Introduction to Mechatronics

FESTO

Introduction

This certification in Mechatronics serves as an introduction, providing foundational knowledge and hands-on skills in mechanical, electrical, and control technology. Students will gain competencies in operating and maintaining pneumatics, electrical systems, sensors, actuators, and controls. By working with real-world automation devices, students will also enhance their STEM (Science, Technology, Engineering, and Math) skills. These core automation, production, and manufacturing skills are in high demand. Upon earning the certification, students will be prepared for advanced Mechatronics and Industry 4.0 training, as well as for roles such as certified production technicians and operators. The certification is derived from extensive industry-based curriculum.

Industry Recognized Certification Topics

- Introduction to engineering basics
- Automation history and basics
- Technical terms and symbology
- Electronics and circuit design:
- Basics of relays, sensors, valves, actuators, gripper, control and logic systems
- Basics of mechanical systems and motors
- Universal PLC and digital logic programming basics
- Control and logic circuits
- Industrial networking and communication
- Simulation and modeling
- Scientific principles and laws
- Maintenance and troubleshooting
- Techniques for maintaining automated systems.
- Safety and compliance standards
- Energy management

Units - 12 / Labs - 9 / Projects - 3

Industry Recognized Certification Competencies

- Identify the components of automated systems
- Explain and demonstrate the functionality of pneumatics, electrical and mechanical components
- Define essential mechatronics terminology
- Utilize software tools to design, stimulate and control automated systems
- Identify the elements of programmable logic controllers
- Analyze logic circuits and develop sequence programs
- Apply the engineering design process to create automated systems and solutions
- Apply critical thinking, problems solving, and teamwork
- Explain the function of electro-pneumatic systems
- Explain and demonstrate the function of
- Stacking, conveying and handling systems