

EE 342- Power System I

CREDIT HOURS

3 Hours

CONTACT HOURS (Hours/week)

Lecture: 2; Tutorial: 2

COURSE COORDINATOR

Dr Rania El Sharkawy

TEXT BOOK:

H. Sadat "Power System Analysis", Mc Graw Hill, Latest edition

COURSE DESCRIPTION:

Single line diagram of power system. The per unit system. Bus admittance matrix. Bus impedance matrix. Power flow equations. Gauss- Seidel power flow solution. Newton Raphson power flow solution. Synchronous generator for power control. Tap changing transformers. Non linear function optimization. Economic dispatch neglecting losses and no generator limits. Economic dispatch neglecting losses and including generator limits. Economic dispatch including losses.

PREREQUISITE:

EE 341

RELATION OF COURSE TO PROGRAM:

Required

COURSE INSTRUCTION OUTCOMES:

The student is capable of using different methods of power systems analysis and design.

TOPICS COVERED:

- The per unit system.
- Numerical Iterative methods for power flow analysis; Gauss Siedel and
- Newton Raphson methods.
- Synchronous generator for power control.
- Tap changing transformers.
- Different methods of optimal dispatch of thermal generation

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.	✓