



INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI

भारतीय प्रौद्योगिकी संस्थान तिरुपति

Yerpedu-Venkatagiri Road, Yerpedu Post, Tirupati District, Andhra Pradesh - 517 619

1.	Title of the course	Introduction to Electrical Systems
2.	Course number	ES106L
3.	Structure of credits (L-T-P-C)	2-0-0-2
4.	New course/modification to	New
5.	To be offered by	Electrical Engineering
6.	Prerequisite	None
7.	Course Objective(s): To discuss the concepts that are essential for designing and analysing electrical systems. To understand the construction and working principles of electrical systems.	
8.	Course Content: Circuit elements and laws: resistors, inductors, capacitors, ideal and practical voltage and current sources, circuit laws, series and parallel connections, DC circuit analysis: mesh analysis, nodal analysis, Thevenin's and Norton's theorem, source conversion, superposition theorem, maximum power transfer theorem, AC circuit analysis: sinusoids and phasors, AC power analysis, measurement of power, concept of reactive power, power factor improvement, magnetic circuits, Introduction to electrical machines: DC machines and transformers.	
9.	Textbook(s): 1. Alexander C K and Sadiku M N O, Fundamentals of Electrical Circuits, 7th Edition, McGraw Hill Education (2022). 2. Hambley A R, Electrical Engineering: Principles and Applications, 7th Edition, Pearson Education (2018).	
10.	Reference(s): 1. Nagrath I J and Kothari D P, Electric Machines, 5th Edition, McGraw Hill Education (2017). 2. Hayt W H, Kemmerly J E and Durbin S M, Engineering Circuit Analysis, 9th Edition, McGraw Hill Education (2020). 3. Del Toro V, Electrical Engineering Fundamentals, 2nd Edition, Pearson Education (2015). 4. Singh S N, Basic Electrical Engineering, PHI Learning (2010).	