

MEC - MECHATRONICS AS (MEC)

*Course Fees are Per Credit Hour

MEC 101. Industrial Safety. (3 Credits)

This course provides an introduction to concepts and processes of safety commonly used in modern manufacturing environments. Topics include procedures, standards, training, hazards, and equipment related to safety in industrial environments. (Fall)

Course Fees: \$60

MEC 110. Instrumentation and Industrial Measurement. (4 Credits)

This course provides an introduction to the sensors and instrumentation commonly used in modern manufacturing environments. Topics include instrumentation used to measure physical, mechanical, electrical, and/or chemical properties as well as the acquisition and transmission of measured data. Hands-on laboratory sessions will provide students with experience setting up, operating, and troubleshooting modern industrial instrumentation. (Fall)

Course Fees: \$60

MEC 140. AC and DC Fundamentals and Circuits. (4 Credits)

This course provides an introduction to the fundamentals, nomenclature, equipment, and calculations both DC and AC electricity and circuits commonly used in modern manufacturing environments. Topics include electricity, electrical components, electrical circuits, electrical measurements and calculations, and basic digital operations. Basic skills will also be obtained in the use of electrical tools, test instruments, and hands-on soldering. Hands-on laboratory sessions will provide students with experience using electrical tools, test instruments, and hands-on soldering, and simplified circuitry. Prerequisite: MA 112. (Spring)

Course Fees: \$60

MEC 160. Industrial Hydraulics and Pneumatics. (4 Credits)

This course provides an introduction to the hydraulic and pneumatic equipment commonly used in modern manufacturing environments. Topics include the safety, operation, and components of manufacturing hydraulic and pneumatic systems. Hands-on laboratory sessions will provide students with experience setting up, operating, and troubleshooting modern industrial hydraulic and pneumatic systems.

Prerequisite: MA 112. (Spring)

Course Fees: \$60

MEC 210. Programmable Logic Controllers. (4 Credits)

This course provides an introduction to programmable logic controllers commonly used in modern manufacturing environments. Topics include hardware components, setup, operation, programming, debugging, optimization, and ladder diagrams. Hands-on laboratory sessions will provide students with experience connecting sensors and actuators, loading programs, and operating systems with the PLC. Prerequisite:

MEC 140. (Fall)

Course Fees: \$60

MEC 220. Electric Motors and Controls. (4 Credits)

This course provides an introduction to electric motors and controllers commonly used in modern manufacturing environments. Topics include DC, single-phase AC, and three-phase AC motors, motor efficiencies, modes of operation, and control. Hands-on laboratory sessions will provide students with experience setting up, operating, and troubleshooting motors and control systems. Prerequisite: MEC 140.

(Fall)

Course Fees: \$60

MEC 230. Preventive Maintenance. (3 Credits)

This course provides an introduction to the basic concepts and methods of preventive maintenance common in modern manufacturing environments. Topics include equipment maintenance, safety, procedures, and predictive and preventive maintenance processes.

(Spring)

Course Fees: \$60

MEC 240. Industrial Process Control. (3 Credits)

This course provides an introduction to the basic concepts and methods of industrial process control common in modern manufacturing environments. Topics include control loops, sensors, actuators, data acquisition, and control equipment. Prerequisites: MEC 110 and MEC 140. (Fall)

Course Fees: \$60

MEC 260. Robotics. (4 Credits)

This course provides an introduction to robotics systems commonly used in modern manufacturing environments. Topics include servo motors, power systems, programming, and control systems. Hands-on laboratory sessions will provide students with experience setting up, programming, operating, and troubleshooting modern industrial robotics systems.

Prerequisite: MEC 140. (Spring)

Course Fees: \$60

MEC 270. Advanced Programmable Logic Controllers. (4 Credits)

This course provides a more in-depth continuation of the PLC logics and skills introduced in the introductory Programmable Logic Controllers course (MEC 210). Topics include communications, graphical user interfaces, hardware interfacing, control loops, and troubleshooting. Hands-on laboratory sessions will provide students with experience developing and implementing more complex control code as well as troubleshooting more challenging hardware/software/communications issues. Prerequisite: MEC 210. (Spring)

Prerequisite: MEC 210. (Spring)

Course Fees: \$60

MEC 280. Industrial Quality Control. (3 Credits)

This course provides an introduction to the basic concepts and methods of quality control common in modern manufacturing environments. Topics include process evaluation, statistical process control, documentation, continuous improvement, and lean manufacturing.

Prerequisites: MA 112 and MEC 110. (Spring)

Course Fees: \$60

MEC 290. Industrial Co-Op/Internship. (1-3 Credits)

This course may be taken in any semester during which the student is working an approved internship/co-op position with an approved employer. Prerequisite: Permission of the Department Chair.

Course Fees: \$60