

<u>4/24/17</u>	DATE	<u>Technology</u>	DIVISION
<u>X</u>	REQUIRED COURSE		NEW COURSE
	ELECTIVE COURSE	<u>X</u>	REVISION

LAKE LAND COLLEGE

Course Information Form

COURSE NUMBER EET072 TITLE Relays and Control Circuits

SEM CR HRS 2 LT HRS 1 LAB HRS 2 SOE HRS _____ ECH _____

COURSE PCS# _____ (Assigned by Administration)

Prerequisites:

Catalog Description (40 Word Limit):

This course provides the student with an understanding of industrial electrical and electronic power systems. Topics covered include three phase circuits, motors wiring, ladder logic, transformers, and electronic motor controllers.

List the Major Course Segments (Units)	Lt Hrs	Lab Hrs
Lock Out/ Tag out	1	1
Relay Ladder Logic	2	3
DC Motors	2	8
Electrical Control Devices and Circuits	2	8
Three Phase Motors	2	4
Single Phase Motors	2	
Electronic Control Devices and Circuits	3	4
Motor control circuits	2	4

EVALUATION: Quizzes X Exams X Oral Pres _____ Papers _____
 Lab Work X Projects _____ Comp Final _____ Other _____

Textbooks: Title: **Electric Motors and Control Systems**
 Author: **Petruzella**
 Publisher: **McGraw Hill**
 Volume/Edition: **2rd**
 Copyright Date: **2010**

Major Course Segment	Hours	Learning Outcomes
Lock out Tag out	2 (lec/lab)	The student will be able to . . . Understand proper lockout/tag out procedures.
Relay Ladder Logic	5 (lec/lab)	Demonstrate these procedures during all labs Understand the elements of a relay ladder logic diagram, create ladder diagrams, use ladder diagrams to build motor starter and control circuits
DC Motors	2	Understand operation and application of shunt, series, compound DC motors.
Operation and Troubleshoot DC Motors	8 (Lab)	Build, connect, operate, troubleshoot if necessary at least two different DC motors.
Electrical Control Devices and Circuits	2	Understand operation and application of motor starters, overload relays, contactors, relays.
Troubleshoot Motor Starter Circuit	8(Lab)	Troubleshoot motor starter circuit.
Three Phase Motor	2	Understand theory of operation and application of three phase wound rotor, and three phase industrial motors.
Operating of Three Phase Motor	4 (Lab)	Properly connect a 6 lead dual voltage three phase induction motor.
Single Phase Motor	2	Understand theory of operation and application of one phase-cap start, split phase, shaded pole motors.
Electronic Control Devices	3	Understand operation and application of SCRs, Triacs, and Diacs in power control circuits.
Triac motor speed control	4 (lab)	Build and test a simple Triac speed control
Examine Operation of Solid State Motor Controls	2)	Understand operation of PWM, Frequency drives, and Vector drive motor speed controls.
PWM controller	4(Lab)	Build and test a PWM DC motor control

Course Outcomes: At the successful completion of this course, students will be able to:

- Transformer power on the input equals the power on the output.
- Describe how to reverse a 3 phase motor