POWER SYSTEM ANALYSIS

PROF. DEBAPRIYA DAS
Department of Electrical Engineering
IIT Kharagpur

INTENDED AUDIENCE : BE/B.Tech. in Electrical Engineering

INDUSTRIES APPLICABLE TO : Power Grid - NTPC - NHEC - DVC and State Electricity Boards.

COURSE OUTLINE :

This course is mainly for undergraduate third-year Electrical Engineering students, which will introduce and explain the fundamental concepts in the field of electrical power system engineering. The basic concepts of per unit system will be introduced along with their applications in circuit applications. Transmission line parameters, their calculations, and the modeling will be introduced. Basic load flow algorithms will be covered in details along with short-circuit analysis and the method of symmetrical components. Unbalanced fault analysis and basic power system stability analysis will also be covered in these lecture series. By the end of the course, the students should be able to gather high-quality knowledge of electrical power system components, its operation strategies, and stability analysis.

ABOUT INSTRUCTOR :

Prof. Debapriya Das obtained his B.E. degree from Calcutta University (B.E. College (Presently known as IIEST), Shibpur, Howrah, WB), M.Tech. from I.I.T. Kharagpur and Ph.D. from IIT Delhi. He has nearly thirty years of experience in teaching and research. For more information, one can visit his IIT Kharagpur website as well as his personal website www.ddas.co.in/. One can also visit the website https://scholar.google.co.in/citations?user=yZj2uFYAAAAJ.

COURSE PLAN :

Week 01 : Structure Of Power System and Few Other Aspects

Week 02 : Resistance, Inductance, and Capacitance of Transmission Lines

Week 03 : Power System Components and Per Unit System

Week 04 : Characteristics and Performance of Transmission Lines

Week 05 : Load Flow Analysis

Week 06 : Load Flow Analysis (Contd.)

Week 07 : Optimal System Operation

Week 08 : Optimal System Operation (Contd.)

Week 09 : Symmetrical Fault

Week 10 : Symmetrical Components

Week 11 : Unbalanced Fault Analysis

Week 12 : Power System Stability