E4231 Aug 3:0

Power system dynamics and control

Instructor

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Teaching Assistant

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Department: Electrical Engineering

Course Time: Tuesday,Thursday:11.30-1 PM

Lecture venue: Room No.303, Dept of Electrical Engineering

Detailed Course Page:

Announcements

Brief description of the course

This course is a basic course for understanding Dynamic modelling of synchronous machines and associated governor, turbine and excitation system modelling.This course can be taken by any master students, who want to develop indepth knowledge of modelling & control of large power systems.

Prerequisites

None

Syllabus

Introduction to system dynamics

concepts of stability, modeling of generator,

transmission networks, loads and control equipment

small signal stability, low frequency oscillations

methods of analysis for single and multi-machine systems

power system stabilizers.

Course outcomes

Students will learn development of various types of models used for synchronous machines, Hydro & steam turbine, governors & excitation systems. Students will get the ability to simulate these models using numerical methods in basic programming languages like C, C++ or fortran. Get knowledge of Transient & small signal stability assessment methods for large power systems.Will get the knowledge of developing various stability controls for Power Systems.Through the project each student will learn various advances in Power Systems Dynamic modelling & Control by implementing 50% results of a reputed journal paper (IEEE Transactions on Power Systems). This gives the ability of doing literature review, understanding technical paper & ability to get the required concepts & tools for paper implementation. This gives a good research training.

Grading policy

Assignments - 10%

Coding exercise - 20%

Best of two Internal Tests - 15%

Internal Project Presentation - 5%

External Test - 25%

Final Project - 25%

Assignments

Resources

Padiyar K R, Power System Dynamics, Stability and Control, Interline Publishing, 1996.
Machowski J, Bialek J W, and Bumby J R, Power System Dynamics and Stability, John Wiley and Sons, 1997.
Prabha Kundur, Power System Stability and Control, Tata McGraw Hill Edn, 2006.
Current Literature.