

ELEC 53.12 Course Outline as of Spring 2004**CATALOG INFORMATION**

Dept and Nbr: ELEC 53.12 Title: PLC'S-MAINT TECHS-1
 Full Title: Programmable Logic Controllers for Maintenance Technicians 1
 Last Reviewed: 10/17/2011

Units	Course Hours per Week		Nbr of Weeks		Course Hours Total	
Maximum	2.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	2.00	Lab Scheduled	0	2	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	2.00		Contact Total	35.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00

Total Student Learning Hours: 105.00

Title 5 Category: AA Degree Applicable
 Grading: Grade Only
 Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP
 Also Listed As:
 Formerly: ELEC299.41

Catalog Description:

Programmable Logic Controllers for the Maintenance Technician. Identification and troubleshooting of typical controller problems; beginning to intermediate ladder logic programming; essentials of working in an industrial environment.

Prerequisites/Corequisites:**Recommended Preparation:**

Completion of ELEC 53.11.

Limits on Enrollment:**Schedule of Classes Information:**

Description: Programmable logic controllers for the maintenance technician. Identification and troubleshooting of typical controller problems; beginning to intermediate ladder logic programming; essentials of working in an industrial environment. (Grade Only)

Prerequisites/Corequisites:

Recommended: Completion of ELEC 53.11.

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area		Effective:	Inactive:	
CSU GE:	Transfer Area		Effective:	Inactive:	
IGETC:	Transfer Area		Effective:	Inactive:	
CSU Transfer:	Transferable	Effective:	Spring 2004	Inactive:	Fall 2017
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:

Certificate Applicable Course

COURSE CONTENT

Outcomes and Objectives:

Upon completion of this course the student will be able to, at a beginning to intermediate level:

1. Design and set up software in a control system and make it work properly.
2. Interpret and apply safety procedures in a manufacturing environment.
3. Originate proper tagout procedures when working on electrical equipment.
4. Develop a PLC (Programmable Logic Controller) program using ladder logic.
5. Recognize and evaluate faults in sensors and output devices.
6. Evaluate and troubleshoot software problems.

Topics and Scope:

1. Types of input devices
2. Types of output devices
3. Types of controllers
4. Types of software
5. Fundamentals of control programs
6. Basic instructions
7. Loading software and operating PLCs
8. Basic tag out procedures
9. Basic Manufacturing safety
10. Wiring, DC inputs, AC inputs, Relay Outputs, Transistor outputs

Assignment:

1. Investigate operation of DC and AC outputs, Relay Outputs, and Transistor outputs and write evaluation.

2. Design and evaluate software used to control a Stepper motor.
3. Review a manufacturing process and design software that could be used to automate the sequencing of machines used in that process.
4. Write four 2-3 page case studies of applications of PLCs to manufacturing environments.
5. Midterm and final exam.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Case studies.	Writing 20 - 30%
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Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, Lab reports	Problem solving 40 - 60%
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Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%
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Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, True/false, Matching items, Completion, Short answer.	Exams 20 - 30%
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Other: Includes any assessment tools that do not logically fit into the above categories.

None	Other Category 0 - 0%
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Representative Textbooks and Materials:

Your Personal PLC Tutor (A guide to understanding PLC's) by Phil Melore, copyright 2003 Phil Melore, (PLCS.net).