# Automated Integrated Systems Course No. 39010 Credit: 0.5

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| **Student name:**  |  | **Graduation Date:** |  |

Pathways and CIP Codes:Manufacturing (48.0000) - Production Strand

Course Description: An advanced **application level** course that focus on Programable Logic Control (PLCs) systems. This includes instruction in basic numbering systems, computer terminology, PLC functions, structure, memory, language, point I/O addressing, programing, and PLC communications. (Prerequisite: Robotics.)

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Programmable Logic Controller (PLC) Basics and Overview

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Describe components of a typical PLC system and its architecture. |  |
| 1.2 | Demonstrate knowledge pf basic numbering and computer technology. |  |
| 1.3 | Explain basic PLC function. |  |

## Benchmark 2: Programmable Logic Controller (PLC) Hardware and Processing

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Describe PLC memory and project organization. |  |
| 2.2 | Describe types of addressing used with/in PLC. |  |
| 2.3 | Interpret real-world I/O addresses. |  |
| 2.4 | Connect PC to PLC. |  |
| 2.5 | Configure I/O for projects. |  |
| 2.6 | Monitor point addressing. |  |

## Benchmark 3: Programming PLC

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Write basic ladder logic program. |  |
| 3.2 | Work with timers and counters within ladder logic program. |  |
| 3.3 | Utilize math instructions and special functions in PLC. |  |
| 3.4 | Use structured text programming to develop routines. |  |
| 3.5 | Create sequential function chart routine. |  |
| 3.6 | Demonstrate use of various types of function blocks with PLC. |  |

## Benchmark 4: Programmable Logic Controller (PLC) Communication

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Describe common data communications and their characteristics. |  |
| 4.2 | Use Ethernet TCP/IP protocols. |  |
| 4.3 | Troubleshoot communications systems in PLC. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

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