

ENGINEERING DESIGN

The Department of Mechanical Engineering offers an undergraduate certificate program in the area of Engineering Design. The program is based on the elective courses of the bachelor of science in engineering degree in mechanical engineering (BSE-ME) program regularly offered by the Department of Mechanical Engineering. The earned credit hours can be applied simultaneously to the certificate program and an undergraduate degree program at the University of Michigan - Dearborn.

The program can be completed entirely on campus, with some courses occasionally offered in the asynchronous online mode.

The Engineering Design certificate combines principles of engineering science with methods of design to find solutions of practical engineering problems. The certificate program offers undergraduate students the opportunity to deepen their understanding of engineering design in the mechanical engineering area and receive official recognition in the field.

Only courses completed with grade B or better will be counted toward the certificate. A minimum certificate grade point average of 3.0 is required to obtain the certificate.

Certificate Requirements

The certificate program requires a minimum of 9 credit hours.

Code	Title	Credit Hours
Select a minimum of 9 credit hours from the following:		
ME 410	Finite Element Methods with Application	3
ME 4191	Structural Mech & Design	4
ME 4202	Design of Turbomachinery and Wind Generation	4
ME 423	Thermal Systems Design & Optimization	4
ME 4301	Computational Thermo-Fluids	3
ME 4361	Design of HVAC Systems	4
ME 4471	Solar Energy Sys Analy&Design	4
ME 452	Sustainable Energy & Environment	4
ME 460	Design for Manufacturing	3
ME 469	Senior Design II	1-4
ME 472	Prin & Appl of Mechatronic Sys	4
ME 483	Dsgn Cons in Poly and Comp Mat	3
ME 493	Advanced Vehicle Energy Systems	3
ME 490	Directed Design Project	1-3
ENGR 360	Design Thinking : Process, Method & Practice	4
BENG 451	Microfluidics	3
ME 440	Intro to Mechanical Vibrations	3
ME 445	Sound and Noise Controls	4
ME 4461	Mech Vibration & Noise Control	4
BENG 470	Advanced Biomechanics	3
BENG 481	Biomimetics	3
ME 4500	Design of Automotive Chassis and Body Systems	3
ME 4550	Computational Uncertainty Quantification for Engineering Applications	3

Notes:

1. Up to 4 credit hours can be transferred from a degree-granting program at another institution.
2. Pass/fail courses are not allowed.
3. All applicable credits earned in the certificate program can be applied toward one University of Michigan – Dearborn degree program.
4. Credits earned in the certificate program cannot be applied toward another certificate program.