

# Programmable Logic Controllers

## SYLLABUS

### CLARENDON COLLEGE

#### Division of Business and Technology

**Course Name:** ELMT 1201.231 Programmable Logic Controllers.

**Credit Hours:** 2

**Semester:** *Spring 2012*

**Classroom Location:** *Pampa Center room V04*

**Instructor:** *John Havens*

**Office Location:** *Pampa Center*

**Phone:** 806-665-8801 **Ext.** 2036 **Mobile:** 806-336-3266

**Email:** *john.havens@clarendoncollege.edu*

**Fax:** 806-874-1567

**Office Hours:** Monday - Thursday 1:30pm – 4:30pm

### **Course Description:**

An entry level course in digital electronics covering number systems, binary mathematics, digital codes, logic gates, Programming a PLC, Input/Output devices and troubleshooting digital I/O.

### **Statement of Purpose**

*This course is required for successful completion of the wind energy program of study offered by Clarendon College.*

### **Required Instructional Materials:**

**Textbook:** Dunning, Gary Programmable Logic Controllers 3rd Edition, Thompson, 2006

**Other Relevant Materials:** Pens/Pencils and note paper

## **Student Requirements**

Students must actively participate in class and attend class unless arrangements are made in advance for absence.

Class Attendance is required!!! Students will only be allowed to miss 3 class periods in the 16 week session.

Personal Tools and Supplies include: scientific calculator, and pencils, note paper (recommend graphing or engineering paper), etc...

## **Methods of Instruction:**

Lecture, Using PowerPoint presentation & includes student interaction.  
Participation in lab work is required

## **Course Objectives**

An introduction to programmable logic controllers used in industrial environments including basic concepts, programming, applications, troubleshooting of ladder logic, and interfacing of equipment. This course is necessary for completing the wind energy course of study.

## **Make up work**

Any work, due to absence MUST be made up within two weeks! Any failure to make arrangements with me about making up your missed assignments will result in a zero being issued for that assignment! The Final exam will be taken on the prescribed day or an arranged day prior to the final exam. No exceptions.

## **Grading Policies:**

The final semester grades will be figured as set in the current catalog:

90 to 100 = A   80 to 89 = B   70 to 79 = C   60 to 69 = D   Below 59 = F

Methods and components of evaluation and grading are listed in the following:

Problems and exercises:	20%
Quizzes:	30%
Attendance:	20%
Final:	30%

A student's final grade will be made available through Campus Connect at Clarendon College's website.

### Classroom Conduct

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 Dean of Students when a student is caught cheating in the course, whether it be a workforce 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 Dean of Students more than once shall be disciplined by the Dean. The Dean 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 12<sup>th</sup> 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 12<sup>th</sup> 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."

Classroom requirements:

The operation of cell phones, MP3 type devices, personal computers, or any other such devices is strictly prohibited during class sessions. The result of such use will result in a zero grade for the event (quiz/test) for that day including final exam day. Cheating, plagiarism or other dishonest acts shall be dealt with to the extent of dismissal from the class permanently on a case by case basis. Under no circumstance will an individual be exonerated after a second incidence, but will be immediately dropped.

Week 1: Chapter 1 – Welcome to the world of Programmable Logic Controllers and Chapter 2 Micro Programmable Logic Controllers

Week 2: Chapter 3 Programming a Programmable Logic Controller

Week 3: Chapter 4 Number Systems and Chapter 5 Introduction to Digital and Analog PLC Interface.

Week 4: Quiz 1 (Ch 1-5) Chapter 6 Introduction to Logic

Week 5: Chapter 7 Input Modules and Chapter 8 Output Modules

Week 6: Chapter 9 Putting Together a Modular PLC

Week 7: Chapter 10 PLC Processors

Week 8: Quiz 2 (Ch 6-10) Chapter 12 Processor Data Organization and Chapter 13 The Basic Relay Instruction

Week 9: Chapter 14 Understanding Relay instructions and the PLC Input Modules and Chapter 15 Documenting Your PLC System

Week 10: Chapter 16 Timer and Counter Instructions and Chapter 17 Comparison and Data Handling Instructions

Week 11: Chapter 18 Sequencer Instructions and Chapter 19 Program Flow Instructions

Week 12: Quiz 3 (Ch 12-19) Lab work on the PLC

Week 13: Lab work on the PLC

Week 14: Lab work on the PLC

Week 15: Course Review and Final Exam Prep

Final exam on date/time as posted on Final Exam Schedule on the Clarendon College website