



ELECTRICAL ENGINEERING

POWER SYSTEM DYNAMICS, CONTROL AND MONITORING



PROF. DEBAPRIYA DAS

Department of Electrical Engineering
IIT Kharagpur

TYPE OF COURSE : New| Core | UG/PG

INTENDED AUDIENCE : Electrical Engineering

PRE-REQUISITES : Power System Analysis (UG)

COURSE DURATION : 12 weeks (28 Jan'19-19 Apr'19)

EXAM DATE : 28 April 2019

INDUSTRIES APPLICABLE TO : NTPC, DVC, BHEL, Powergrid, NHPC

COURSE OUTLINE :

This course is both for undergraduate and postgraduate Electrical Engineering students. This course will introduce and explain the concepts of synchronous machine modeling, reference frame transformation, automatic voltage regulation, power system stabilizer, transient stability for multimachine system, automatic generation control under deregulated environment, state estimation, eigenvalue and participation factor analysis. By the end of the course, the students should be able to gather high-quality knowledge on stability, operation and control of power systems.

ABOUT INSTRUCTOR :

Debapriya Das obtained his B.E. degree from Calcutta University (B.E. College (Presently known as IEST), Shibpur, Howrah, WB), M.Tech. from I.I.T. Kharagpur and Ph.D. from I.I.T., Delhi. He has nearly thirty years of experience in teaching and research. For more information, one can visit his I.I.T KGP website. or <https://scholar.google.co.in/citations?user=yZj2uFYAAAAJ>.

COURSE PLAN :

Week 01 : Basic concepts of power system stability and synchronous machine

Week 02 : Synchronous machine modeling

Week 03 : Synchronous machine modeling in d-q reference frame

Week 04 : Per unit system for Synchronous machine

Week 05 : Steady state analysis : Voltage, current and flux linkage relationships

Week 06 : Generator representation by classical model, swing equation and block diagram development

Week 07 : Automatic voltage regulator (AVR) and Power system stabilizer (PSS)

Week 08 : Eigenvalue and participation factor analysis

Week 09 : Transient stability analysis

Week 10 : AGC under deregulated environment

Week 11 : AGC under deregulated environment

Week 12 : State Estimation