Level 1: Fundamentals
Robotics

FESTO

Today, and in the future, Robotics are becoming more and more common. From repetitive tasks to highly complex interaction with humans, robots can be found. This course is designed expose students to the various types of robots and the various ways they can increase productivity in industrial applications. While these robots can replace low skilled human tasks, they require people with technical skills to program, operate and maintain them.

Upon completion of this course, student will have worked with various types and brands of robots – learning how to program, teach positions, and work safely with these critical elements of modern industry

Course Topics

– Introduction to industrial robotics
– Robotics and work place safety
– Familiarization with various robots
– Point-to-point and task programs

– Program editing
– Control overview
– Industrial applications.

Core Competencies

– Identify and explain the design and function of various types of robotic systems
– Safely operate and maintain robotic systems
– Program various robotic systems
– Commission and teach robotic programs and positions

– Understand and define control instructions
– Utilize conditional statements
– Incorporate sensors and other applications with a robot application

Equipment

CIROS Robotics Software

– Allows students to simulate and control the operation of various brands and types of robots
– Control the robot movements using "articular" and/or "Cartesian" coordinates
– Multi-seat licensing and transfer of files between computers
– Various application models to choose from for real-world applications
– Control/simulation software program simulates and controls with three-dimensional representations of the mechanical and electrical characteristics of the equipment
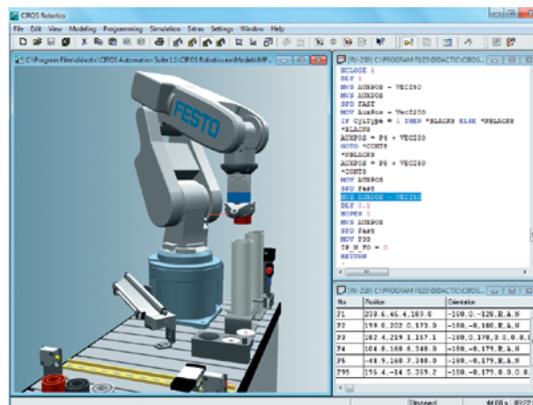
At least one Industrial Robot is required.

Level 2: Advanced Mechatronics
Applied Robotics

FESTO

Estimated Duration: 20 hours

The Applied Robotics Course expands on Robotics Fundamentals. Students will work more extensively with the CIROS software and real industrial robotic applications. Robots rarely do work in isolation. They interact with other manual and automated systems. The MPS Robot Cell allows students to learn about these topics and how to program and edit robot programs and positions to accomplish various tasks.

Course Topics

- Integration of an industrial robot in an assembly process
- Teaching of robots in complex assembly environments
- Commissioning of complex systems

- Maintenance, servicing, and troubleshooting of complex systems
- Programming of industrial robots combined with the integration of sensors and additional actuators
- Programming of multitasking applications

Core Competencies

- Program and edit complex robot applications
- Incorporate sensors and other automated elements into the robot application

- Effectively work with subroutines
- Efficiently maintain and service industrial robots
- Teach precise robot positions

Equipment

MPS Robot and Assembly Station

The Festo Robot and Assembly station is based on the proven design of the Festo MPS® and can easily be integrated with upstream and/or downstream stations. The robot determines the orientation of the bodies and places them in the assembly holder in the correct orientation. It takes the piston from the pallet and assembles it in the body. Controlled magazines feed the piston springs and cylinder end caps to the robot. The fully assembled pneumatic cylinder is then placed on a slide.
The system includes:
- Trolley with Safety Guarding System
- Industrial Robot (Mitsubishi, Fanuc, ABB, Kuka, Etc.)
- Handling Module
- Assembly module

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