

EE 544- Power Systems 3

CREDIT HOURS

3 Hours

CONTACT HOURS (Hours/week)

Lecture: 2; Tutorial: 2

COURSE COORDINATOR

Dr Rania El Sharkawy

TEXT BOOK:

W. and B. Wollenberg, "Power generation, operation and control", John Wiley, latest edition.

COURSE DESCRIPTION:

The concept of reliability. Components reliability-reliable and non-reliable systems. State-space method and system reliability calculations. Load forecasting and load classifications. New approach used in load forecasting. Economic dispatch of thermal units. Methods of solution of dispatching problem. Unit commitment problem. SCADA systems. Harmonics and its disadvantages. Design of harmonics filters. Distributing loads. Neural networks definition. Types of neural networks. Applications of neural networks on power systems

PREREQUISITE:

EE441

RELATION OF COURSE TO PROGRAM:

Elective

COURSE INSTRUCTION OUTCOMES:

The student is introduced to more advanced and up-to-date topics in electric power systems, mainly: Reliability, Load Forecasting, economic dispatching, SCADA, and harmonics.

TOPICS COVERED:

- Reliability.
- Load forecasting.
- Economic dispatch.
- Unit commitment.
- SCADA.
- Harmonics and filters. Distributing loads

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.	✓