MECHANICAL ENGINEERING

- Master of Mechanical Engineering
  Focus Areas: Manufacturing, Mechanics (Solids or Thermofluids), Robotics and Controls
- Post-Master’s Certificate in Mechanical Engineering

COURSES

CORE COURSES
535.441  Mathematical Methods for Engineers

This advanced mathematics course must be taken in the first semester of the student's program, unless the advisor explicitly allows the student to do otherwise.

RECOMMENDED
SELECT ONE
At least one computationally oriented course is strongly recommended in lieu of an elective.

535.409  Topics in Data Analysis
535.410  Computational Methods of Analysis
535.431  Introduction to Finite Element Methods
535.432  Applied Finite Elements
565.415  Finite Element Methods

COURSES BY FOCUS AREA

Students are required to choose one of three focus areas: Mechanics, Manufacturing, or Robotics and Controls. The focus area selected does not appear as an official designation in the student transcript. Each focus area has two required courses; the remaining three courses can be chosen among the other courses listed for that area. Post-master’s certificate students are not limited to one focus area but can choose their courses among all the courses offered by the program.

MECHANICS (SOLIDS)

REQUIRED CORE COURSES
535.406  Advanced Strength of Materials
535.423  Intermediate Vibrations

OTHER COURSES FOR THE FOCUS AREA (SELECT THREE)
535.409  Topics in Data Analysis
535.412  Intermediate Dynamics
535.427  Computer-Aided Design
535.431  Introduction to Finite Element Methods
535.432  Applied Finite Elements
535.454  Theory and Applications of Structural Analysis
535.460  Precision Mechanical Design
535.484  Modern Polymeric Materials
535.720  Analysis and Design of Composite Structures
535.731  Engineering Materials: Properties and Selection
565.415  Finite Element Methods
585.609  Cell Mechanics
585.618  Biological Fluid and Solid Mechanics
585.620  Orthopedic Biomechanics

MECHANICS (THERMOFLUIDS)

REQUIRED CORE COURSES
535.421  Intermediate Fluid Dynamics
535.433  Intermediate Heat Transfer

OTHER COURSES FOR THE FOCUS AREA (SELECT THREE)
535.409  Topics in Data Analysis
535.414  Fundamentals of Acoustics
535.424  Energy Engineering
535.434  Applied Heat Transfer
535.450  Combustion
535.452  Thermal Systems Design and Analysis
535.461  Energy and the Environment
535.636  Applied Computational Fluid Mechanics
535.712  Applied Fluid Dynamics
585.609  Cell Mechanics
585.618  Biological Fluid and Solid Mechanics

MANUFACTURING

REQUIRED CORE COURSES
535.428  Computer-Integrated Design and Manufacturing
535.459  Manufacturing Systems Analysis

OTHER COURSES FOR THE FOCUS AREA (SELECT THREE)
535.423  Intermediate Vibrations
535.426  Kinematics and Dynamics of Robots
535.427  Computer-Aided Design
535.433  Intermediate Heat Transfer
535.442 Control Systems for Mechanical Engineering Applications
535.458 Design for Manufacturability
535.460 Precision Mechanical Design
535.472 Advanced Manufacturing Systems
535.484 Modern Polymeric Materials
535.626 Advanced Machine Design
595.460 Introduction to Project Management

ROBOTICS AND CONTROLS

REQUIRED CORE COURSES
535.442 Control Systems for Mechanical Engineering Applications
535.426 Kinematics and Dynamics of Robots

OTHER COURSES FOR THE FOCUS AREA (SELECT THREE)
525.409 Continuous Control Systems
525.763 Applied Nonlinear Systems
535.409 Topics in Data Analysis
535.412 Intermediate Dynamics
535.422 Robot Motion Planning
535.423 Intermediate Vibrations
535.427 Computer-Aided Design
535.428 Computer-Integrated Design and Manufacturing
535.445 Digital Control and Systems Applications
535.459 Manufacturing Systems Analysis
535.460 Precision Mechanical Design
535.726 Robot Control

Please refer to the course schedule (ep.jhu.edu/schedule) published each term for exact dates, times, locations, fees, and instructors.