



**ELTR 1220 Industrial PLC's
COURSE SYLLABUS
Hybrid
Fall Semester 2017**

****TENTATIVE – SUBJECT TO CHANGE**

COURSE INFORMATION

Credit Hours/Minutes: 4 Credit Hours/ 4500 Minutes

Class Location: Building 6 Lab 6102/ Blackboard

Class Meets: HYBRID / 15 weeks Monday and Tuesday 4:30pm– 8:10 pm (67% HYBRID & 33% as on ONLINE)

CRN: 20037

Preferred Method of Contact: STC Email

INSTRUCTOR CONTACT INFORMATION

Instructor Name: Tony Criswell

Office Location: Building 6 Lab 6102

Office Hours: Monday and Tuesday 8:00AM- 8:30AM and 2:00PM- 4:30PM; Wednesday and Thursday 8:00AM- 8:30AM and 2:00PM- 3:30PM

Email Address: tcriswell@southeasterntech.edu

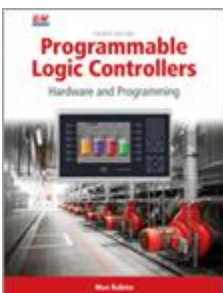
Phone: 478-289-2235

Fax Number: 478-289-2276

Tutoring Hours: Available upon request

This course is taught in a hybrid format. Hybrid classes require students to complete a portion of the required contact hours traditionally by attending classes on campus while completing the remaining portion online at the student's convenience with respect to the instructor's requirements.

REQUIRED TEXT



Programmable Logic Controllers: Hardware and Programming, 4th edition; ISBN 978-1-63126-932-5; Publisher- Goodheart- Wilcox

REQUIRED SUPPLIES & SOFTWARE

Safety Glasses
USB Drive
Highlighter

Note: Although students can use their smart phones and tablets to access their online course(s), exams, discussions, assignments, and other graded activities should be performed on a personal computer. Neither Blackboard nor GVTC provide technical support for issues relating to the use of a smart phone or tablet so students are advised to not rely on these devices to take an online course.

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 setup, PLC programming basics, relay logic instructions, timers and counters, connecting field devices to I/O cards, and PLC safety procedures.

PREREQUISITE(S)

None

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:

1. The ability to utilize standard written English.
2. The ability to solve practical mathematical problems.
3. The ability to read, analyze, and interpret information.

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*. **Industrial Electrical and Maintenance Technician program students must earn a minimum grade of C in this course.**

HYBRID ATTENDANCE

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 Helen Thomas, 912-538-3126, hthomas@southeasterntech.edu, 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 Helen Thomas, 912-538-3126, hthomas@southeasterntech.edu.

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.

Assignment due dates are listed on the attached lesson schedule. Students are expected to have the assignment completed at the beginning of class on the date that it is due. It is within the instructor's discretion to accept or reject late assignments. Any late assignments accepted will be subject to a ten-point penalty each day the assignment is late. After three class meetings, no late assignments will be accepted; a zero will be recorded.

Unannounced quizzes are subject to be given on any day. A grade of zero will be assigned for any quizzes missed. There will be no makeup of quizzes. Any zeros recorded will be included in the final score calculation.

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:

1. 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.

2. 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.

3. 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

The Technical College System of Georgia and its constituent Technical Colleges do not discriminate on the basis of race, color, creed, national or ethnic origin, sex, religion, disability, age, political affiliation or belief, genetic information, disabled veteran, veteran of the Vietnam Era, spouse of military member 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).

The following individuals have been designated to handle inquiries regarding the nondiscrimination policies:

ADA/Section 504 - Equity- Title IX (Students) - OCR Compliance Officer	Title VI - Title IX (Employees) - EEOC Officer
Helen Thomas, Special Needs Specialist Vidalia Campus 3001 East 1 st Street, Vidalia Office 108 Phone: 912-538-3126 hthomas@southeasterntech.edu	Blythe Wilcox, Director of Human Resources Vidalia Campus 3001 East 1 st Street, Vidalia Office 138B Phone: 912-538-3147 bwilcox@southeasterntech.edu

GRIEVANCE PROCEDURES

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

ACCESS TO TECHNOLOGY

Students can now access Blackboard, 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](#).

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.

GRADING POLICY

Assessment/Assignment	Percentage
Chapter Review Questions	15%
Labs	55%
Exam	25%
Discussion Boards	5%
Total	100%

GRADING SCALE

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

ELTR 1220 Industrial PLC's Fall Semester 2017 Lesson Plan

Date/Week	Chapter/Lesson	Content	Assignments & Tests Due Dates	Competency Area
August 14	Class Introduction	Syllabus, Outline, Lab Rules & Regulations coverage	<p>In Class- Instructor will go over syllabus, lesson plan, lab rules, how to access the hybrid portion of the class and introduction of PLC's</p> <p>Hybrid- Login to BLACKBOARD</p> <p>Getting Started – Start Here Items:</p> <ul style="list-style-type: none"> • Read all items • Complete STC Pledge Acknowledgement, Student Introduction • Read Chapter 1- Programmable Logic Controller (PLC) Overview of Textbook Pages 2-17 • Look over Chapter 1 PowerPoints on USB Drive • Complete Chapter 1 Discussion Board • Answer Review Questions for Chapter 1 and submit by email <p>Due 11:59PM 08/21/17</p>	9 a,b,c
August 21	1	Programmable Logic Controller (PLC) Overview	<p>In Class- Instructor will discuss information about PLC's, show a demonstration of how PLC's work, different components of the PLC</p> <p>Hybrid-</p> <ul style="list-style-type: none"> • Complete Chapter 1 Exam in Blackboard under exams • Read Chapter 2- PLC Selection, Components, and Communication in textbook Pages 18-40 • Look over Chapter 2 PowerPoints on USB Drive • Complete Chapter 2 Discussion Board • Answer Chapter 2 Review Questions 1-7 and 9-15 on pages 40-41 and submit by email <p>Due 11:59PM 08/28/17</p>	1,2,9 a,b,c

Date/Week	Chapter/Lesson	Content	Assignments & Tests Due Dates	Competency Area
August 28	2	PLC Selection, Components, and Communication	<p>In Class- Instructor will discuss how to select PLC components and communication setup for PLC's. Show different types of communication and components</p> <p>Hybrid-</p> <ul style="list-style-type: none"> • Complete Chapter 2 Exam in Blackboard under exams • Read Chapter 3- Number Systems and Codes in textbook Pages 42-55 • Look over Chapter 3 PowerPoints on USB Drive • Answer Even Number Review Questions on pages 56-57 and submit by email <p>Due 11:59PM 9/11/17</p>	1,2,9 a,b,c
September 4	Labor Day Holiday			
September 11	3	Number Systems and Codes	<p>In Class- Instructor will discuss the different numbering systems and codes used for PLC's and their importance</p> <p>Hybrid-</p> <ul style="list-style-type: none"> • Complete Chapter 3 Exam in Blackboard under exams • Read Chapter 4- Input/Output Devices and Motor Controls in textbook Pages 58-77 • Look over Chapter 4 PowerPoints in Blackboard under assignments • Complete Chapter 4 Discussion Board • Answer Review Questions on page 78 and submit by email <p>Due 11:59PM 9/18/17</p>	3 a,b,c

Date/Week	Chapter/Lesson	Content	Assignments & Tests Due Dates	Competency Area
September 18	4	Input/Output Devices and Motor Controls	<p>In Class- Instructor will discuss and demonstrate the different types input/output devices and motor control symbols that are used in hooking up field devices</p> <p>Hybrid-</p> <ul style="list-style-type: none"> • Complete Chapter 4 Exam in Blackboard under exams • Read Chapter 5- Creating Ladder Logic Diagrams in textbook Pages 80-89 • Look over Chapter 5 PowerPoints in Blackboard under assignments • Answer Review Questions on page 89, which include drawing relay logic diagrams and submit by email <p>Due 11:59PM 9/25/17</p>	4,5,6 a,b,c
September 25	5	Creating Ladder Logic Diagrams	<p>In Class- Instructor will discuss and demonstrate how to create ladder logic diagrams and how to use the software</p> <p>Hybrid-</p> <ul style="list-style-type: none"> • Complete Chapter 5 Exam in Blackboard under exams • Read Chapter 6- PLC Programming in textbook Pages 90-119 • Look over Chapter 6 PowerPoints in Blackboard under assignments • Answer Chapter 6 Review Questions on page 119, which include drawing relay logic diagrams and submit by email <p>Due 11:59PM 10/2/17</p>	5,6 a,b,c

Date/Week	Chapter/Lesson	Content	Assignments & Tests Due Dates	Competency Area
October 2	6	PLC Programming	<p>In Class</p> <ul style="list-style-type: none"> Instructor will discuss and demonstrate how to program PLC's Students will do Labs 1-3 the PLC Trainer Lab Manual <p>Hybrid-</p> <ul style="list-style-type: none"> Complete Chapter 6 Exam in Blackboard under exams Read Chapter 7- Programming Logic Gate Functions in PLC's in textbook Pages 126-155 Look over Chapter 7 PowerPoints in Blackboard under assignments Complete Chapter 7 Discussion Board Answer Chapter 7 Review Questions Number 1-42 on pages 155-156 and submit by email <p>Due 11:59PM 10/9/17</p>	5 a,b,c
October 10	7	Programming Logic Gate Functions in PLC's	<p>In Class</p> <ul style="list-style-type: none"> Instructor will discuss and demonstrate Programming Logic Gate Functions in PLC's Students will do Labs 4-5 in the PLC Trainer Lab Manual <p>Hybrid-</p> <ul style="list-style-type: none"> Complete Chapter 7 Exam in Blackboard under exams Read Chapter 8- PLC Timer Instructions in textbook Pages 164-182 Look over Chapter 8 PowerPoints in Blackboard under assignments Answer Chapter 8 Review Questions Number 1-32 on pages 182-183 and submit by email <p>Due 11:59PM 10/16/17</p>	5,6 a,b,c

Date/Week	Chapter/Lesson	Content	Assignments & Tests Due Dates	Competency Area
October 16	8	PLC Timer Instructions	<p>In Class</p> <ul style="list-style-type: none"> Instructor will discuss and demonstrate PLC Timer Instructions Students will do Lab 6 in the PLC Trainer Lab Manual <p>Hybrid-</p> <ul style="list-style-type: none"> Complete Chapter 8 Exam in Blackboard under exams Read Chapter 9- PLC Counter Instructions in textbook Pages 188-200 Look over Chapter 9 PowerPoints in Blackboard under assignments Answer Chapter 9 Review Questions Number 1-34 on pages 200-201 and submit by email <p>Due 11:59PM 10/23/17</p>	7 a,b,c
October 23	9	PLC Counter Instructions	<p>In Class</p> <ul style="list-style-type: none"> Instructor will discuss and demonstrate PLC Counter Instructions Students will do Lab 7 in the PLC Trainer Lab Manual <p>Hybrid-</p> <ul style="list-style-type: none"> Complete Chapter 9 Exam in Blackboard under exams Read Chapter 16- Troubleshooting and Servicing the PLC System in textbook Pages 318-329 Look over Chapter 16 PowerPoints in Blackboard under assignments Answer Chapter 16 Review Questions Number 1-9 on page 329 and submit by email <p>Due 11:59PM 10/30/17</p>	7 a,b,c

Date/Week	Chapter/Lesson	Content	Assignments & Tests Due Dates	Competency Area
October 30	16	Troubleshooting and Servicing the PLC System	In Class <ul style="list-style-type: none"> Instructor will discuss and demonstrate Sequencer Instructions Students will do Lab 11-13 in the PLC Trainer Lab Manual Hybrid- <ul style="list-style-type: none"> Complete Chapter 16 Exam in Blackboard under Exams Look over wiring Diagrams in Blackboard under assignments and create PLC Programs Complete Discussion Board on Blackboard on the importance of PLC's in the manufacturing process Due 11:59PM 11/6/17	4,5,6 a,b,c
November 6		Hardwire of PLC	<ul style="list-style-type: none"> Students will complete PLC Labs on a Motor Control Trainer Complete Instructor Evaluation 	9 a,b,c
November 13		Hardwire of PLC	<ul style="list-style-type: none"> Students will complete PLC Labs on a Motor Control Trainer Complete Instructor Evaluation 	9 a,b,c
November 20		Hardwire of PLC	<ul style="list-style-type: none"> Students will complete PLC Labs on a Motor Control Trainer Complete Instructor Evaluation 	9 a,b,c
November 27	Last Night of Class		<ul style="list-style-type: none"> Students will complete PLC Labs on a Motor Control Trainer Complete Instructor Evaluation 	

Competency Areas:

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 Core Educational 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.