In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No : EEE F312

Course Title : Power Systems

Instructor-in-charge : Rajneesh Kumar

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1. Scope and objective:
   This course aims at introducing the students to the basic features of the modern power systems, analysis and operation under steady state and transient conditions. Students will be also familiar with Power system related simulation tools.

2. Course description:
   Modeling of the transmission lines (short, medium and long) generator and transformer, load flow studies optimal operation, symmetrical and unsymmetrical fault analysis, protection, circuit breaker, HVDC transmission, distribution system and recent advances in power system;

3. Text Book:
   1. Grainger J. John,Stevension W.D. Jr. “Power System Analysis” International Edition, TMH, 1994.
4. Reference material:
   Provided during the lecture

5. Course Plan:

Lecture No.	Learning objective	Topic to be covered	Reference
1-3	Introduction/Basic concepts	A perspective/complex power, per unit, one line diagram	1.1-1.15
4-8	Transformers and Synchronous machines	Three phase transformers: phase shift and equivalent circuits, tap changing and regulating transformers, three phase generation, synchronous reactance and equivalent circuits, real and reactive powers	2.5to 2.9 3.1-3.9

9-13	Series impedance of transmission line and capacitance of transmission line	Inductance and capacitance calculations for double circuit bundle conductors resistance, skin & proximity effect	4.1-4.12 5.1-5.9
14-18	Current and voltage relations on a transmission line	Short, medium and long transmission line	6.1-6.13
19-24	The admittance and impdedance model of network calculations	Branch and node admittances, impedance matrix,$Y_{bus}Z_{bus}$	7.1-7.7 8.1-8.7
25-28	Power flow solutions	Power flow problem, Gauss-Siedel method, Newton Raphson method	9.1-9.7
29-35	Symmetrical faults, symmetrical components and sequence networks, unsymmetrical faults	Fault calculations, sequence circuits SLG, SLL DLG faults	10.1-10.3 11.1-11.10 12.1-12.6
36-37	Economic operation of power systems	Load distribution and transfer	13.1-13.8
38-40	Power system stability	The stability problem, equal area criterion	15.1-15.5

Evaluation Scheme:

1. **Mid-sem test (30%) close book,** 16/3 9:00 - 10:30 AM
2. **Assignments/quiz(25%) open book**
3. **Comprehensive exam(45%) close book,** 7/5 FN

Chamber consultation Hours: To be announced in the class.

Course Notices: Noticeswill be displayed on EEE notice board.

Make-up Examination: It will be given on extremely genuine grounds only. Prior application and approval should be making for seeking this.

Instructor-In-Charge

EEE F312.