WESTERN IOWA TECH COMMUNITY COLLEGE
Course Syllabus

Term:
Course Number and Section: ELT 250 ___
Course Title: Programmable Logic Controllers
Semester Hours: 3.00
Meeting time/location:
Instructor:
Phone: 712.274.8733 Ext.
E-mail: @witcc.edu
Office Location:
Office Hours:

COURSE DESCRIPTION AND PREREQUISITES/COREQUISITES:

This course is a combined lecture and laboratory class. This class introduces the use of PLCs, programming PLCs via ladder diagrams, and wiring PLCs to sensors and controllers.

Prerequisite: None
Corequisite: None

REQUIRED TEXTBOOKS/MATERIALS

1. Petruzella, Frank D.. *Programmable Logic Controllers*, 3rd ed. McGraw Hill , ISBN-13: 0-07-829852-0

COURSE OBJECTIVES

The course will provide information which should enable the student to:

1. Explain programmable logic controllers
2. Define logic systems
3. Explain PLC programming
4. Develop fundamental PLC wiring diagrams and ladder programs
5. Follow instructions as used in PLCs

CONTENT OUTLINE:

I. Program Logic Controller
II. Logic System
    A. Number system
    B. Codes
    C. Combination logic
III. PLC Programming
    A. Ladder programs
    B. Timers
    C. Counters
IV. Advanced PLC Instructions
    A. Program control instructions
V. PLC Installation Practices
    A. Installation
    B. Troubleshooting

COMPETENCIES:

At the conclusion of the course the student will be able to:
1. List and describe the function of the hardware components used in PLC systems and the functions of a memory map
2. List PLC advantages over relay systems

3. Define the decimal, binary, octal, and hexadecimal numbering systems and be able to convert from one numbering or coding system to another
4. Draw the logic symbol, construct a truth table, and state the Boolean equation for the AND, OR, and NOT functions
5. Construct circuits from Boolean expressions and derive Boolean equations for given logic circuits
6. Convert relay ladder diagrams to logic ladder diagrams
7. Describe input and output image tables and a typical PLC program scan sequence
8. Compare sequential and combination control processes
9. Describe proper grounding practices and preventive maintenance tasks associated with PLC systems
10. Define and identify the functions of PLC instructions

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