



ELTR 1220 Industrial PLC's COURSE SYLLABUS Fall Semester 2015

****Instructor reserves the right to change the syllabus and/or lesson plan as necessary. ****

Semester: Fall 2015

Course Title: Industrial PLC's

Course Number: ELTR 1220

Credit Hours/ Minutes: 4 / 4500

Class Location: Building 6 Lab 6102

Class Meets: 9:20AM-12:00PM TR

CRN: 20278

Instructor: Tony Criswell

Office Hours: Monday and Tuesday 8:15AM-9:15AM and 2:00PM-4:00PM;
Wednesday 8:00AM-9:15AM and 2:00PM-3:00PM; Thursday 8:15AM-9:15AM

Office Location: Building 6 Lab 6102

Email Address: tcriswell@southeasterntech.edu

Phone: 478-289-2235

Fax Number:

Tutoring Hours: Whenever needed

REQUIRED TEXT: Amatrol PLC LAP Packages Purchased in the Bookstore

REQUIRED SUPPLIES & SOFTWARE: Safety Glasses

COURSE DESCRIPTION: Introduces operational theory, systems terminology, PLC installations, and programming procedures for programmable logic controls. Emphasis is placed on PLC programming, connections, installations, and start-up procedures.

MAJOR COURSE COMPETENCIES: PLC hardware and software, PLC functions and terminology, introductory numbering systems, PLC installation and set up, PLC programming basics, relay logic instructions, timers and counters, connecting field devices to I/O cards, and PLC safety procedures.

PREREQUISITE(S): ELTR 1110, ELTR 1180

COURSE OUTLINE:

1. PLC Hardware and Software
2. PLC Functions and Terminology
3. Introductory Numbering Systems
4. PLC Installation and Setup
5. PLC Programming Basics
6. Relay Logic Instructions
7. Timers and Counters
8. Connecting Field Devices to I/O Cards
9. PLC Safety Procedures

GENERAL EDUCATION CORE COMPETENCIES: STC has identified the following general education core competencies that graduates will attain:

- A. The ability to utilize standard written English.
- B. The ability to solve practical mathematical problems.
- C. The ability to read, analyze, and interpret information.

All students pursuing a degree, a diploma, or a Technical Certificate of Credit with a General Education component will be required to pass the General Education Competency Exams prior to graduation.

STUDENT REQUIREMENTS (Hybrid): Class attendance is a very important aspect of a student's success in this course. Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is expected. Students are expected to complete all work required by the instructor. Unannounced quizzes/assignments may be given. Students that miss an unannounced quiz or assignment will receive a grade of 0. Students are expected to complete all work shown on the attached assignment sheet. Students are also expected to complete all tests and comprehensive problems on the dates specified on the attached calendar. Students are responsible for policies and procedures included in the *STC Catalog*. **Electrical Systems Technology program students must earn a minimum grade of C in this course.**

ATTENDANCE GUIDELINES: Class attendance is a very important aspect of a student's success. Being absent from class prevents students from receiving the full benefit of a course and also interrupts the learning process. Southeastern Technical College considers both tardiness and leaving early as

types of absenteeism. Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is required for student success. Students will be expected to complete all work required by the instructor as described in the individual course syllabus.

Instructors have the right to give unannounced quizzes/assignments. Students who miss an unannounced quiz or assignment will receive a grade of 0. Students who stop attending class, but do not formally withdraw, may receive a grade of F and face financial aid repercussions in upcoming semesters.

Instructors are responsible for determining whether missed work may be made up and the content and dates for makeup work is at the discretion of the instructor.

Students will not be withdrawn by an instructor for attendance; however, all instructors will keep records of graded assignments and student participation in course activities. The completion dates of these activities will be used to determine a student's last date of attendance in the event a student withdraws, stops attending, or receives an F in a course.

SPECIAL NEEDS: Students with disabilities who believe that they may need accommodations in this class based on the impact of a disability are encouraged to contact Jan Brantley, Room 1208 Swainsboro Campus, 478-289-2274, or Helen Thomas, Room 108 Vidalia Campus, 912-538-3126, to coordinate reasonable accommodations.

SPECIFIC ABSENCES: Provisions for Instructional Time missed because of documented absences due to jury duty, military duty, court duty, or required job training will be made at the discretion of the instructor.

PREGNANCY: Southeastern Technical College does not discriminate on the basis of pregnancy. However, we can offer accommodations to students who are pregnant that need special consideration to successfully complete the course. If you think you will need accommodations due to pregnancy, please advise me and make appropriate arrangements with the Special Needs Office. Swainsboro Campus: Jan Brantley, Room 1208, (478) 289-2274 -- Vidalia Campus: Helen Thomas, Room 108, (912) 538-3126.

WITHDRAWAL PROCEDURE: Students wishing to officially withdraw from a course(s) or all courses after the drop/add period and prior to the 65% portion of the semester (date will be posted on the school calendar) must speak with a Career Counselor in Student Affairs and complete a Student Withdrawal Form. A grade of "W" is assigned when the student completes the withdrawal form from the course.

Students who are dropped from courses due to attendance (see your course syllabus for attendance policy) after drop/add until the 65% point of the semester will receive a "W" for the course. Abandoning a course(s) instead of following official withdrawal procedures may result in a grade of 'F' being assigned.

After the 65% portion of the semester, the student will receive a grade for the course. (Please note: A zero will be given for all missed assignments.)

There is no refund for partial reduction of hours. Withdrawals may affect students' eligibility for financial aid for the current semester and in the future, so a student must also speak with a representative of the Financial Aid Office to determine any financial penalties that may be assessed due to the withdrawal. All grades, including grades of 'W', will count in attempted hour calculations for the purpose of Financial Aid.

Remember - Informing your instructor that you will not return to his/her course does not satisfy the approved withdrawal procedure outlined above.

MAKEUP GUIDELINES (Tests, quizzes, homework, projects, etc...): Extenuating circumstances are determined at the instructor's discretion. Unless otherwise scheduled with the instructor, it is expected that the test will be taken the next day, scheduled outside of regular class time. Failure to follow this procedure will result in a grade of zero.

ACADEMIC DISHONESTY POLICY: The STC Academic Dishonesty Policy states *All forms of academic dishonesty, including but not limited to cheating on tests, plagiarism, collusion, and falsification of information, will call for discipline.* The policy can also be found in the *STC Catalog and Student Handbook.*

Procedure for Academic Misconduct

The procedure for dealing with academic misconduct and dishonesty is as follows:

--First Offense--

Student will be assigned a grade of "0" for the test or assignment. Instructor keeps a record in course/program files and notes as first offense. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus. The Registrar will input the incident into Banner for tracking purposes.

--Second Offense--

Student is given a grade of "WF" for the course in which offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of second offense. The Registrar will input the incident into Banner for tracking purposes.

--Third Offense--

Student is given a grade of "WF" for the course in which the offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of second offense. The Vice President for Student Affairs, or designee, will notify the student of suspension from college for a specified period of time. The Registrar will input the incident into Banner for tracking purposes.

STATEMENT OF NON-DISCRIMINATION: Southeastern Technical College does not discriminate on the basis of race, color, creed, national or ethnic origin, gender, religion, disability, age, disabled veteran, veteran of Vietnam Era or citizenship status, (except in those special circumstances permitted or mandated by law). This school is in compliance with Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, or national origin; with the provisions of Title IX of the Educational Amendments of 1972, which prohibits discrimination on the basis of gender; with the provisions of Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination on the basis of handicap; and with the American with Disabilities Act (ADA).

GRIEVANCE PROCEDURES: Grievance procedures can be found in the Catalog and Handbook located on STC's website.

ACCESS TO TECHNOLOGY: Students can now access Angel, Remote Lab Access, Student Email, Library Databases (Galileo), and BannerWeb via the mySTC portal or by clicking the Current Students link on the STC website at www.southeasterntech.edu.

GRADING POLICY

LAP Test	40%
Labs	<u>60%</u>
Total	100%

GRADING SCALE

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

TCSG GUARANTEE/WARRANTY STATEMENT: *The Technical College System of Georgia guarantees employers that graduates of State Technical Colleges shall possess skills and knowledge as prescribed by State Curriculum Standards. Should any graduate employee within two years of graduation be deemed lacking in said skills, that student shall be retrained in any State Technical College at no charge for instructional costs to either the student or the employer.*

ELTR 1220- INDUSTRIAL PLC'S LESSON PLAN FALL SEMESTER 2014

DATES	CHAPTER/UNIT	OBJECTIVES	ASSIGNMENTS	COMP.
August 18	Fall Semester Begins			
August 18 Begin August 25 End	LAP 1- Introduction to Programmable Controllers	In this first LAP (Learning Activity Packet) you will learn about the basic operation of the PLC and how its programming language works.	Do LAP 1 Manual Take Lap 1 Quiz	2 A,D
August 25 Begin September 1 End	LAP 2- Basic PLC Programming	In this LAP, you will learn how to enter, edit, and store PLC programs using PLC software. You will also learn about the PLC's memory, how it is organized, and what types of numbering systems are currently used with the PLC. All of these skills are important to be able to fully understand and operate the SLC 500.	Do LAP 2 Manual Take Lap 2 Quiz	1,2,3 A,B,C,D
September 3 Begin September 10 End	LAP 3- PLC Motor Control	In the first three segments of this LAP, you will learn how the PLC is programmed to control electric motor applications. To do this, you will learn about the sixth logic element, which is memory. The programs and instructions you will learn in this LAP are not limited to motor control but are fundamental to all PLC programs. In the last segment, you will learn how to add comments to your PLC programs and how to copy and paste sections of your program.	Do LAP 3 Manual Take Lap 3 Quiz	2,4,5,6,9 A,B,C,D
September 10 Begin September 17 End	LAP 4- Discrete I/O Interfacing	You will learn how to interface a number of common I/O devices to the PLC and how to test this interfacing to make sure it is working.	Do LAP 4 Manual No Hands-on Take Lap 4 Quiz	2,5,8 A,B,C,D
September 22 Begin September 29 End	LAP 5- Introduction to Troubleshooting	You will begin your study of PLC troubleshooting. To do this you are going to use the troubleshooting feature of the 890-PEC Programmable Controller Training System, which allows you to insert faults into the system. You will also perform tests on the PLC components to learn where failures can occur and how to tell when a component is good or bad.	Do LAP 5 Manual Take Lap 5 Quiz	1,2,3,4,5, 6 A,B,C,D
September 29 Begin October 6 End	LAP 6- PLC Systems Troubleshooting	You are going to learn a systematic method for troubleshooting the entire PLC system. This method will combine the troubleshooting skills for various PLC subsystems you learned in LAP 5 with the processor troubleshooting skills you will learn in Segment 1 of LAP 6. The troubleshooting skills that you have learned so far, and will learn, will be applied in the following LAP's so that you continue to reinforce these skills.	Do LAP 6 Manual Take Lap 6 Quiz	1,2,3,4,5, 6 A,B,C,D
October 8 Begin October 15 End	LAP 7- Event Sequencing	In this LAP, you will learn how to design and interpret PLC programs that control the sequence of operations of entire machines. This is an important topic because most PLC programs perform a sequence of some kind.	Do LAP 7 Manual Take Lap 7 Quiz	1,2,3,4,5, 6 A,B,C,D
October 15 Begin October 22 End	LAP 8- Application Development	In this previous LAP, you learned the basics of designing and interpreting PLC programs that control machine sequencing. Event sequencing programs, you may have noticed, can seem very complicated. In this LAP, you will learn a step-by-step technique that makes reading and designing event sequencing programs much easier.	Do LAP 8 Manual Take Lap 8 Quiz	1,2,3,4,5, 6 A,B,C,D
October 27 Begin November 3 End	LAP 9- PLC Timer Instructions	You are going to learn about PLC timer instructions and their applications. PLC programs often use timers. An example is to sequence the events in a chemical mixing process.	Do LAP 9 Manual Take Lap 9 Quiz	1,2,3,4,5, 6,7 A,B,C,D
November 3 Begin November 19 End	LAP 10- Counter Instructions	You are going to learn how to use counter instructions and how to interface BCD thumbwheels and LED displays to the PLC. Counter instructions are important because they allow a PLC to keep track of production and other data as well as control functions that are based on counting. The BCD thumbwheel switch and LED display are commonly used with PLC's to input and display timer/counter preset and accumulated values. To use them, you will two more instructions: FRD and TOD.	Do LAP 10 Manual Take Lap 10 Quiz	1,2,3,4,5, 6,7 A,B,C,D
November 24 Begin December 3 End	PLC Hardwiring	Complete the PLC hardwiring projects- See Instructor	See Instructor	1,2,3,4,5, 6,7 A,B,C,D

COURSE OUTLINE:

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| 1. PLC Hardware and Software | 2. PLC Functions and Terminology |
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| 5. PLC Programming Basics | 6. Relay Logic Instructions |
| 7. Timers and Counters | 8. Connecting Field Devices to I/O Cards |
| 9. PLC Safety Procedures | |

GENERAL EDUCATION CORE COMPETENCIES:

- A. The ability to utilize standard written English.
- B. The ability to solve practical mathematical problems.
- C. The ability to read, analyze, and interpret information.
- 4D The ability to utilize basic computer skills.