



## COURSE SYLLABUS

**DIVISION:** Workforce Services

**CURRICULUM IN WHICH COURSE IS TAUGHT:** Integrated Systems Technology

**COURSE NUMBER AND TITLE:** ELE 239, Programmable Logic Controller Systems I

**CREDIT HOURS:** 3-4

**HOURS/WEEK LECTURE:** 2-3

**HOURS/WEEK LAB:** 3

**LECTURE/LAB COMBINATION:** 5-6

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The OEE classes are self-paced study classes in which a student has 16 weeks to complete once enrolled. Students will complete all lab and bookwork before doing the end of chapter tests. All end of chapter tests and final exams are closed book. Upon completion of the lab, all tools, components, and supplies shall be returned to their proper location.

- I. CATALOG DESCRIPTION:** Teaches operating and programming of programmable logic controllers. Covers analog and digital interfacing and communication schemes as they apply to system.
- II. RELATIONSHIP OF THE COURSE TO CURRICULUM OBJECTIVES IN WHICH IT IS TAUGHT:** This course offers the basic fundamentals 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: ETR 156 and ETR 211 or equivalent
- IV. COURSE CONTENT**
  - Introduction to Programmable Controllers
  - Basic PLC Programming
  - PLC Motor Control
  - Discrete I/O Interfacing
  - PLC Timer Instructions
  - PLC Counter Instructions
  - Introduction to PLC Troubleshooting
  - PLC System Troubleshooting
  - Event Sequencing
  - Application Development
  - Program Control Instructions
  - Math and Data Move Instructions

**V. Learner Outcomes****VI. Evaluation**

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| Student will understand the function of and be able to identify the basic components of a programmable logic controller.                                       | Class participation, homework, quizzes, and final exam |
| Student will understand PLC operation & PLC programming language.  | Class participation, homework, quizzes, and final exam |
| Student will understand features used to select a PLC discrete input/output module, how to interface to a discrete electronic sensor and a machine controller. | Class participation, homework, quizzes, and final exam |
| Student will understand the function and operation of PLC timers.  | Class participation, homework, quizzes, and final exam |
| Student will be able to identify PLC faults and understand methods of PLC troubleshooting, including power supply, input/output and processor troubleshooting. | Class participation, homework, quizzes, and final exam |
| Student will be able to describe event-driven and continuous cycle sequencing  | Class participation, homework, quizzes, and final exam |
| Student will understand design and operation of a programmable controller  | Class participation, homework, quizzes, and final exam |
| Student will understand design and operation of a programmable controller  | Class participation, homework, quizzes, and final exam |
| Student will understand function and operation of status flags, master control reset, routines and jump and label instructions.                                | Class participation, homework, quizzes, and final exam |

**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](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:

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| Title IX Coordinator:       | Ms. Cheryl Terry<br>Wyatt Building, Room 111<br>434.797.8524<br><a href="mailto:titleix@dcc.vccs.edu">titleix@dcc.vccs.edu</a> or<br><a href="mailto:cerry@dcc.vccs.edu">cerry@dcc.vccs.edu</a>      |
| Deputy Title IX Coordinator | Mr. Howard Graves<br>Wyatt Building, Room 108<br>434.797.8443<br><a href="mailto:titleix@dcc.vccs.edu">titleix@dcc.vccs.edu</a> or<br><a href="mailto:hgraves@dcc.vccs.edu">hgraves@dcc.vccs.edu</a> |

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)