PROGRAMMABLE LOGIC CONTROLLERS IN CONSTRUCTION
Course Syllabus

Course Number: CNST-0777
OHLAP Credit: No
OCAS Code: None
Course Length: 90 hours
Career Cluster: Architecture and Construction
Career Pathway: Construction
Career Major(s): Commercial Electrician’s Assistant

Pre-requisite(s): This course covers the application of programmable logic controllers in various commercial and industrial applications and includes the application of internal relays, timers, counters, and special functions. Analog inputs and outputs are covered.

Textbooks:
Amatrol Learning Activity Pack, Mastering Programmable Controllers Series Allen Bradley SLC 500 by Amatrol, Inc.

Course Objectives:

A. Identify, Describe, Install, and Operate PLC Controls.
1. Describe the function of a programmable logic controller and name various applications.¹
2. List advantages of a PLC.¹
3. Identify and describe the functions of the five basic components of a PLC.¹
4. Name three methods of running a PLC program and give an advantage of each.¹
5. Describe the basic operation of a PLC.¹
6. View a directory of programs using PLC software.¹
7. Load a PLC program using PC software.¹
8. Monitor a PLC program using software.¹
9. Run a PLC program using PC software.¹
10. Stop a PLC program using PC software.¹
11. Explain why PLCs use ladder diagrams.¹
12. Describe the function and operation of input/output diagrams.¹
13. Describe the operation of N.O. and N.C. input Instructions.¹
14. Describe the operation of a coil instruction.¹
15. Describe the basic operation of PLC ladder logic.¹
16. Describe three advantages of PLC software.¹
17. Enter a basic PLC program using PC software.¹
18. Save a PLC program to disk using PC software.¹
19. Edit a PLC program using PC software.¹
20. Print out a ladder logic program using PC software.¹
21. Describe how an input device can reference multiple input instructions.¹
22. Describe how the input device logic affects input instruction logic.¹
23. Describe how a PLC controls multiple outputs at the same time.¹
B. **Identify, Describe, Install, and Operate PLC Advanced Controls.**
   1. Describe the function of a RTO timer instruction.\(^1\)
   2. Describe the function of a timer on instruction.\(^1\)
   3. Describe the function of a timer off instruction.\(^1\)
   4. Create, program and run a plc program using timer instructions.\(^1\)
   5. Describe the function of a counter up instruction.\(^1\)
   6. Describe the function of a counter down instruction.\(^1\)
   7. Create, program and run a plc program using counter instructions.\(^1\)

\(^1\) Amatrol objective

**Teaching Methods:** The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

**Grading Procedures:**
1. Students are graded on theory and shop practice and performance.
2. Each course must be passed with seventy (70%) percent or better.
3. Grading scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, F=50-59%.

**Description of Classroom, Laboratories, and Equipment:** Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.

**Available Certifications/College Credit**
The student may be eligible to take state, national or industry exam after completion of the program. College credit may be issued from Oklahoma State University-Okmulgee or Tulsa Community College. See program counselor for additional information.

**College Credit Eligibility:**
The student must maintain a grade point average of 2.0 or better.