COMPUTER AIDED POWER SYSTEM ANALYSIS

ELECTRICAL ENGINEERING

PROF. BISWARUP DAS
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TYPE OF COURSE : Rerun | Elective | UG/PG
INTENDED AUDIENCE : BE/ME(EE/EC/EI)
PRE-REQUISITES : 2nd year/third year of B.Tech EE

COURSE DURATION : 12 weeks (20 Jul’20 - 9 Oct’20)
EXAM DATE : 17 October 2020

INDUSTRIES APPLICABLE TO : PGCIL, NHPC, all state power transmission companies

COURSE OUTLINE :

This course introduces the computational aspects of the power system analysis. The thrust of this course is description of the computer algorithms for analysis of any general power transmission system. Starting with load flow analysis, which is essentially the backbone of any power system analysis tool, this course further deals with computer algorithms for contingency analysis, state estimation and phase domain fault analysis method of any general power transmission system.

ABOUT INSTRUCTOR :

Dr. Biswarup Das has obtained his Ph.D from IIT Kanpur. He is presently a Professor with the Electrical Engineering Department, Indian Institute of Technology, Roorkee, India. His general area of teaching and research is Electrical power system.

COURSE PLAN :

Week 01 : Review of modeling of power system components and formulation of YBUS matrix
Week 02 : Basic power flow equations and Gauss-Seidel load flow method
Week 03 : Newton-Raphson load flow in polar co-ordinate
Week 04 : Newton-Raphson load flow in rectangular co-ordinate and introduction to Fast Decoupled load flow method
Week 05 : Fast Decoupled load flow method and AC-DC load flow method
Week 06 : Sparsity and optimal ordering methods
Week 07 : LU decomposition and contingency analysis
Week 08 : Line outage sensitivity factor and method of least square
Week 09 : Method of least square (contd.) and Introduction to AC state estimation
Week 10 : AC state estimation (contd.) and test for bad data detection
Week 11 : Formulation of YBUS matrix of three phase unbalanced system
Week 12 : Fault analysis in phase domain