

MECHATRONICS ENGINEERING TECHNOLOGY (MET)

MET 320. Integrated Engineering Sciences

Credits: 2

Corequisite: Concurrent registration in, or previous successful completion of, MET 320L.

Typically Offered: FALL

Students will learn basic concepts of statics and dynamic applied to fluid properties, fluid statics, fluid dynamics, transport theory and transport analogies, conservation of mass, energy and momentum, dimensional analysis, boundary layer concepts, pipe flows, compressible flow, and open channel flow.

MET 320L. Integrated Engineering Sciences Lab

Credits: 1

Corequisite: Concurrent registration in, or previous successful completion of, MET 320.

Typically Offered: FALLSUM

The lab portion of the course is a lab/lecture which provides hands-on verification of the theory presented in MET 320. This lab is only available on campus concurrent with lecture or during a condensed summer session.

MET 325. Manufacturing Methodology

Credits: 3

Typically Offered: SPRING

Students will study the principles of additive and subtractive manufacturing including Turning, Milling, Laser cutting, and 3D printing. As part of this study material properties will be discussed, analyzed, and demonstrated. Function, operation, and setup of CNC milling machines, laser cutters, 3D printers, and other automated machine tools used in industry will be demonstrated.

MET 330. Input and Output System Application

Credits: 2

Corequisite: Concurrent registration in, or previous successful completion of, MET 330L.

Typically Offered: SPRING

Students will learn input and output system theory and apply learned concepts of mechatronic equipment including sensors, smart sensors, motors, actuators, and other control devices. Sensor theory, selection, and placement concepts will be applied to mechatronic system design. Basic mechatronic system programming concepts will be reviewed.

MET 330L. Input and Output System Application Lab

Credits: 1

Corequisite: Concurrent registration in, or previous successful completion of, MET 330.

Typically Offered: SPRSUM

The lab portion of the course is a lab/lecture which provides hands-on verification of the theory presented in MET 330. This lab is only available on campus concurrent with lecture or during a condensed summer session.

MET 332. Input and Output System Application

Credits: 3

Typically Offered: SPRING

Students will learn input and output system theory and apply learned concepts of mechatronic equipment including sensors, smart sensors, motors, actuators, and other control devices. Sensor theory, selection, and placement concepts will be applied to mechatronic system design. Basic mechatronic system programming concepts will be reviewed.

MET 340. Workcell Design, Ergonomics and Efficiency

Credits: 2

Corequisite: Concurrent registration in, or previous successful completion of, MET 340L.

Typically Offered: SPRING

This course teaches engineering concepts needed to design and build a manufacturing workcell to industry standards. System design concepts taught include math calculations, CAD design, failure mechanisms, efficiency, and ergonomics and safe operator system interaction.

MET 340L. Workcell Design, Ergonomics, and Efficiency Lab

Credits: 1

Corequisite: Concurrent registration in, or previous successful completion of, MET 340.

Typically Offered: SPRSUM

The lab portion of the course is a lab/lecture, which provides hands-on verification of the theory presented in MET 340. This lab is only available on campus concurrent with lecture or during a condensed summer session.

MET 342. Workcell Design, Ergonomics and Efficiency

Credits: 3

Typically Offered: SPRING

This course teaches engineering concepts needed to design and build a manufacturing workcell to industry standards. System design concepts taught include math calculations, CAD design, failure mechanisms, efficiency, and ergonomics and safe operator system interaction.

MET 395. Service Learning

Credits: 1

Repeat Status: Repeatable up to 6.00 credits.

Typically Offered: ONDEMAND

Designed to increase off-campus community involvement and awareness of civic responsibility, Service Learning gives students the opportunity to earn up to six semester hours of college credit while pursuing volunteer activities that have positive impact in the community. Some examples of activities that may serve as vehicles for Service Learning include: volunteer work at non-profit organizations (e.g., Kiwanis, Lions, etc.); serving as unpaid interns in local and state government; and organizing and participating in activities that are beneficial to the community as a whole (e.g. spring clean-up drives, neighborhood watch programs, meals-on-wheels, etc.). Students interested in Service Learning should discuss options with their academic advisors and/or faculty in areas related to the proposed activity.

MET 410. Material Properties & Mechanics

Credits: 3

Typically Offered: FALL

Students study the mechanics of materials emphasizing the analysis and design of beams, columns, and structural members including equilibrium of rigid-bodies and coplanar force systems, trusses, load tracing, centroids and center of gravity, bending stress, shear stress and beam deflections, and properties of materials.

MET 420. Robotics Applications

Credits: 3

Typically Offered: FALL

Subjects covered are robotic nomenclature, classifications and application, the spatial position and orientation of robot manipulators, safety, systematic preventative maintenance, and programming of industrial and autonomous robots.

MET 420L. Robotics Applications Lab

Credits: 1

Corequisite: Concurrent registration in, or previous successful completion of, MET 420.

Typically Offered: FALLSUM

The lab portion of the course is a lab/lecture which provides hands-on verification of the theory presented in MET 420. This lab is only available on campus concurrent with lecture or condensed summer session.

MET 430. System Programming and Process Control

Credits: 3

Typically Offered: SPRSUM

This course utilizes experiential learning to gain knowledge about mechatronic system control. Students will work with other students to design, connect, program, control and troubleshoot a mechatronic production system.

MET 430L. System Programming and Process Control Lab

Credits: 1

Corequisite: Concurrent registration in, or previous successful completion of, MET 430.

Typically Offered: SPRSUM

The lab portion of the course is a lab/lecture which provides hands-on verification of the theory presented in MET 430. This lab is only available on campus concurrent with lecture or condensed summer session.

MET 450. Mechatronic System Design

Credits: 3

Typically Offered: SPRSUM

This course is a capstone to the Mechatronics Engineering Technology program. Students will apply skills and knowledge learned to work in a team environment designing and building a mechatronic system to create a product using automation. Using a collaborative process, focus will be given to system safety, cost control, efficiency, and lean manufacturing principles.

MET 450L. Mechatronic System Design Lab

Credits: 1

Corequisite: Concurrent registration in, or previous successful completion of, MET 450.

Typically Offered: SPRSUM

The lab portion of the course is a lab/lecture which provides hands-on verification of the theory presented in MET 450. This lab is only available on campus concurrent with lecture or during condensed summer session.