

Level 1: Fundamentals

PLC—Allen Bradley

Working with a PLC efficiently requires a strong familiarity with the specifics of the programming environment and languages. This is exactly the purpose this course. The students will work with high-end products from Rockwell Automation/Allen Bradley. This training program allows students to acquire hands-on experience with industrial control equipment. Realistic examples are used to motivate students to gain the skills needs to work with PLC controlled systems – which surround us in our daily lives. As a Rockwell Encompass Partner, Festo’s training is well suited for this environment.

Course Topics

- Control relays
- Basic design and operation
- PLC sections: input, logic and output
- Input types: discrete, analog and digital
- Memory types: ROM and RAM
- Logic processing: addressing and scanning
- Output types: discrete, analog and digital
- Numbering systems: decimal, binary, octal, hex and ASCII
- Boolean functions: identity, AND/OR/NOT circuits
- Basic troubleshooting: using a PLC as a troubleshooting tool

Core Competencies

- Explain the operation and design of various relays
- State/explain the three PLC sections
- State/explain the three types of input devices
- State/explain the types of memory in a PLC
- Explain different types of PLC addressing
- State/explain the three types of output devices
- Convert different numbering systems used in a PLC
- Explain various Boolean gates/truth tables
- Demonstrate how to use a PLC for troubleshooting to resolve problems quicker

Equipment

Advanced PLC Training System - Allen Bradley

- Introduction to PLC and PLC Hardware
- Familiarization with RSLogix 5000
- Understanding PLC operation and addressing
- Understanding four different IEC 61131 languages: Ladder Logic (focus), Sequential Function Chart, Function Block, and Structured Text
- Basic Troubleshooting



Equipment will be utilized in level 2 as well

Level 2: Advanced Mechatronics

PLC Technology II: Allen Bradley or Siemens

Estimated Duration: 16 hours

Level 2

PLC II expands on the topics covered in PLC I and utilizes the same equipment. Students will go deeper into programming PLCs, incorporate HMI (Human Machine Interface) programming and modifying programs to include changes in the applications. This is a highly sought after skill in modern industry.

Course Topics

- Ladder Logic Programming
- Basic functions: operation and programming
- Program modifications
- Uploading and downloading programs to a PLC
- HMI (Human Machine Interface)
- Basic Networking
- Troubleshooting

Core Competencies

- Program a PLC using ladder logic
- Upload and download programs to/from a PLC
- Understand and program basic PLC functions
- Modify a current PLC program
- Program HMI Applications
- Understand and explain basic networking fundamentals

Equipment

Advanced PLC Training System

- Allen Bradley or Siemens PLC
- Siemens or Allen Bradley HMI
- Stratix 2000 industrial Ethernet switch
- 16 digital inputs
- 16 digital outputs
- 4 universal analog inputs
- 2 configurable analog outputs
- 3 high-speed counters
- 2 high-speed counter output points
- 2 NO push-buttons
- 2 NC push-buttons
- 4 toggle switches
- 2 potentiometers
- 8 indicator lamps
- Eight electric fault switches

