Systems Physiology II

Concentration Electives

3 electives required for selected concentration:

- 1 must be a technical 300-level or higher
- 1 must be a technical 400-level or higher

Biomechanics

Technical Electives:

BIME 430 - Bioprocess Engineering
BIME 480 - Stress Analysis & Biomechanics
BIME 489 - Hemodynamics
BIME 510 - Bioanalytical Microfluidics
MCSE 610 - Biofluid Mechanics and Microcirculation
ISEE 330 - Ergonomics and Human Factors

Free Electives:

1 MATH 241 - Linear Algebra
MATH 305 - Intro to Mathematical Computing (CSCI 141 req.)
MATH 311 - Linear Optimization (MATH 241 req.)
2 MATH 341 - Advanced Linear Algebra (MATH 241 req.)
MATH 381 - Complex Variables
MATH 421 - Mathematical Modeling (MATH 241 req.)

after taking 1 and 2, one of these two help toward math minor after immersion

Instrumentation & Imaging

Technical Electives:

BIME 345 - Neuroscience Principles and Methods
BIME 489 - Theory & Application Biomedical Imaging
BIME 489 - Biomedical Device Sensor Interfacing

Free Electives:

1 MATH 241 - Linear Algebra
MATH 305 - Intro to Mathematical Computing (CSCI 141 req.)
MATH 311 - Linear Optimization (MATH 241 req.)
2 MATH 341 - Advanced Linear Algebra (MATH 241 req.)
MATH 381 - Complex Variables
MATH 421 - Mathematical Modeling (MATH 241 req.)
IMGS 261 - Linear and Fourier Methods for Imaging
IMGS 361 - Image Processing and Computer Vision I
IMGS 371 - Imaging Systems Analysis
CSCI 510 - Foundations in Computer Graphics
CSCI 631 - Foundations in Computer Vision

after taking 1 and 2, one of these two help toward math minor after immersion

Tissue Engineering

Required:

BIME 570 - Tissue Engineering

Technical Electives:

BIME 430 - Bioprocess Engineering
BIME 470 - Cell Culture Techniques
BIME 489 - Hemodynamics
BIME 510 - Bioanalytical Microfluidics
MCSE 610 - Biofluid Mechanics and Microcirculation

Free Electives:

* CHMO 231 - Organic Chemistry I
* CHMO 232 - Organic Chemistry II
* CHMB 402 - Biochemistry I
CHMB 610 - Advanced Protein Biochemistry
BIOL 450 - Genetic Engineering

*part of Chemistry Immersion