Common Course Outline

EMET 165
Programmable Logic Controllers

3 Semester Hours

The Community College of Baltimore County

Description

EMET 165 – 3 credits - Programmable Logic Controllers

introduces electronic controls of process and mechanical devices. This course provides background of PLC's and presents many aspects of the PLC systems, both large and small. Topics covered include PLCs structure, operation, capabilities and limitations. Students will write programs and use Allen Bradley PLC trainers to test, troubleshoot and verify results. Students will apply specific procedures in real world simulation activities.

3 credits: 2 lecture hours per week; 2 lab hours per week

Prerequisites: EMET 125 –Mechanics & Maintenance Fundamentals and EMET 145 – Principles of Electronics/Electricity.

Overall Course Objectives

Upon successful completion of this course the student will be able to:

1. explain the functions of an electromagnetic relay, a control circuit, and a power circuit;
2. interpret symbols and terms used in Boolean logic;
3. differentiate the uses for each of the following: BCD, Grey code, and ADCII;
4. describe the concept and types of memory;
5. apply PLC system concepts in a real world situation;
6. relate ladder and Boolean logic;

7. organize the steps required to develop the hardware and software of a control system;
8. perform and document debugging procedures;
9. perform routine maintenance procedures required by the PLC system;
10. describe the operation of the shift register instruction;
11. apply the principles associated with local area network (LAN), baud rate, through put, and gateway; and
12. define the three main applications of LANs.

Major Topics

The following major topics are covered in this course:

I. Relay and Solid-State Logic
II. Number Systems
III. Boolean Logic
IV. Maintenance Logs and Documentation
V. Routine Maintenance
VI. Troubleshooting
VII. System Expansion and Retrofits
VIII. System Integration

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member and will be provided on the first day of class.

The following will be required for this course:

1. Written paper or suitable practical project

2. Midterm exam
3. Comprehensive final (including a practical exam).

In addition, students can expect grades from the following areas:

4. Quizzes
5. Lab Projects
6. Homework Assignments.

Other Course Information

EMET 165 - Programmable Logic Controllers is a required course in the Mechanical Engineering Technology option within the Engineering Technology A.A.S. program. The course is taught in both classroom and lab environments.