Design and Innovation in Engineering, Minor

The Design and Innovation in Engineering minor is designed for non-engineering undergraduate students who wish to explore and develop working solutions to engineering problems. The course requirements for the minor are designed to expose the student to the engineering elements necessary to solve the important problems facing today's society. The elective options offer a high degree of flexibility and exposure to the engineering design process, CAD, programming, micro-controllers-based projects, and mathematical computation. The skills will be used in interactive open-ended projects. This provides more depth within the student's discipline and improves future career opportunities. Students can model and analyze designs, applying many techniques engineers utilize to create and test designs toward implementation. The student, upon successful completion of the minor, will be able to apply value-sensitive design principles to determine a societal need and propose and build or develop a solution. Students work in teams, use project management techniques, CAD, and algorithmic thinking to ideate a particular solution, and deliver effective team presentations on engineering projects and topics.

Students are permitted to double-count a maximum of 50% of the credits required for a minor from their major.

Minor Requirements

Note: This minor is for non-engineering majors.

Required Courses

Code	Title	Hours
Complete one of the following pairs:		8
GE 1110 and GE 1111	Engineering Design and Engineering Problem Solving and Computation	
GE 1501 and GE 1502	Cornerstone of Engineering 1 and Cornerstone of Engineering 2 [1]	

Elective

Code	Title	Hours
Complete two of the following:		8-10
BIOE 2350	Biomechanics	
BIOE 2355	Quantitative Physiology for Bioengineers	
BIOE 2365 and BIOE 2366	Bioengineering Measurement, Experimentation, and Statistics and Lab for BIOE 2365	
CHME 2308	Conservation Principles in Chemical Engineering	
CHME 2204	History of Fluid Mechanics	
CHME 2310	Transport Processes 1	
CIVE 1200	How Cities Work: Experiencing Urban Infrastructure	
CIVE 2221 and CIVE 2222	Statics and Solid Mechanics and Recitation for CIVE 2221	
CIVE 2334	Environmental Engineering: Principles, Technology, and Sustainability	
CIVE 2260 and CIVE 2261	Materials for the Built Environment and Lab for CIVE 2260	
CIVE 2300 and CIVE 2301	Environmental Measurements in Natural and Engineered Systems and Lab for CIVE 2300	
CIVE 2320 and CIVE 2321	Structural Analysis and Recitation for CIVE 2320	
CIVE 2331	Fluid Mechanics and Hydraulics	
EECE 2140	Computing Fundamentals for Engineers	
EECE 2150	Circuits and Signals: Biomedical Applications	
EECE 2160	Embedded Design: Enabling Robotics	
EECE 2210 and EECE 2211	Electrical Engineering and Lab for EECE 2210	
EECE 2322 and EECE 2323	Fundamentals of Digital Design and Computer Organization and Lab for EECE 2322	
EECE 2412 and EECE 2413	Fundamentals of Electronics and Lab for EECE 2412	
EECE 2540	Fundamentals of Networks	

EECE 2560	Fundamentals of Engineering Algorithms
EECE 2750	Enabling Engineering
GE 2500	Design Analysis and Innovation
GE 2750	Enabling Engineering
GE 3300	Energy Systems: Science, Technology, and Sustainability
IE 2310 and IE 2311	Introduction to Industrial Engineering and Recitation for IE 2310
IE 3412	Engineering Probability and Statistics
IE 4510	Simulation Modeling and Analysis
ME 2350	Statics
ME 2380 and ME 2381	Thermodynamics and Recitation for ME 2380

GPA Requirement

Minimum 2.000 GPA required in the minor

Credit Requirement

16 semester hours required

[1] Students can substitute Engineering Design (GE 1110 (https://catalog.northeastern.edu/search/?P=GE%201110)) and Engineering Problem Solving and Computation (GE 1111 (https://catalog.northeastern.edu/search/?P=GE%201111)) or Cornerstone of Engineering 1 (GE 1501 (https://catalog.northeastern.edu/search/?P=GE%201501)) and Cornerstone of Engineering 2 (GE 1502) .