

JAMESTOWN COMMUNITY COLLEGE
State University of New York

INSTITUTIONAL COURSE SYLLABUS

Course Title: Advanced Programmable Logic Controllers

Course Abbreviation and Number: ELC 2220

Credit Hours: 3

Course Type: Lecture/Lab

Course Description: Students will learn about the programming and applications of a Programmable Logic Controller (PLC). This course will focus on program troubleshooting, hardware troubleshooting, data manipulation, math instructions, subroutines, and event-driven and time-driven sequences. Advanced topics such as HMI devised, PID, applications to robotics, data communications, and SCADA will be discussed.

Prerequisite: ELC 1220.

Student Learning Outcomes:

Students who demonstrate understanding can:

1. Apply PLC math functions to calculate results of real world inputs.
2. Distinguish among and explain types of functions.
3. Evaluate and outline advanced troubleshooting techniques to identify problems down to the discrete I/O level.
4. Design a sequential control program using proper sequencer controls.

Topics Covered:

- Tag database
- Ethernet basics for PLC's
- Ladder logic review, including updated instructions
- Function block, structured text and sequential function chart logic
- Configuration of program tasks
- Building custom data types
- Building add-on instructions
- HMIs
- Communication with other PLCs over a network

Information for Students

- Expectations of Students
 - [Civility Statement](#)
 - [Student Responsibility Statement](#)
 - [Academic Integrity Statement](#)

- [Accessibility Services](#)

Students who require accommodations to complete the requirements and expectations of this course because of a disability must make their accommodation requests to the Accessibility Services Coordinator.

- [Get Help: JCC & Community Resources](#)
- [Emergency Closing Procedures](#)

- Course grade is determined by the instructor based on a combination of factors, including but not limited to, homework, quizzes, exams, projects, and participation. Final course grade can be translated into a grade point value according to the following:

| | | | | | | | |
|-------|--------|-----|--------|-----|--------|-----|-----|
| A=4.0 | B+=3.5 | B=3 | C+=2.5 | C=2 | D+=1.5 | D=1 | F=0 |
|-------|--------|-----|--------|-----|--------|-----|-----|

- Veterans and active duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, VA appointments) are welcome and encouraged to communicate these to the instructor.

Effective Date: Fall 2021