



## Allen-Bradley ControlLogix Intermediate I Programming & Troubleshooting Module: 242

Logic programs often contain a combination of contacts, coils, timers, and counters with additional instructions manipulating data, in the program, at the word level. The Intermediate I course explores the Compare, Compute, Data Conversion, File Manipulation, and Message instructions. Programs using these instructions include data gathering, calculations, date and time stamping, shift reports, data concentration, totalizing, averaging, etc. The Intermediate I course begins developing the skills necessary to trace the flow of word information into, through, and out of logic programs using the word and file manipulation instructions. This additional programming knowledge provides the ability to comprehend and troubleshoot detailed control circuits. In addition, the system status and diagnostic data access instructions (SSV, GSV), are introduced and used to help diagnose and solve in-plant control problems more quickly.

The course length is four days. Rockwell Software's RSLogix-5000 / Studio-5000 Logix Designer programming software is used to conduct this course. *Module 241 Allen-Bradley ControlLogix Maintenance & Troubleshooting is a prerequisite.*

### Objectives

- Refresh knowledge of the major functional components of the Allen-Bradley Logix (ControlLogix) programmable logic control system as it relates to your facility's installation.
- Discuss design considerations for system architecture and communication system layout.
- Review issues to consider when replacing failed controllers, and modules.
- Refresh knowledge of the memory layout and configuration of the Logix (ControlLogix) processor; tags, data types, tasks, programs, and routines.
- Discover uses for User Defined Data Types.
- Re-examine differences and capabilities of Local, Universal Remote, DeviceNet, ControlNet, and Ethernet I/O systems.
- Discuss the impact of the System Overhead Task
- Refresh knowledge of the Contact, Coil, Timer, and Counter instructions.
- Explore and test the functionality of the Comparison, Math, Data Conversion, File Manipulation, and Message instructions.
- Explore in detail the application and use of Periodic and/or Event versus Continuous Tasks.
- Read and Write information on a communication network using the Message instruction and Produced/Consumed Tags.
- Access and Manipulate processor status and configuration information with the Get System Value (GSV) and the Set System Value (SSV) instructions.
- Create methods to test programs, develop traps, and to follow the flow of information through a series of instructions.
- Develop advanced troubleshooting skills, learn to gather clues to help eliminate non-problem spots, and draw attention to possible problem areas.
- Use the programming software as a diagnostic and troubleshooting tool.
- Develop a thorough understanding of and the safety issues related to Forcing in the Logix (ControlLogix) family of PLCs.
- Is the circuit really off? Discuss appropriate safety issues.