EE341 Power System Analysis

Course Objectives:

1- Understanding the fundamentals of both normal and abnormal operations of power systems.
2- Analyzing the normal operation through power flow calculations.
3- Analyzing the abnormal operation through symmetrical fault, symmetrical components and stability calculations.

Course Topics:

1- Power system incidence matrices 2- Power flow 3- Symmetrical faults
4- Symmetrical components 5- Power system Stability

Course Schedule:

week	Topics	Text Book
1	Bus admittance and bus impedance matrices	6.4
2	Power flow problem	6.4
3	Gauss-Seidel power-flow solution	6.2 & 6.5
4	Newton-Raphson power-flow solution	6.3 & 6.6
5	Fast decoupled solution , Sparsity techniques	6.9 & 6.8
6	System modeling under fault conditions	7.1, 7.2 & 7.3
7	Fault calculation using Zbus. Circuit breaker selection	7.4 & 7.5
8	Definition of symmetrical components, Sequence networks of loads	8.1, 8.2
9	Sequence networks of series impedances, Sequence networks of machines	8.3, 8.5
10	Sequence networks of transformers	8.6
11	Stability problem. Swing equation. Machine model.	13.1 & 13.2
12	Power angle equation. Equal area criterion.	13.3
13	Step-by-step solution of swing equation.	13.4
14	Stability of multi-machine system	13.5

Text Book : J.D. Glover & M Sarma, "Power system analysis and Design", 3rd edition, PWS Publishing, 2002.

Grading Policy

Mid-Term I: Tuesday 15/9/26 (9:30 PM)	20 %
Mid-Term II: Sunday 9/11/25 (5:30 PM)	20 %
Tutorial &Home Works	10 %
Lectures attendance & PowerWorld HW	10 %
Final Exam	40 %
Total	100 %

Instructor

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