

EE 548- Design of Electrical and Electromechanical Systems for Commercial and Industrial Installations

CREDIT HOURS

3 Hours

CONTACT HOURS (Hours/week)

Lecture: 2; Tutorial: 2

COURSE COORDINATOR

Dr Rania El Sharkawy

TEXT BOOK:

C. Shelton, "Electrical Installations", Longman Group, latest edition.

COURSE DESCRIPTION:

Determination of loads and Load Characteristics. Design of Industrial and Commercial Distribution Systems. Factors affecting selection of circuit arrangements, Systems, Equipment and Facilities required to satisfy functional requirements, System protection Equipment and coordination. Wiring systems: Cables and bus ways, Controllers and motor control centers. Power factor and power factor improvement. Emergency and standby power systems. Effects of special loads, on supply voltage, Electric arc furnaces, convertors motors. Lighting. Heating and Air-conditioning. Lifts and escalators. Grounding. Electrical safety: Fire alarm systems. Codes and Standards. Energy management.

PREREQUISITE:

EE442

RELATION OF COURSE TO PROGRAM:

Elective

COURSE INSTRUCTION OUTCOMES:

The student is introduced to the general and special design requirements in industrial and commercial installations, in order to use standards and codes of general and special design requirements in commercial and industrial applications.

TOPICS COVERED:

- Characteristics of industrial & commercial loads.
- Selection of distribution system and wiring systems.
- System protection and coordination.
- Controllers and MCC.

- Power factor correction.
- Lighting, HVAC, Lifts and escalators.
- Grounding, Special Loads.
- Safety and Fire Alarm Safety.
- Codes and Standards

CONTRIBUTION OF COURSE TO MEET THE REQUIREMENTS OF CRITERION 5:

Professional Component Content			
Math and Basic Sciences	Engineering Topics	General Education	Engineering Design
	✓	✓	✓

RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:

Student Outcomes		Course Outcomes
a.	An ability to apply knowledge of mathematics, science, and engineering.	
b.	An ability to design and conduct experiments, analyze and interpret data.	
c.	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.	✓
d.	An ability to function on multi-disciplinary teams.	
e.	An ability to identify, formulate, and solve engineering problems.	✓
f.	An understanding of professional and ethical responsibility.	
g.	An ability to communicate effectively.	
h.	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal content	
i.	A recognition of the need for, and an ability to engage in life-long learning.	
j.	A knowledge of contemporary issues within and outside the electrical engineering profession.	
k.	An ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.	✓