

EE 542- Electrical Power Stations

CREDIT HOURS

3 Hours

CONTACT HOURS (Hours/week)

Lecture: 2; Tutorial: 2

COURSE COORDINATOR

Dr Rania El Sharkawy

TEXT BOOK:

W. Woolenbug, "Power Generation, Operation and Control", J. Willey, USA, , latest edition.

COURSE DESCRIPTION:

Introduction to power stations. Loads and load curves. Power plant economies-Tariffs and power factor improvements. Selection of plants. Types of power stations: Gas turbines, thermal, hydro, steam and nuclear power stations. Hydrothermal coordination. Parallel operation of alternators. Major electrical equipments in power plants. System inter connections. New energy sources.

PREREQUISITE:

EE442

RELATION OF COURSE TO PROGRAM:

Elective

COURSE INSTRUCTION OUTCOMES:

The student gains fundamental knowledge required for the understanding of the construction of different power stations and power substation, the economies of power generation, the procedures of power stations selection and get acquainted with major electrical equipments in power plants.

TOPICS COVERED:

- Types of power stations and substations.
- Design of substations, potential definition and calculation.
- Earthing of power and substation, interlocking principles.
- Emergency system for power station.
- Economics, tariffs and SCADA systems

**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.	✓