Danville Community College

Workforce Services
Danville Community College

COURSE SYLLABUS

DIVISION: Workforce Services

CURRICULUM IN WHICH COURSE IS TAUGHT: Integrated Systems Technology

COURSE NUMBER AND TITLE: ELE 240, Advanced Programmable Logic Controller Programming

CREDIT HOURS: 3 **HOURS/WEEK LECTURE: 4**

HOURS/WEEK LAB: 2 **LECTURE/LAB COMBINATION: 6**

This course teaches the student advance PLC programming techniques. A combination of lecture and lab is used to reinforce the learning experience. This course is competency-based with a class project comprising for the main portion of the class grade.

I. CATALOG DESCRIPTION: Teaches operating and programming of programmable logic controllers (PLC). Covers how PLC technology is an integral part of the manufacturing process.

II. RELATIONSHIP OF THE COURSE TO CURRICULUM OBJECTIVES IN WHICH IT IS TAUGHT:

This course offers the advanced programming techniques of programmable logic controllers and is necessary for today's industrial maintenance technicians.

III. REQUIRED BACKGROUND: This course is intended for those individuals with no prior experience in PLCs, as well as programmers, machine operators, maintenance technicians, supervisors and owners. Prerequisite: ETE 233.

IV. COURSE CONTENT

Developing Project Scope for PLC Programming
Developing I/O Requirements
Advanced Basic PLC Programming
PLC Motor Control
Discrete I/O Interfacing
PLC Timer Instructions
PLC Counter Instructions
PLC Troubleshooting techniques
PLC System Troubleshooting
Event Sequencing
Program Control Instructions
Math, Data Move, and Comparison Instructions
Human Machine Interface (HMI) Programming

V. Learner Outcomes	VI. Evaluation
Demonstrate an understanding of the theory of operation, maintenance procedures, and safety concerns related to Programmable Controllers.	Class participation, homework, quizzes, and class project
Demonstrate an understanding of the theory of operation, maintenance procedures, and safety concerns related to Advanced PLC Programming	Class participation, homework, quizzes, and class project
Demonstrate an understanding of the theory of operation, maintenance procedures, and safety concerns related to Discrete I/O Interfacing	Class participation, homework, quizzes, and class project
Demonstrate an understanding of the theory of operation, maintenance procedures, and safety concerns related to PLC Timer Instructions	Class participation, homework, quizzes, and class project
Demonstrate an understanding of the theory of operation, maintenance procedures, and safety concerns related to PLC Counter Instructions	Class participation, homework, quizzes, and class project
Demonstrate an understanding of the theory of operation, maintenance procedures, and safety concerns related to PLC Troubleshooting	Class participation, homework, quizzes, and class project
Demonstrate an understanding of the theory of operation, maintenance procedures, and safety concerns related to PLC System Troubleshooting	Class participation, homework, quizzes, and class project
Demonstrate an understanding of the theory of operation, maintenance procedures, and safety concerns related to Event Sequencing	Class participation, homework, quizzes, and class project
Demonstrate an understanding of the theory of operation, maintenance procedures, and safety concerns related to Program Control Instructions	Class participation, homework, quizzes, and class project
Demonstrate an understanding of the theory of operation, maintenance procedures, and safety concerns related to Math, Data Move, and Comparison Instructions	Class participation, homework, quizzes, and class project
Demonstrate an understanding of the theory of operation, maintenance procedures, and safety concerns related Human Machine Interface Programming	Class participation, homework, quizzes, and class project

VII. The course supports the following general education goals/objectives:

DCC Educational Objectives

- Communication
- Critical Thinking
- Information Literacy
- Quantitative Reasoning

DCC Title IX (Sexual Harassment and Misconduct): Your Rights and How to Make a Report
Consistent with its mission, Danville Community College is committed to providing a learning and working environment that emphasizes the dignity and worth of every member of its community. Sexual misconduct, which encompasses a range of behavior used to obtain sexual gratification against another's will or at the expense of another in any form will not be tolerated. Sexual misconduct includes sexual harassment, sexual assault, sexual exploitation, and sexual violence. Sexual harassment is unwelcome conduct of a sexual nature, which can include unwelcome sexual advances, requests for sexual favors, or other verbal, nonverbal, or physical conduct of a sexual nature. Thus, sexual harassment prohibited by Title IX can include conduct such as touching of a sexual nature; making sexual comments, jokes, or gestures; writing graffiti or displaying or distributing sexually explicit drawings, pictures, or written materials; calling students sexually charged names; spreading sexual rumors; rating students on sexual activity or performance; gender-based stalking or bullying; conditioning a benefit on submitting to sexual advances; or circulating, showing, or creating e-mails or websites of a sexual nature. Under Title IX, this constitutes sexual misconduct and includes rape or sexual assault.

If you have been the victim of sexual harassment or other sexual misconduct, you have certain rights under Title IX. For additional information regarding your rights, please consult the DCC Title IX website at http://www.dcc.vccs.edu/News/Title_IX/Title_IX_and_Sexual_Misconduct.htm.

In accordance with College policy and federal law, all faculty and staff members are required to report incidents of sexual harassment including sexual violence to one of the individuals below whose responsibility it is to investigate all complaints. In addition, you can contact these individuals for a complaint against a Danville Community College faculty or staff member for sexual harassment, sexual assault, sex discrimination, or other forms of sexual misconduct:

Title IX Coordinator:	Ms. Andrea Burney Wyatt Building, Room 212 434.797.8458 titleix@dcc.vccs.edu or aburney@dcc.vccs.edu
Deputy Title IX Coordinator	Mr. Howard Graves Wyatt Building, Room 108 434.797.8443 titleix@dcc.vccs.edu or hgraves@dcc.vccs.edu

Plagiarism and Academic Dishonesty:

Students will be expected to maintain complete honesty and integrity in their academic work in this class. Acts of academic dishonesty, such as cheating, plagiarism, or inappropriately using the work of others to satisfy course requirements, will be not tolerated. Students who maintain their enrollment in this class agree that such acts will be managed at the discretion of the instructor according to the severity or the infraction. (Faculty may here specify the sorts of actions you will take in the event of a violation of academic dishonesty)