

ME 595- Automation of Mechanical System

Hour: Lecture: 2 Hrs.

Tutorial: 2 Hrs.

Credit: 3.

Coordinator: Salem Haggag

Text Book:

- Hugh Jack, “Automating Manufacturing Systems with PLCs”, September 2008, sites.google.com/sites/automatedmanufacturingsystems/.

Reference Books:

- Siemens PLC S7-200 Reference Manual

Specific course information

- a. Introduction to Programmable Logic Controllers - Relay Logic - PLC Basics - Hardware Architectures - Bit Logic - Ladder Diagram - Timers/Counters - Flow chart and state diagram conversion to Ladder Diagram - SCADA and HMI interfaces - DCS Systems.
- b. Prerequisite: ME593
- c. Designation: Required

Specific goals for the course:

- An ability to apply knowledge of mathematics, science, and engineering.
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- An ability to identify, formulate, and solve engineering problems.
- An ability to use the techniques, skills, and modern engineering tools necessary for Mechanical engineering practice.

Course instruction outcomes:

- The students will be able to Understand the basic principles of Industrial and Power Electronics systems,
- The students will be familiar with the basic electrical machines and machine control
- The students will be familiar with the Automation, Relay Logic, PLCs, and the sensors, amplifiers, conditioning circuits, and actuators

Topics Covered:

- Introduction and overview.
- Introduction to Programmable Logic Controllers
- Relay Logic
- PLC Basics - Hardware Architectures

- Bit Logic
- Ladder Diagram
- Timers/Counters
- Flow chart and state diagram conversion to Ladder Diagram
- SCADA and HMI interfaces
- DCS Systems

Course / credit hours	Math & Basic Sciences	Engineering Topics	General Education
Automation Of Mechanical System /3		3	