

# **Industrial Controls: Programmable Logic Controller**

Degree: **Certificate of Achievement**

College Code: **PLC.CA**

## **Program Description**

The Industrial Controls: Programmable Logic Controller Certificate of Achievement is a course of study designed to quickly train new learners or incumbent electrical mechanics in the skills necessary to troubleshoot and program the PLCs used in batch and/or discrete automation. The PLC is a real-time computer running a specialized Operating System which is programmed in using Relay Ladder Logic language. PLCs are used to control high-speed factory automation equipment and manufacturing processes, electrical switchgear, industrial robots, motors, pumps, and valves.

The PLC.CA certificate includes courses that will investigate both discrete and analog sensors, pneumatics directional control valves, AC and DC motors, and single-phase and three-phase power. The PLC used will be the Allen Bradley SLC 500 processor running RSLogix software. No special skills are required, however prior industrial electrical experience will prove beneficial to the student.

## **Program Goals**

- Qualify students for entry-level employment in an automated manufacturing or process enterprise.
- Diagnose and troubleshoot problems with automated manufacturing production equipment.
- Develop manufacturing methods, processes and systems.
- Facilitate process improvement methodologies on the factory floor.
- Research and develop new methods/processes for improving future manufacturing performance.

## **Program Student Learning Outcomes**

At the end of the program the graduate will be able to:

1. Specify, populate, and install a Programmable Logic Controller (PLC) and its input and output modules.
2. Develop and troubleshoot Relay Ladder Logic (RLL) program code for Allen-Bradley (AB) SLC processors which use discrete and analog I/O modules to monitor, control, and record the states of common digital devices found in typical industrial and manufacturing environments.
3. Identify, conduct hands-on exercises, and explain the operating principles of those inductive elements found in typical industrial settings including AC, DC, stepping, and universal motors; electromechanical and solid state relays; solenoids; and transformers.
4. Read and interpret single phase and three phase motor name plates and wiring diagrams and ISO 1219 pneumatic symbols.
5. Describe and discuss the differences and similarities between capacitive, inductive, and photoelectric proximity detectors.

## **Employment Opportunities**

CIMET graduates who specialized in PLC Programming are currently employed in the process, packaging, labeling, food & beverage, pharmaceutical, waste water, systems integration, power generation, cosmetics, metal extrusion, compact disc pressing, and chemical industries functioning as:

- PLC Programmer
- Jr. PLC Programmer
- System Designer
- Manufacturing Technician
- Electrical Mechanic
- Process Controls Technician
- Manufacturing Support Technician
- Systems Integrator

## **Contact Person**

Kevin Schmidt, Coordinator

(856)227-7200, ext. 4517

E-mail: [kschmidt@camdencc.edu](mailto:kschmidt@camdencc.edu)

**Industrial Controls: Programmable Logic Controller**  
Degree: **Certificate of Achievement**  
College Code: **PLC.CA**

<b>Code</b>	<b>Course</b>	<b>Credits</b>
<b>First Year/Fall Semester</b>		
CIM-211	PLC Programming	4
		<b>4</b>
<b>Second Semester/Spring</b>		
CIM-212	Advanced PLC Programming	3
CIM-231	Motors, Controllers & Sensors	3
		<b>6</b>
	<b>Total Minimum Credits</b>	<b>10</b>