

EEE4543 Process Control

1996/1998 Catalog Data:

Prerequisites: EEE3233, EEE3313, Co-requisite: EEE4541. Design and implementation of industrial controllers using programmable logic controllers (PLCs). Relay ladder logic, relay characteristics, electrical schematic symbols, thyristors, starting and stopping of large motors. National Electric Code, operator safety, input/output circuitry, state machines Grafset, PID controllers. Lect. 3 hrs. 3 hours credit

Textbooks:

Thomas A. Hughes Programmable Controllers Thomas Henry Control Circuits

Coordinator: Richard R. Johnston

Goals:

This course is designed to give senior Electrical Engineering students an introduction to relay ladder logic as a language for posing and solving industrial control problems, to introduce them to power electronic circuitry, and to introduce them to the National Electric Code. Students learn to solve problems involving the control of moderately complex industrial automation systems by specifying the necessary hardware and writing the software in relay ladder logic.

Prerequisites by topic:

Microprocessors
Electronics
Computer programming

Topics:

Definition of PLCs, relays, contacts, schematics, ladder diagrams, PLC I/O, PLC scan, switching components, solenoids, arc suppression, snubbers. (3 classes)

Review of binary numbers and logic gates, expression of Boolean functions by relay ladder logic. (3 classes)

Control circuits, multipole switches, selectors, process sensors, contactors, electrical system grounding, GFI, Ampacity, power switching, reversing DC motors. (2 classes)

Case study: garage door opener. (3 classes)

PLC DC, TTL, CMOS input circuitry. (2 classes)

