

EE 543- Electrical Power Distribution

CREDIT HOURS

3 Hours

CONTACT HOURS (Hours/week)

Lecture: 2; Tutorial: 2

COURSE COORDINATOR

Dr Rania El Sharkawy

TEXT BOOK:

W. Kersting, "Distribution System Modeling & Analysis", latest edition

COURSE DESCRIPTION:

Distribution substation service areas. Distribution configurations. primaries design. secondary design. Voltage profiles and regulators. O.H.T.L. and equipment's. Types of power transformers O.H.T.L. and equipment's. Types of regulators. Underground distribution lines and switch gear. Design of dis. Substation Underground distribution lines and switchgear. Design of service area. Capacitors design and reactive power compensation. Power factor definitions. Capacitors and reactive power compensation. Methods of improving power factor. Capacitors and reactive power compensation. Sizing and locating of power factor compensators. Motor control centers. Distribution substation operation.

PREREQUISITE:

EE441

RELATION OF COURSE TO PROGRAM:

Elective

COURSE INSTRUCTION OUTCOMES:

The student is capable of selecting and designing the best configuration for a distribution system using different components of distribution substations. The student is also capable of investigating the performance of distribution system under different loading conditions and the effect of power factor improvement on the distribution system.

TOPICS COVERED:

- Distribution system elements and configuration.
- Voltage profile and regulation
- Over head transmission line and equipment.
- Type of regulators.
- Distribution substation design and load distribution.

- Service area of distribution substation
- Power factor corrections.
- Motor control center.
- Operation of distribution substation

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.	✓