

MECHATRONICS (MEC)

MEC 101: Introduction to Mechatronics (3)

Introduction to Mechatronics will build the basic skills a student will need to be successful in the Mechatronics program and industry. This will be an introduction to terminology, tools, problem solving, and work habits. It will also provide insight to basic manufacturing theory and tools for processes improvement

Terms Typically Offered: Fall

MEC 118: Preventive Maintenance (3)

This course is designed to introduce the student to basic preventative maintenance (PM). Basic PM covers how routine work is done in industrial settings to keep equipment in good working order and to optimize its efficiency and accuracy. Activities in this class include regular routine cleaning, lubricating, testing, checking for wear and tear and eventually replacing components to avoid breakdown

Terms Typically Offered: Spring

MEC 120: Industrial Safety (3)

Course covers OSHA regulations specific to manufacturing, including worker rights and employer responsibilities. Appropriate use of personal protective equipment, safety hazards found in industrial settings, and documenting safety remedies will be covered

Terms Typically Offered: Winter

MEC 121: Mechanical Components (5)

Introduces students to the basic concepts & procedures of mechanical power transmission in industry. Covers the principles of power transmission and the methods that are used to perform it, the basic items that are used in these types of systems, calculations of speed and force and how they affect a power transmission systems ability to perform work. Covers the basics of safe work practices for working around machinery, common hand tools associated with maintenance work and some of the more common terms and definitions.

Registration-Enforced Prerequisite: MEC 101.

Terms Typically Offered: Fall

MEC 123: Automation Programming I (5)

Covers fundamentals of digital logic and an introduction to programmable logic controllers (PLCs) in a complex mechatronics system with a focus on the automation system and appropriate programming software. Will cover basic elements of PLC functions by writing and testing small programs on an actual system, including identification of malfunctioning PLCs, and application of troubleshooting strategies

Terms Typically Offered: Fall

MEC 151: Electricity in Mechatronics (5)

Covers information on basic DC and AC electrical theory, definitions, basic component identification and analysis of series, parallel and combination circuits. Emphasis is placed on practical application, troubleshooting and problem solving. Recommended-

Corequisite: MTH 102.

Terms Typically Offered: Winter

MEC 199: Mechatronics (3)

Covers fundamentals of digital logic and an introduction to programmable logic controllers (PLCs) in a complex mechatronics system with a focus on the automation system and appropriate programming software. Will cover basic elements of PLC functions by writing and testing small programs on an actual system, including identification of malfunctioning PLCs, and application of troubleshooting strategies

MEC 201: Composites (5)

Introduction to composite materials and their uses in industry with a focus on developing basic fabrication skills and the safe use of materials. Prepares students for entry level employment.

Registration-Enforced Prerequisite: MEC 101 and MEC 120.

Terms Typically Offered: Fall

MEC 219: Robotics in Manufacturing (5)

Covers the basics of robotic operation, basic programming, interfacing, and material handling in a complex mechatronic system. Students will gain conceptual, technical, and practical knowledge of robotic applications and how they are applied in industrial tasks using hands-on, interactive robotic devices.

Registration-Enforced Prerequisite: MEC 151, MEC 120, MEC 123 and MEC 224.

Terms Typically Offered: Winter

MEC 222: Hydraulics and Pneumatics (5)

Course will introduce the student to basic hydraulic and pneumatic concepts common in industry. Technical documents, circuit diagrams, displacement step diagrams and function charts will be covered. Explains the fundamental concepts of fluid power including calculations of physical properties of fluids and their ability to do work.

Registration-Enforced Prerequisite: MEC 101.

Terms Typically Offered: Winter

MEC 224: Controls and Instrumentation (5)

Covers the fundamentals of controls and instrumentation in troubleshooting in a mechatronics system. Will build skills in troubleshooting motors and variable speed drives, adjusting speed and direction, and interpreting relay logic and sizing of components for various applications.

Registration-Enforced Prerequisite: MEC 101 and MEC 123.

Terms Typically Offered: Fall

MEC 225: Automation Programming II (5)

Covers advanced programmable logic controllers (PLCs) in a complex mechatronics system with a focus on the automation system and appropriate programming software. Introduction to industrial-grade Siemens and Allen-Bradley PLCs. Will identify and localize problems caused by PLC hardware.

Registration-Enforced Prerequisite: MEC 151 and MEC 123.

Terms Typically Offered: Spring

MEC 229: Mechatronics Capstone (3)

Students use the skills developed during their prior courses to work as a team to design and build a capstone project.

Registration-Enforced Prerequisite: MEC 219.

Terms Typically Offered: Spring

MEC 280: CWE-Mechatronics (1-13)

Students are expected to learn skills related to their program of study in a work setting. Positions are normally off campus with private industry and governmental agencies. The work-site supervisor will guide, direct, instruct, and evaluate the student's performance. The student will set learning objectives before beginning work and evaluate his/her progress at the end of the experience.

Registration-Enforced Prerequisite: MEC 120.

Terms Typically Offered: Fall, Winter, Spring, Summer