
ESO203T – INTRODUCTION TO ELECTRICAL ENGINEERING

Instructor:

Dr. Ankush Sharma

ACES 103, Dept. of E.E.

Email: ansharma@iitk.ac.in

Contact – 0512 259 2012

OBJECTIVE

THIS COURSE AIMS AT THE BASICS OF CIRCUIT ANALYSIS FOR AC CIRCUITS, AND INTRODUCE THE PRINCIPLES OF TRANSFORMER, AC MACHINES, AND DC MACHINES

COURSE CONTENT

Topic	Lecture Names
1	Introduction, Single-Phase Circuits, Power Calculations, Analysis of 3-Phase Circuits, Mutually Coupled Circuits
2	Transformers: Magnetic Circuits, Equivalent Circuit and Performance
3	Direct-Current Machines: Construction, Equivalent Circuit, Torque-Speed Characteristics, Applications
4	Induction Machines: Construction, Equivalent Circuit, Torque-speed characteristics, Speed Control, Starting, Applications
5	Synchronous Machines: Construction, Equivalent Circuit, Generator & Motor Operation, Power Angle Characteristics, Hunting, Pull-Out
6	Special Topics: Stepper Motors, Principles of Industrial Power Distribution

Reference books

- Fundamentals of electric circuits, Alexander and Sadiku
- Introductory Circuit Analysis, R. L. Boylestad
- Electric machinery fundamentals, Stephen J Chapman
- Electric Machinery, A. E. Fitzgerald, Charles Kingsley Jr., Stephen D. Umans
- Engineering Circuit Analysis, Hayt, Kemmerly and Durbin
- Principles and applications of electrical engineering, Giorgio Rizzoni

LECTURES

- Recorded lectures will be uploaded every week on hello.iitk.ac.in
- Online Zoom session will be on every Wednesday 12-1 PM to clear doubts
- Tutorials on every Friday via Zoom between 17:15 – 18:15 PM
- Tutorials may include quizzes every Friday, so be attentive and regular in tutorials

EVALUATION SCHEME

Item	Weightage
Mid Semester Exam	20%
End Semester Exam	30%
Quizzes and Assignments	50%

Please note that –

- All exams, including quizzes, are compulsory.
- Missing the End Sem exam will lead to an Incomplete (I) grade in the course.
- The grade (I) will be converted to a suitable grade if the absentee takes the Make-up End Sem exam after suitable permission(s) from the required authority.
- In case the absentee does not appear for the Make-up End Sem for whatsoever reason, the grade (I) will be converted to grade (F).
- For any difficulty in accessing online contents, contact the Remote Teaching Cell (RTC) of EE Dept.