University of Toledo
Electrical Engineering Technology
Master Syllabus

Course Title: Programmable Cont Fund　　　**Course Code & Number: EET-2410**

Credit Hour Total:　4 Semester Hours

Lecture Contact Hours:　　　3　　　　Lab Contact Hours:　2

Coordinator:　Dr. Ted Evans

Text:　　　　**Programmable Logic Controllers: Fundamentals and Applications, ISBN 1588744086, Evans, Stipes**

Software:　　**RSLogix 500 (Allen-Bradley), RSLinx (A-B), Step 7 Basic (Siemens)**

Program Required Course　　　　**Prerequisite: EET 2210, Digital Logic Fund**

A. Course Description

A study of programmable controllers emphasizing program development, logic development and troubleshooting. Emphasis on relays, timers, counters, integer math and scan-dependent programming. Factory floor control concepts are stressed.

B. Related Program Outcomes (d, e):

d. Students are encouraged to use creativity in the design and use of logic systems and processes.

e. In lab experiments, students are encouraged to function as part of a team.

C. **Course Objectives:**

- Develop an understanding of the programming processes necessary to control a real-time process
- Develop an understanding of the interaction between hardware and software in a real-time system
- Work effectively in the laboratory with lab partners
- Develop an understanding of the processes necessary to organize and complete a programmable controller project

D. **Course Outline – Major Content Areas**

- Introduction to Relay Logic
- Introduction to PLC programming on the PC
- Introduction to the A-B instruction set
- Comparing A-B and Modicon Instruction set
- Introduction to A-B hardware and PLC hardware in general
- Discussion of PLC addressing types and modes
- Use of relays and relay-type instructions
- Use of timer and Counter instructions
- Use of relays together with timers and counters
- Use of logic involving integer math
- Use of logic involving relays, timers, counters, and math
- Use of Comparison Instructions
- Discussions about scan dependent coding

E. **Major Laboratory Topics**

- Basic Ladder Logic wiring
- Motor Starter wiring
- Introduction to RSLogix
- Introduction to simple combinational logic
- Simple timer and combinational logic to control a traffic intersection
- Simple math and counter operations to control a McDonald's style cash register
- Full adder logic to add/subtract 16-bit binary integers
- A multiplexer wired and programmed
- More complicated logic – Three pump floating master
- Sequential batching program using indirect addressing