ELEC 53.11 Course Outline as of Fall 2002

CATALOG INFORMATION

Dept and Nbr: ELEC 53.11 Title: BASICS OF PLC'S Full Title: Introduction to Programmable Logic Controllers Last Reviewed: 3/18/2002

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	17.5	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:	

Catalog Description:

An introductory course in Programmable Logic Controllers. This course is designed for students who desire a fundamental understanding of PLCs. The course is divided into three areas of concentration, including the basics of electronics, control components, and PLC programming.

Prerequisites/Corequisites:

Recommended Preparation:

Completion of ELEC 53.10.

Limits on Enrollment:

Schedule of Classes Information:

Description: An introductory course in Programmable Logic Controllers. This course is designed for students who desire a fundamental understanding of PLCs. The course is divided into three areas of concentration, including the basics of electronics, control components, and PLC programming. (Grade Only) Prerequisites/Corequisites: Recommended: Completion of ELEC 53.10.

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree: CSU GE:	Area Transfer Are	a	Effective: Effective:	Inactive: Inactive:	
IGETC:	GETC: Transfer Area				Inactive:
CSU Transfer	:Transferable	Effective:	Fall 2002	Inactive:	Spring 2011
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:

Certificate Applicable Course

COURSE CONTENT

Outcomes and Objectives:

The student will:

- Analyze DC circuits with respect to current, voltage and resistance.
 Analyze the characteristics of AC circuits with respect to AC
- generators.
- 3. Analyze control circuits.
- 4. Identify the characteristics of magnetic contactors and starters.
- 5. Identify the characteristics of control switches, relays, switches and sensors.
- 6. Analyze PLC numbering systems.
- 7. Analyze connecting external devices to a PLC.
- 8. Program a PLC.

Topics and Scope:

- 1. Basic Electronics
- A. Conductors, Insulators, and Semiconductors
- B. Current, Voltage, and Resistance C. Ohm's Law
- D. Power Law
- E. Series, Parallel, and Series/Parallel Circuits
- F. AC Generators
- G. Inductive and Capacitive Reactance
- H. Series/Parallel RLC Circuits
- I. Transformers
- 2. Basic Controllers
- A. Control Circuits
- **B.** Electrical Symbols
- C. Manual Starters

- D. Magmatic Contactors and Starters
- E. Control Transformers
- F. Control Relays
- G. Timing Relays
- H. Limit Switches
- 3. Basic PLCs
- A. Numbering Systems
- B. Terminology
- C. Connecting External Devices
- D. Programming
- E. Discrete Input/outputs
- F. Analog Input and outputs
- G. Timers
- H. Counters

Assignment:

- 1. Textbook readings.
- 2. Textbook homework problems.
- 3. Handout homework problems.

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.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, Quizzes

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, True/false, Matching items, Completion

Other: Includes any assessment tools that do not logically fit into the above categories.

Writing 0 - 0%

Problem solving 30 - 70%

Skill Demonstrations 0 - 0%

> Exams 30 - 70%

None

Other Category 0 - 0%

Representative Textbooks and Materials: Hall, Programmable Logic Controllers. Prentice Hall, 1998. Dunn, Gary, Introduction to Programmable Logic Controllers. Delmar Thompson Learning, 2001.