EEPC2T1   **POWER SYSTEM DYNAMICS & STABILITY**   **Credits: 4**

Lecture: 4 periods/week   **Internal assessment: 30 marks**
                                                               Semester end examination: 70 marks
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Objective:
This subject deals with modeling of synchronous machine, loads, induction motor, excitation and governor system. It gives the concept of stability digital simulation of transient stability and concept of multi machine stability and also gives the detailed study different types of excitation system.

Learning outcomes:
1. Understand the modeling of synchronous machine, loads, induction motor, excitation and governor system
2. Understand the stability when synchronous machine connected to infinite bus and digital simulation of transient stability.
3. Understand the concept of multi machine stability
4. To be familiarize with different type of excitation system

Unit 1 : System Dynamics : Synchronous machine model in state space form , computer representation for excitation and governor systems –modelling of loads and induction machines.

Unit 2 : Stability – steady state stability limit – Dynamic Stability limit – Dynamic stability analysis.

Unit 3 : State space representation of synchronous machine connected to infinite bus, Time response – Stability by eigen value approach.

Unit 4 : Digital Simulation of Transient Stability : Swing equation, Machine equations

Unit 5 : Concept of Multimachine Stability, Multimachine Transient Stability Under Different Faulted Conditions.

Unit 6 : Effect of governor action and exciter on power system stability. Effect of saturation, saliency & automatic voltage regulators on stability.

Unit 7 : Excitation Systems : Rotating Self-excited Exciter with direct acting Rheostatic type, voltage regulator – Rotating main and Pilot Exciters with Indirect Acting Rheostatic Type Voltage Regulator.

Unit 8 : Rotating Main Exciter, Rotating Amplifier and Static Voltage Regulator – Static excitation scheme – Brushless excitation system.

Reference Books :
1. Power System control and Stability by Prabha kundur.
2. Power System Stability by Kimbark Vol. I&II, III – 1968, Dover Publication Inc, New York 1968.
3. Power System control and stability by Anderson and Foud, Vol – I, P.M.Arolerson & A.A.foud, Galgotia Publications 3B/12, Uttari marg Rajunder Nagar, New Delhi – 110060, 1981, 1 st edition.
4. Power System Dynamics Stability and Control by K.R.Padiyar, Second edition B.S.Publications 2002.
5. Computer Applications to Power Systems–Glenn.W.Stagg &   Ahmed. H.El.Abiad
6. Power Systems Analysis & Stability – S.S.Vadhera   Khanna Publishers.

7. Power System Analysis by "Hadi Saadat" – Tata McGraw Hill Publications
8. Power System Analysis by John J.Graniger William D.Stevenson. JR. – Tata McGraw Hill Publications.