## Engineering (ENGINR)

### ENGINR 1000: Introduction to Engineering
This course will help students identify a field of engineering that they will pursue during the remainder of their studies at MU. This objective will be achieved by exposing students to the history of our engineering disciplines, and by giving an overview of the individual departments within the college of engineering. Guest lecturers from industry will make presentations on what it's like to be an engineer. Other lectures will be given to help acclimate students to university life. Graded on A-F basis only.

**Credit Hour:** 1

### ENGINR 1001: Experimental Course
For freshman-level students. Content and number of credit of hours to be listed in Schedule of Courses.

**Credit Hour:** 3-99

### ENGINR 1100: Engineering Graphics Fundamentals
Introduction to computer-aided design and drafting. Topics include visualization methods and standards techniques for communication and presenting engineering design graphics information.

**Credit Hours:** 2

**Prerequisites or Corequisites:** MATH 1500

**Prerequisites:** Restricted to Engineering Students only, or by departmental consent

### ENGINR 1110: Solid Modeling for Engineering Design
Introduction to 3D (three dimensional) modeling techniques using computer aided design software. Topics include model creation techniques and advanced graphical presentation practices. Graded on A-F basis only.

**Credit Hour:** 1

**Prerequisites:** ENGINR 1100 or instructor’s consent. Restricted to Engineering Students Only or by departmental consent

### ENGINR 1200: Statics and Elementary Strength of Materials
Fundamentals of statics; static equilibrium and introduction to elements of mechanics of elastic materials.

**Credit Hours:** 3

**Prerequisites or Corequisites:** PHYSCS 2750. Restricted to Engineering Students only or with departmental consent

**Prerequisites:** MATH 1500

### ENGINR 2001: Experimental Course
For sophomore-level students. Content and number of credit hours to be listed in Schedule of Courses.

**Credit Hour:** 1-99

### ENGINR 2001W: Experimental Course - Writing Intensive
For sophomore-level students. Content and number of credit hours to be listed in Schedule of Courses.

**Credit Hour:** 1-99

### ENGINR 2100: Circuit Theory for Engineers
DC circuit analysis, inductors and capacitors, first-order response, AC circuit analysis, single-phase AC power and three-phase, transformers.

**Credit Hours:** 3

**Prerequisites:** MATH 1700. For Non-Electrical and Computer Engineering Majors. Restricted to Engineering Students only or with departmental consent

### ENGINR 2100H: Circuit Theory for Engineers - Honors
DC circuit analysis, inductors and capacitors, first order response, AC circuit analysis, single-phase AC power.

**Credit Hours:** 3

**Prerequisites:** MATH 1700. Honors eligibility required

### ENGINR 2200: Intermediate Strength of Materials
Elements of mechanics of elastic materials.

**Credit Hours:** 3

**Prerequisites:** ENGINR 1200. Restricted to Engineering Students only or with departmental consent

### ENGINR 2300: Engineering Thermodynamics
(same as MAE 2300). Fluid properties, work and heat, first law, second law, entropy, applications to vapor and ideal gas processes.

**Credit Hours:** 3

**Prerequisites:** PHYSCS 2750. Restricted to Engineering Students Only or departmental consent

### ENGINR 2500: A History of Modern Engineering
This course will introduce the student to significant engineering events that have shaped the late modern-area from the French Revolution to the end of World War II (1789-1945). Radical inventions and their dates will be used as historical landmarks throughout the course. Graded on A-F basis only.

**Credit Hours:** 3

### ENGINR 2500H: A History of Modern Engineering - Honors
This course will introduce the student to significant engineering events that have shaped the late modern-area from the French Revolution to the
end of the World War II (1789-1945). Radical inventions and their dates will be used as historical landmarks throughout the course. Graded on A-F basis only.

**Credit Hours:** 3  
**Prerequisites:** Honors eligibility required

**ENGINR 2600H: History of Human Spaceflight - Honors**
This course will provide an overview of the history of human spaceflight, including early efforts up through the present for the three countries that have flown humans in space (U.S., Russian, and China). Special topics will include a discussion of the major space accidents. Finally, the future of human space exploration will be discussed. May be repeated for credit. Graded on A-F basis only. Prerequisites: Honors eligibility required

**Credit Hours:** 3

**ENGINR 2600HW: History of Human Spaceflight - Honors/ Writing Intensive**
This course will provide an overview of the history of human spaceflight, including early efforts up through the present for the three countries that have flown humans in space (U.S., Russian, and China). Special topics will include a discussion of the major space accidents. Finally, the future of human space exploration will be discussed. May be repeated for credit. Graded on A-F basis only. Prerequisites: Honors eligibility required

**Credit Hours:** 3

**ENGINR 3000: Short Term Education Abroad**
Introduction to history and culture of country and/or cities in specified country. Students will make engineering profession and corporate site visits. Lecture activities will focus on industry and society, with country and/or cities compared and contrasted to U.S. engineering. Graded A-F only.

**Credit Hours:** 3  
**Prerequisites:** Instructor's consent required. Students must be in Academic Good Standing

**ENGINR 3000H: Short Term Education Abroad - Honors**
Introduction to history and culture of country and/or cities in specified country. Students will make engineering profession and corporate site visits. Lecture activities will focus on industry and society, with country and/or cities compared and contrasted to U.S. engineering. Graded A-F only.

**Credit Hours:** 3  
**Prerequisites:** Instructor's consent required. Students must be in Academic Good Standing

**ENGINR 4000: Study Abroad Technical Elective**
This course is designed to provide students with an international experience while also potentially fulfilling a required engineering technical elective course. Engineering technical electives are courses that are relevant or related to engineering from a broad range of fields including math and science as well as the various engineering departments. This course will be used as the umbrella course for all Engineering Technical Elective Study Abroad Opportunities and each course will provide a separate section number.

**Credit Hour:** 3-6

**ENGINR 4085: Problems in Engineering**
Special design, experimental or analytical problems in engineering. May be repeated to 6 hours.

**Credit Hour:** 0-6

**ENGINR 4890: Multi-disciplinary Senior Engineering Capstone Design**
Engineering design and prototyping including reliability, testing, evaluation, preparation of documentation, safety, ethics, manufacturing, intellectual property, economic and environmental constraints. Oral and written reports. Graded A-F only.

**Credit Hours:** 3  
**Prerequisites:** Instructor's consent. Student's department consent also required  
**Recommended:** Senior standing

**ENGINR 4890W: Multi-disciplinary Senior Engineering Capstone Design - Writing Intensive**
Engineering design and prototyping including reliability, testing, evaluation, preparation of documentation, safety, ethics, manufacturing, intellectual property, economic and environmental constraints. Oral and written reports. Graded A-F only.

**Credit Hours:** 3  
**Prerequisites:** Instructor's consent. Student's department consent also required  
**Recommended:** Senior standing

**ENGINR 8100: Design and Development of Biomedical Innovations**
(same as BIOL_EN 8100). This course takes students through the process of brainstorming and working out a solution to a medical need, and then producing a product. Outputs may include the development of a physical prototype through interactions with the College of Engineering rapid prototype facility. May be repeated for credit. Graded on A-F basis only.

**Credit Hours:** 3  
**Prerequisites:** Must be enrolled in a graduate degree program