PLC Basics and Troubleshooting

PLC Basics and Troubleshooting Course: This is a 4 day course on PLC systems. At the completion of the course the students take the PMMI PLC Level 1 Certificate Test.

Course Length: 4 Days

Day	Module	Module Objective	Summary of Task/Actions	Hands On	Time (Hours)	Quiz
1	History of the PLC	Provide an overview of the history, function, components, advantages, setup and basic symbols of a PLC	• Lecture • Hands on	Hands on – PLC types and functions	1	Yes
	PLC Schematics	Provides knowledge on PLC schematics and symbols.	• Lecture • Hands on – reading schematics	Hands on – Schematics	1	Yes
	Discrete I/O and Interfacing	Provide an understanding of the requirements and background necessary to interface relay and TRIAC source and sink inputs/outputs to the PLC controller	• Lecture • Hands on - Wiring	Hands on wiring lab. Wire and troubleshoot panel (wiring lab is 3.5 hours). Lab includes: color codes, NEC, NFPA, wire stripping, schematic interpretation and wiring techniques	2	Yes
	Memory Organization and Addressing	Provides students with an understanding of the different types of memory within the PLC and the methods used to assign tags and variable names	• Lecture • Hands on PLC	Hands on using the ProLogic Simulator.	1	Yes
	Basic PLC Logic Instructions	Provides students with an understanding of the basics of placing an executable rung in the PLC utilizing add new-rung, XIO, XIC and output	• Lecture • Hands on PLC	Create simple programs using the Prologic Simulator	4	Yes

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2	Creating more complex programs	Provide students with an understanding of more complex programs and how to navigate through more complex code	• Lecture • Hands on PLC	Create programs using Prologic Simulator.	3	Yes
	Troubleshooting PLC systems	Provide students with an understanding of how to use the PLC as a tool for Troubleshooting	• Lecture • Hands on	Hands on - LogicPro	1	Yes
	Use of Debug/Test interface to troubleshoot	Provide students with an understanding of the PLC as a tool for troubleshooting the entire system including mechanical and electrical failures	• Lecture • Hands on troubleshooting	Hands on – Utilizing the PLC to troubleshooting the entire system	4	Yes
3	Integrate the PLC into a project that includes Mechanical and Electrical systems	The students will integrate a project that combines mechanical, electrical and sensors. They will then develop the program to operate the system	• Hands on – Protection Circuits	Hands on – Write PLC program and Troubleshoot. Instructor will create issues and students need to diagnose and resolve the problem.	4	Yes
4	Troubleshooting Automated Systems	The students would spend the day on an automated line that included mechanical, electrical, fluid power and PLC systems.	• Hands On troubleshooting	Hands on – Faults would be introduced into the system and students would have to find the faults and take corrective action	8	Yes
	PMMI Test	PLC Level 1 Certificate Test				