EST 1542 Introduction to Programmable Logic Controllers

Instructor: Alessandro Anzalone, Ph.D.
Class Location: Room 218, BSSB
Class Time: Thursdays 9:30am-12:15pm
Office Hours: Tuesdays 2:00-4:00pm, other times by appointment.
Office: BSSB 213e
Phone: (813) 253-7852
Fax: (813) 253-7868
Email: aanzalone2@hccfl.edu

Course Description:

Provides basic operational concepts common to programmable controllers, focusing on PLC principles, programming, and the fundamentals needed for simple process control.

Course Outcomes:

Upon completion of the course the student should be able to:

1. Distinguish a ladder wiring diagram from a ladder program diagram
2. Define PLC hardware components and the connections to input sensors and final control elements.
3. Draw the PLC configuration for a ladder wiring diagram control scheme.
4. Understand and explain the role of codes (ASCII, gray, binary) in PLC I/O operations.
5. Demonstrate the use of and write PLC function blocks (arithmetic, timers, counters) as program elements in a ladder program.
6. Write a ladder logic code that will successfully control a process example that includes push buttons (start, stop) and contacts (alarm sensors) that includes logic operations as part of the control scheme.
7. Provide program documentation that includes the I/O map for sensors and final control elements and includes the cycle time for the program code.

Textbook and Materials:

Required: Jay F. Hooper, Introduction to PLCs, Second Edition, Carolina Academic Press, ISBN: 978-1-59460-331-0

Academic Dishonesty Policy: All parties identified as cheating or plagiarizing on an exam, project or assignment will be assigned a grade zero on that item and subject to academic discipline in accordance with HCC policy.

Attendance Policy: It is important that you attend every class period and be on time. Missing class means that you miss some important material. Since this course is a cumulative experience, you will put yourself at an extreme disadvantage.

1. It is your responsibility to sign the attendance sheet provide at every class meeting.

2. If you are absent, it is your responsibility to get announcements, materials, and assignments before the next class period.
3. More than 3 absences per semester are considered excessive and will result in points taken off your final grade for the unexcused absences after the third absence. Please note that excused absences must be documented and may be death or illness of family members, personal illness, military duty, car trouble, etc.

Instructional Methods (including Examination Policies):
This course focuses on hands on experiences.
Students will be evaluated via class participation, technical reports, and a final exam.

1. Unexcused absences on test day will receive a zero for that test.
2. Tests will be closed book closed notes. Reference materials will be provided if required.
3. Tests will be short answer, T/F, multiple choices, and some problems.
4. Please contact me by email or phone if at all possible before the time of the test (leave a voice message) in the event you have to miss a test.
5. No retests will be given for any exams that have been taken.
6. Every student will be required to take the final exam.
7. Make up tests from excused illnesses must be made up within 2 weeks of the absence and the test may be of a different format than the class test.
8. If you are auditing this class, it must be declared at registration.
9. Some work will be competency-based and assessed accordingly.

Grading System: The final grades will be determined on the following basis:

90 - 100 A
80- 89 B
70 - 79 C
60 - 69 D
0 - 59 F

Request for Accommodations:
If, to participate in this course, you require an accommodation due to a physical or learning impairment, you must contact the Office of Services to Students with Disabilities. The office is located in the Student Services Building, BSSB 109. You may also reach the office by telephone at (813) 253-7914 {voice line}.

Religious Observances:
HCC will reasonably accommodate the religious observances, practices, and beliefs of students in its admissions, class attendance, and examination policies and work assignments. Students must notify instructors at least one week prior to a religious observance.

Class Schedule

Date	Chapter	Activities
08/26	Introduction to the course	
09/02	Chapter 1 Overview	Read Chapter 1 before class session. Read packet 1, segments 1-2, objectives 1-5. complete skills 1-5.
09/09	Chapter 2 Hardware	Read Chapter 2 before class session. Read packet 1, segment 3, objectives 6-11.
09/16	Chapter 3 Programming Basics	Read Chapter 3 before class session. Read packet 2, segments 1-2, objectives 1-5, complete skill 2
09/23	Chapter 4 Basic Logic	Read Chapter 4 before class session. Read packet 2, segment 3, objectives 6-7. complete skills 3-7.
10/07	Chapter 5 Ladder Logic	Read Chapter 5 before class session. LogixPro, Door Simulation, exercises 1 and 2.
10/14	Chapter 5 Ladder Logic (continued)	LogixPro, Door Simulation, exercises 3 and 4.
10/21	Chapter 6 Counters	Read Chapter 6 before class session. Read packet 8, segment 1, objectives 1 and 2, complete skill 1.
10/28	Chapter 7 Timers	Read Chapter 7 before class session. Read packet 7, segment 1 objectives 1 and 2, complete skill 1.
11/04	Chapter 7 Timers (continued)	Read packet 7, segment 2, objectives 3 and 4, complete skill 2
11/11	Veterans Day (no class)	
11/18	Chapter 8 Sequencers	Read Chapter 8 before class session. Read packet 7, segment 3, objectives 6 and 7.
11/25	Thanksgiving Day (no class)	
12/02	Chapter 8 Sequencers (continued)	Read packet 5, segment 3, objective 5, complete skill 2
12/09	Final Exam	

This Class Schedule is subject to change.