



MONROE COUNTY
COMMUNITY COLLEGE

Course Outcome Summary

Required Program Core Course

ELEC 130

Introduction to Programmable Logic Controllers

Course Information

Division	Applied Science and Engineering Technology
Contact Hours	60
Theory	30
Lab Hours	30
Total Credits	3.0

Prerequisites: ELEC 125

Course Description

The course introduces the concepts and applications of the control and protection of industrial machines and systems through the use of programmable logic controllers (PLCs).

This course is a required core course for students pursuing an AAS in Electrical Engineering Technology

Program Outcomes Addressed by this Course:

Upon successful completion of this course, students should be able to:

- B. Utilize Virtual Instrumentation, Data Acquisition, Schematic Capture and Test and Applications software packages to refine skills and to analyze and design various electronic circuits.
- D. Demonstrate Equipment/Instrumentation Competence
- H. Develop and demonstrate the synergistic relationship and integration of various technical and academic fields into the study of Electronics (i.e. Mechatronics)
- I. Design, Construct, and Troubleshoot AC and DC Motor Control Circuits and demonstrate an understanding of process control



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Course Outcomes

In order to evidence success in this course, the students will be able to:

1. Explain the advantages of Programmable Logic Controllers (PLCs) versus hard-wired automation.

Applies To Program Outcome

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2. List the component parts of a PLC and describe the function of each.

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3. Configure a PLC system by defining I/O, Internal Memory, and Communication Parameters.

Applies To Program Outcome

- B. Utilize Virtual Instrumentation, Data Acquisition, Schematic Capture and Test and Applications software packages to refine skills and to analyze and design various electronic circuits.
- C. Develop and demonstrate effective wiring and laboratory skills.
- D. Demonstrate Equipment/Instrumentation Competence
- G. Value Safety Training, Safe Work Practices and acknowledge Safety Standards
- H. Develop and demonstrate the synergistic relationship and integration of various technical and academic fields into the study of Electronics (i.e. Mechatronics)
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4. Program a PLC using standard interface software.

Applies To Program Outcome

- B. Utilize Virtual Instrumentation, Data Acquisition, Schematic Capture and Test and Applications software packages to refine skills and to analyze and design various electronic circuits.
- D. Demonstrate Equipment/Instrumentation Competence
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5. Apply I/O addresses in accordance with the PLC manufacturer's addressing scheme and in accordance with the physical wiring to the input rack and from the output rack.

Applies To Program Outcome

- B. Utilize Virtual Instrumentation, Data Acquisition, Schematic Capture and Test and Applications software packages to refine skills and to analyze and design various electronic circuits.
- D. Demonstrate Equipment/Instrumentation Competence
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6. Debug a PLC program to verify correct function.

Applies To Program Outcome

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7. Apply relay type PLC instructions properly (Examine-On, Examine-Off, and Output Energize) in a program.

Applies To Program Outcome

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8. Apply timer and counter instructions in a program.

Applies To Program Outcome

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9. Perform calculations in hex, binary and octal number systems and program PLC's to do similar math operations.

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10. Write PLC logic to manipulate string data.

Applies To Program Outcome

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11. Program touchscreens or other Human Machine Interfaces (HMI's) to interface with PLC logic.

Applies To Program Outcome

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- D. Demonstrate Equipment/Instrumentation Competence
- H. Develop and demonstrate the synergistic relationship and integration of various technical and academic fields into the study of Electronics (i.e. Mechatronics)
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Date Updated: October 10, 2019

By: MJ Dubois