



FUNDAMENTALS OF ELECTRICAL ENGINEERING

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Department of Electrical Engineering
IIT Kharagpur

INTENDED AUDIENCE : Power Grid, NTPC, NHEC, DVC and State Electricity Boards. In general, this basic course is for all engineering professionals.

INDUSTRIES SUPPORT : Power Grid, NTPC, NHEC, DVC and State Electricity Boards. In general, this basic course is for all engineering professionals.

COURSE OUTLINE :

This course is mainly for undergraduate First-Year Engineering students from all Specializations. This course will introduce and explain the fundamental concepts of basic electrical engineering. The basic concepts of DC and AC (Single Phase and Three Phase Circuits) network analysis, first order DC transients, steady state and phasor analysis of AC networks, series and parallel resonance and magnetic coupled circuits. This course will also cover Single Phase Transformers, Three Phase Induction Machines and DC Machines. By the end of the course, the students should be able to gather high-quality knowledge of basic Electrical Engineering.

ABOUT INSTRUCTOR :

Prof. 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 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 : Basic Concepts and Basic Laws

Week 02 : Methods of Analysis

Week 03 : DC Network Theorems

Week 04 : Capacitors and Inductors and First Order Circuits

Week 05 : Sinusoidal and Phasors

Week 06 : Sinusoidal Steady-State Analysis

Week 07 : AC Circuit Analysis and Network Theorems

Week 08 : Series and Parallel Resonance and Magnetically Coupled Circuits.

Week 09 : Three Phase Circuits and Power Measurements

Week 10 : Single Phase Transformers

Week 11 : Three Phase Induction Machines

Week 12 : DC Machines