

Course name:	PROGRAMMABLE LOGIC CONTROLLER INTRODUCTION
Short name:	PLCI
Length:	40 hrs
Prerequisites:	ES1

Purpose

This course provides an introduction to the Allen-Bradley SLC/PLC families of processors. It is designed for trainees who have very little or no experience with PLCs.

Description

This course provides the technical knowledge and hands-on skills needed to understand the hardware, computer software and fundamental instructions.

Topics include:

- Numbering systems and conversions
- Supply voltages
- Input and output wiring
- Input, output and program data addressing
- Basic instructions (bit level to counters)
- Memory organization for program and data files
- Processor scan and program considerations
- Dip switch setting on hardware
- Using RSLogix for program entry, monitoring and documentation
- Saving, Restoring and Printing a program

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Assisting in the installation and start up of PLC controller equipment.
- Performing basic diagnostics.
- Replace defective hardware.
- Uploading and downloading program files and data files.
- Modifying programs.

Course name:	PROGRAMMABLE LOGIC CONTROLLER 5 (using Allen–Bradley Family)
Short name:	PLC5
Length:	80 hrs
Prerequisites:	ES1 PLCI

Purpose

This course provides the necessary foundation to analyze machines and processes controlled by Allen-Bradley PLC5 Controllers.

Description

This course includes instruction on Allen-Bradley PLC5 hardware configurations (the 1771 and 1794 I/O families), memory organizations, I/O addressing, the processor scan, the processor instruction set, and Grafcet fundamentals. The trainees apply this knowledge to analyzing functioning PLC controlled machines in the workshop. Instruction is given on programming software as well as a current engineering standard of PLC program design.

Topics include:

- PLC fundamentals
- Hardware configuration
- Memory organization
- I/O addressing
- Programming software
- Processor scan
- Processor instruction set
- GRAFCET fundamentals
- Introduction to programming standards and methods
- Data highway plus fundamentals
- Remote I/O communications
- Analyzing PLC controlled machines

Course Objective:

Upon successful completion of this course, the trainee will be competent in:

- Installing and starting up of PLC controlled equipment.
- Using PLC programming software for configuring, programming, analyzing and diagnosis of PLC systems.
- Locating and replacing defective hardware.
- Uploading and downloading program files and data files.
- Writing and modifying structured programs.

Course name:	PROGRAMMABLE LOGIC CONTROLLER 5 ADVANCED
Short name:	PLCADV (Allen-Bradley)
Length:	40 hrs
Prerequisites:	PLC5

Purpose

This course provides advanced knowledge and analytical abilities of trainees whose job responsibilities include maintenance of Allen-Bradley PLC5 equipment utilizing Allen-Bradley intelligent modules and DH+ communications.

Description

This course provides a solid foundation in processor control of Intelligent I/O modules and communication over Data Highway + and the Remote I/O. Treatment of basic network terminology, topologies and access methods is also included. Exercises are implemented on a shop floor machine and simulators.

Topics include:

- BTR, BTW instructions and programming considerations
- Thermocouple/Millivolt input module (1771-IXE)
- Analog input module (1771-IFE)
- Analog output module (1771-OFE)
- Remote I/O scanner to adapter communication
- Remote I/O link to external devices (i.e. Allen-Bradley drives)
- Data highway plus (DH+) message instruction

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Installing and configuring intelligent I/O modules in a PLC control system.
- Analyzing ladder logic programs that control intelligent I/O.
- Installing and configuring a Data Highway Plus or Remote I/O network systems.
- Installing and configuring PLC processors to communicate in Scanner-Adapter mode.
- Programming communication over Data Highway and/or Remote I/O.

Course name:	SMALL LOGIC CONTROLLERS (Allen-Bradley) CONVERSION COURSE
Short name:	SLC
Length:	24 hrs
Prerequisites:	PLC5

Purpose

This course is designed to provide instruction unique to the Allen-Bradley SLC500 family of small programmable controllers.

Description

This course is an accelerated PLC training course. Instruction is provided on the SLC500 family of processors and I/O configurations, as well as ladder programming. Exercises are designed to reinforce classroom discussions and provide practical experience using the SLC500.

Topics include:

- SLC500 family hardware characteristics
- SLC500 processor memory organization
- Input output, (I/O) addressing
- Processor instruction set
- Fault finding, using the status file
- Ladder logic programming software

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Installing and starting up SLC processor controlled equipment.
- Using the SLC programming software for configuring, programming, analyzing and diagnosis of SLC systems.

Course name:	SMALL LOGIC CONTROLLERS 5
Short name:	SLC500 (Allen-Bradley)
Length:	80 hrs
Prerequisites:	ES1 PLCI

Purpose

This course provides the foundation to analyze machines and processes controlled by Allen-Bradley SLC500 Controllers. This course differs from PLC5 only in the equipment emphasized.

Description

This course includes instruction on Allen-Bradley SLC500 hardware configurations (the 1747 and 1746 I/O families). Trainees apply this knowledge to analyze PLC controlled machines in the workshop. Instruction is given on programming software as well as engineering standards of PLC program design.

Topics include:

- PLC fundamentals
- Hardware configuration
- Memory organization
- I/O addressing
- Programming software
- Processor scan
- Processor instruction set
- GRAFCET fundamentals
- Introduction to programming standards and methods
- Data highway plus fundamentals
- Remote I/O communications
- Analyzing

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Installing and starting up of SLC controlled equipment.
- Using the SLC programming software for configuring, programming, analyzing and diagnosis of the SLC500 System.
- Locating and replacing defective hardware.
- Uploading and downloading program files and data files.
- Writing and modifying structured programs.

Course name:	ST265 PROGRAMMING STANDARD
Short name:	ST265
Length:	24 hrs
Prerequisites:	PLC5 and/or SLC500

Purpose

This course is designed to instruct the current version of PLC machine animation using a specific programming standard called ST-265 (rev. date: 06/01/97). This standard is similar to the Allen-Bradley Sequential Function Chart “SFC” method. The “ST-265” specification document was developed for use with the Allen-Bradley PLC5 and SLC5/0x families of processors.

Description

This course is a customized course for PLC programming standards. This course provides the basic technical knowledge needed to understand the ST-265 method of user software structuring for the purpose of programming, interpreting and analyzing applications.

Topics include:

- GRAFCET
- Modular structure
- Program structure
- Data structure
- Application structure
- Graph structure, master
- Coding and synchronization of graphs
- Diagnostics

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Understanding program structure and data structure of the standard model.
- The interaction of the Stop graph, Operating graph and Cycle graphs.
- The use of grafkets and diagnostics for analyzing machines programmed to the standard.
- Implementing programming structure which enhances program efficiency.

Course name:	DEVICENET
Short name:	DNET
Length:	16 hrs
Prerequisites:	PLC and/or RSLogix 5 or 500.

Purpose

This course provides the necessary foundation to analyze Devicenet networks using Rockwell Software “RSNetWorx for Devicenet”.

Description

This course provides the technical knowledge and hands-on skills needed to understand Devicenet hardware and the software “RSNetWorx for Devicenet” using PLC5 and SLC scanners. Exercises are implemented on classroom simulators.

Topics include:

- Devicenet hardware and configuration
- Power supplies
- EDS files
- Data and I/O configuration
- Status information

Course Objectives:

Upon the successful completion of this course, the trainee will be competent in:

- Installation and removal of hardware from the network.
- Testing power supplies for operation and condition.
- Installation of new EDS files.
- Analyze bidirectional data flow from device and PLC.
- Analyze status of devices using software.

Course name:	CONTROLLOGIX
Short name:	CTRLGX
Length:	40 hrs
Prerequisites:	PLC5 and/or RSLogix 5 or 500.

Purpose

This course provides the knowledge and practice to analyze machines and processes controlled by Allen- Bradley ControlLogix 5000 processors.

Description

This course provides the technical knowledge and hands-on skills needed to understand the ControlLogix hardware and the programming and documentation software (RSLogix 5000). Exercises on classroom simulators are included.

Topics include:

- ControlLogix family hardware and configuration
- Organizing a project and its tasks
- Data and I/O configuration
- Status instructions
- Editing processor instructions and ladder logic
- Introduction to communications networks

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Installing and starting up ControlLogix components.
- Configuring and analyzing ControlLogix hardware.
- Identifying I/O tags in memory and their relationship to field devices.
- Working with controller and program scoped tags.
- Using the programming software for configuration of tasks, programs and routines.

Course name:	PLC Networking
Short name:	Net
Length:	40 hrs
Prerequisites:	ControlLogix RSLogix 5000

Purpose

This course provides the necessary foundation to analyze Ethernet DeviceNet and ControlNet as it relates to the ControlLogix platform

Description

This course is designed to give the technical knowledge and hands-on skills required to understand hardware and the software for all three networks. When combined into one course the common properties of each network make it possible to complete in 40 hours.

Topics include:

- Ethernet hardware and configuration
- Configuring RSLinks© for Ethernet
- IP addressing
- ControlNet hardware and configuration
- Messages
- DeviceNet hardware and configuration
- Power supplies
- EDS files
- Node commissioning
- Troubleshooting
- Status information

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Installation and removal of hardware from the network
- Determine and follow bidirectional data flow
- Determine status of devices using software and indicators
- Trouble shooting Ethernet and ControlNet
- Test power supplies for operation and condition
- Installation of new EDS files
- Determine and follow bidirectional data flow from device and PLC

Course name:	ETHERNET
Short name:	ENET
Length:	16 hrs
Prerequisites:	RSLogix 5000

Purpose

This course provides the necessary foundation to analyze Ethernet networks for the ControlLogix® platform.

Description

This course is designed to give the technical knowledge and hands-on skills required to understand Ethernet hardware using the ControlLogix platform. Exercises are implemented on classroom simulators.

Topics include:

- Ethernet hardware and configuration
- Configuring RSLinks® for Ethernet
- IP addressing
- Troubleshooting
- Status information

Course Objectives:

Upon the successful completion of this course, the student will be competent in:

- Installation and removal of hardware from the network
- Troubleshooting Ethernet
- Determine and follow bidirectional data flow.
- Determine status of devices using software and indicators.

Course name:	CONTROLNET
Short name:	CNET
Length:	16 hrs
Prerequisites:	RSLogix 5000

Purpose

This course provides the necessary foundation to analyze ControlNet networks using Rockwell Software “RSNetWorx© for ControlNet” software.

Description

This course is designed to give the technical knowledge and hands-on skills required to understand ControlNet hardware and the software “RSNetWorx© for ControlNet” using the ControlLogix platform. Exercises are implemented on classroom simulators.

Topics include:

- ControlNet hardware and configuration
- Messages
- Scheduling Data
- Troubleshooting
- Status Information

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Installation and removal of hardware from the network
- Troubleshooting ControlNet
- Determine and follow bidirectional data flow
- Determine status of devices using software and indicators

Course name:	CONTROLLOGIX DEVICENET
Short name:	CDNET
Length:	16 hrs
Prerequisites:	ControlLogix RSLogics 5000

Purpose

This course provides the necessary foundation to analyze Devicenet networks using Rockwell Software “RSNetWorx© for Devicenet”.

Description

This course is designed to give the technical knowledge and hands-on skills needed to understand Devicenet hardware and the software “RSNetWorx© for Devicenet” using ControlLogix scanners. Exercises are implemented on classroom simulators.

Topics include:

- Devicenet hardware and configuration
- Power supplies
- EDS files
- Data and I/O configuration
- Status information
- Node Commissioning

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Installation and removal of hardware from the network
- Test power supplies for operation and condition
- Installation of new EDS files
- Determine and follow bidirectional data flow from device and PLC
- Determine status of devices using software