

Clarendon College

Industrial Maintenance Syllabus

Course Name: ELMT 1301 Programmable Logic Controllers

Credit Hours: 3 sem hrs; 2 lec, 2 lab (64hrs)

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Course Level: Introductory

Prerequisites/Co-requisites: None

Course Description: An introduction to programmable logic controllers as used in industrial environments including basic concepts, programming, applications, troubleshooting of ladder logic, and interfacing of equipment.

Learning Outcomes: The Student Will –

- Identify basic components of a PLC and understand their functions.
- Understand ladder logic
- Demonstrate knowledge by programming a PLC
- Understand motor control basics
- Demonstrate knowledge of discrete I/O interfacing
- Demonstrate knowledge of event sequencing
- Understand PLC timer instructions
- Understand PLC counter instructions

Grades and Assessment Methods:

A = 90-100%
B = 80-89%
C = 70-79%
D = 60-69%
F = below 60%

Class Participation	10%
Exams	60%
Lab Grades	30%
Total	= 100%

Class Policy:

- **Attitude** – Have a good attitude in class. This is important for the learning process. Be respectful of others in class. Horseplay will not be permitted in the classroom and especially the lab area. Follow all safety procedures. Notify your instructor **BEFORE** any circuit is energized or equipment turned on. At the end of class all tools must be returned to their proper place and the student must clean up any mess they made.
- **Attendance** - Attendance is required. All unexcused absences will result in 10 points being deducted from the students attendance grade for the first three absences, the fourth absence will result in an attendance grade of zero. The student is responsible for turning in assignments and making up any work missed. Please notify your instructor as soon as you realize you will need to miss a class.
- **Attention** – It is very important that you pay attention during instruction time and especially during lab time. This is essential not only for the learning process, but also for your safety. Food and tobacco products are not allowed in the classroom or lab. Drinks will not be allowed in the lab. Cell phones must be silenced during class and any kind of MP3 device will not be allowed in classroom or lab.

Supplies:

Student will need a calculator, pencil, notebook paper, and graphing or engineering paper.

Text:

Amatrol Learning Activity Packet 1-8

Tentative Schedule: This is a self-paced “Competency Based” course. This schedule will give you some general guidelines to help keep you on track. It will be your responsibility to keep on track in order to complete this course by the end of the semester. Your instructor will help you along the way and encourage you if you start to fall behind.

You must complete the following in 16 weeks for the Fall and Spring Semesters, and 12 weeks for Summer classes.

- Lap 1 Introduction to Programmable Controllers
- LAP 2 Basic PLC Programming
- LAP 3 PLC Motor Control
- LAP 4 Discrete I/O Interfacing
- LAP 5 Event Sequencing
- LAP 6 Application Development
- LAP 7 PLC Timer Instructions
- LAP 8 PLC Counter Instructions

Teams:

You will be allowed to work independently during lab time if at all possible, but it is highly likely that all labs will be done in teams of two because of the size of classes, the number of trainers available and the limited time we have in class. In the workplace you will often find yourself working with a partner or a group especially on major projects, therefore, it is important that you learn how to work at a team. Please follow these basic principles when working in teams.

- Split the workload evenly. Some people have a tendency to take a project over and do all the work, while others have a tendency to sit back and watch. Neither tendency is fair to your partner.
- Communicate openly. Communication is key when working together. Talk about what you are about to do, and how you will proceed. Make sure you both understand the assignment before you start.
- Settle conflict quickly. If you disagree on something, find a way to compromise and fix the problem. If you can't settle it quickly and in a fair manner, get help from another student or go to your instructor.
- Have a good attitude. In life, work and school, it's all about attitude. Decide right now that this is going to be fun and you are going to learn. No matter what your level of knowledge about the subject, your attitude will determine how well you do and what you get out of the course. Even in the workplace your attitude will determine how well you do your job, and the type of relationship you have with co-workers and supervisors. This can be a fun learning experience that will lead to a rewarding career, or a total waste of time. It's your choice.

If you experience problems:

If you are having problems with the course material, time issues, personal problems, or you need to make up work, talk to your instructor. Don't just quit coming to class or drop the course. Most problems can be worked out. If a problem does arise that cannot be solved and it becomes evident that you will not be able to complete the course, follow the procedures in the college catalog to drop the class. If you just quit coming to class you will receive an F on your transcript, which will have a permanent effect on your grade point.

Withdrawal:

If you decide that you are unable to complete this course or that it will be impossible to complete the course with a passing grade, you may drop the course and receive a "W" on our transcript instead. Withdrawal from a course is a formal procedure that you must initiate. If you do not go through the formal withdrawal procedure, you will receive a grade of "F" on your transcript. A student is permitted to drop a course if he/she obtains an official drop slip from the office and has the instructor sign the slip before the 12th class week.

Remember, a student is only allowed to drop the same class twice before he/she will be charged triple the tuition amount for taking the class a third time or more. Furthermore, beginning with the Fall 2007 semester, students in Texas may only drop a total of 6 courses throughout their entire undergraduate career. After the 6th course, he/she will no longer be able to withdraw from any classes.

Classroom Policies:

Failure to comply with lawful direction of a classroom instructor is a disruption for all students enrolled in the class. Cheating violations include, but are not limited to: (1) obtaining an examination, classroom activity, or laboratory exercise by stealing or collusion; (2) discovering the content of an examination, classroom activity, laboratory exercise, or homework assignment before it is given; (3) using an unauthorized source of information during an examination, classroom activity, laboratory exercise, or homework assignment; (4) entering an office or building to obtain unfair advantage; (5) taking an examination for another person; (6) completing a classroom activity, laboratory exercise, homework assignment, or research paper for another person; (7) altering grade records; (8) using any unauthorized form of electronic communication device during an examination, classroom activity, or laboratory exercise; (9) Plagiarism. Plagiarism is the using, stating, offering, or reporting as one's own, an idea, expression, or production of another person without proper credit. Disciplinary actions for cheating in a course are at the discretion of the individual instructor. The instructor of that course will file a report with the Vice-President of Student Services when a student is caught cheating in the course, whether it be a work-force or academic course. The report shall include the course, instructor, student's name, and the type of cheating involved. Students who are reported as cheating to the Vice-President of Student Services more than once shall be disciplined by the Vice-President of Student Services. The Vice-President of Student Services will notify all involved parties within fourteen days of any action taken.

American with Disabilities Act Statement:

Clarendon College provides reasonable accommodations for persons with temporary or permanent disabilities. Should you require special accommodations, notify the Office of Student Services (806-874-3571 or 800-687-9737). We will work with you to make whatever accommodations we need to make.

Dropping a Course:

A student who is enrolled in a developmental course for TSI purposes may not drop his/her only developmental course unless the student completely withdraws from the college. A student may drop any other course with a grade of "W" any time after the census date for the semester and on or before the end of the 12th week of a long semester, or on or before the last day to drop a class of a term as designated in the college calendar. The request for permission to drop a course is initiated by the student by procuring a drop form from the Office of Student Services. (Refer to other policies concerning this issue in the current college catalog online.)

Withdrawal from College:

When a student finds it necessary to withdraw from school before the end of the semester, he or she should obtain a withdrawal form from the Office of Student Services. Students may also withdraw from the college by sending a written request for such action to the Registrar's Office. The request must include the student's signature, the student's current address, social security number and course information details. Students who withdraw after the census date for the semester and on or before the end of the 12th week of a long semester, or on or before the last day to drop a class of a term as designated in the college calendar will be assigned a grade of "W."

Student Rights and Responsibilities:

A copy of the Student Rights and Responsibilities is available on the College website at: <http://www.clarendoncollege.edu/Resources/Student%20Services/StudentRightsResponsibilities.pdf>.

Criminal Background HB 1508

For students in this course who may have a criminal background, please be advised that the background could keep you from being licensed by the State of Texas. If you have a question about your background and licensure, please speak with your instructor or the Vice President of Academic Affairs. You also have the right to request a criminal history evaluation letter from the applicable licensing agency.

Campus Carry

The 84th Session of the Texas Legislature passed two bills which relate to guns on the premises of college campuses:

Effective **January 1, 2016**, House Bill 910 (commonly referred to as the “Open Carry” bill) allows a Texas Concealed Handgun License holder to openly carry a holstered handgun, except on the campus of a higher education institution. The law remains unchanged that a firearm may be stored or transported in a locked privately owned or leased motor vehicle by a person who holds a license to carry.

Effective August 1, 2016, for four year Universities and Colleges, and **August 1, 2017** for Junior Colleges Senate Bill 11 (commonly referred to as the “Campus Carry” bill) allows a license holder to carry a concealed handgun while on the campus of an institution of higher education. This bill provides that, after consulting with students, staff, and faculty regarding the nature of the population and safety considerations, the Chief Executive Officer of the institution of higher education shall establish reasonable rules, regulations, and provisions regarding carrying on the campus. The established rules and regulations may not generally prohibit license holders from carrying concealed handguns on campus. Information regarding the portions of the campus where license holders may not carry, referred to as Gun Free Zones, can be found within the [Concealed Campus Carry Regulations](#).

It continues to be an offense if the license holder carries a partially or wholly visible handgun and intentionally/knowingly displays the handgun in plain view to another person on the premises of the campus to include driveways, streets, sidewalks, parking lot, parking garage, or parking area of the institution of higher learning.

Anyone with questions or concerns regarding the Campus Carry Policy can contact the President's Office at 806-874-4808

More information can be found on the website: www.clarendoncollege.edu