

Bioengineering, Minor

A bioengineering minor is designed both for engineering students who wish to see how engineering can be applied to biological systems and nonengineering students who wish to build some engineering fundamentals in the context of biological systems. The minor's core focuses on bioengineering experimentation and an engineering lens to physiology, and the electives allow for exploration in an area of interest. While primarily composed of BIOE courses, this minor does allow for some flexibility with courses from other departments as alternatives, making it feasible to fit among many majors across the university.

Minor Requirements

Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified. Some courses may have prerequisites not explicitly outlined in the requirements.

At least three, 4-semester-hour courses for this minor must be bioengineering (subject code of BIOE) courses.

Required Courses

Code	Title	Hours
BIOE 2355	Quantitative Physiology for Bioengineers	4
Complete one of the following course sets:		5-9
BIOE 2365 and BIOE 2366	Bioengineering Measurement, Experimentation, and Statistics and Lab for BIOE 2365	
ENVR 2500 and ENVR 2501 and BIOL 2309	Biostatistics and Lab for ENVR 2500 and Biology Project Lab	
PHTH 2210 and PHSC 2100	Foundations of Biostatistics and Lab Research Rotation	

Electives

Complete two courses (with potential labs) from the following:

Code	Title	Hours
BIOE 2350 or ME 2355 and ME 2356	Biomechanics Mechanics of Materials and Lab for ME 2355	
BIOE 3210 or EECE 2150 or EECE 2210 and EECE 2211	Bioelectricity Circuits and Signals: Biomedical Applications Electrical Engineering and Lab for EECE 2210	
BIOE 3310 or CHME 2310 or ME 3475 or ME 3480 or CIVE 2331	Transport and Fluids for Bioengineers Transport Processes 1 Fluid Mechanics International Applications of Fluid Mechanics Fluid Mechanics and Hydraulics	
BIOE 3380	Biomolecular Dynamics and Control	
BIOE 3410	Experimental Laboratory Methods	
BIOE 4991	Research	
BIOE 5115	Dynamical Systems in Biological Engineering	
BIOE 5235	Biomedical Imaging	
BIOE 5250	Regulatory and Quality Aspects of Medical Device Design	
BIOE 5410 or BIOE 5411	Molecular Bioengineering Applied Molecular Bioengineering	
BIOE 5420 or CHME 5630	Cellular Engineering Biochemical Engineering	
BIOE 5430	Principles and Applications of Tissue Engineering	
BIOE 5450	Stem Cell Engineering	
BIOE 5510	Bioengineering Products/Technology Commercialization	
BIOE 5630	Physiological Fluid Mechanics	

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BIOE 5640	Computational Biomechanics
BIOE 5648	Biomedical Optics
BIOE 5650	Multiscale Biomechanics
BIOE 5660	Integrative Mechanobiology
BIOE 5710	Experimental Systems and Synthetic Bioengineering
BIOE 5720	Physical Bioengineering
BIOE 5750	Modeling and Inference in Bioengineering
BIOE 5800	Systems, Signals, and Controls for Bioengineers
or EECE 2520	Fundamentals of Linear Systems
BIOE 5810	Design of Biomedical Instrumentation
BIOE 5820	Biomaterials
or CHME 5631	Biomaterials Principles and Applications
BIOE 5850	Design of Implants
CHME 5632	Advanced Topics in Biomaterials
CIVE 3430	Engineering Microbiology and Ecology
EECE 2750	Enabling Engineering
ME 5665	Musculoskeletal Biomechanics

GPA Requirement

Minimum 2.000 GPA required in all minor courses

Credit Requirement

17–23 hours required