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	Electrical Circuits and Networks
2.	Course number	EE213L
3.	Structure of credits (L-T-P-C)	3-1-0-4
4.	New course/modification to	Modified with EE201L/ELECTRICAL CIRCUITS AND NETWORKS
5.	To be offered by	Electrical Engineering
6.	Proposed by	V Vignesh
7.	Prerequisite	None
8.	**Course Objective(s):** To discuss the fundamental methods required for the analysis of electrical circuits and networks. To illustrate various electrical network theorems and discuss the methods for the steady-state and transient analysis of electrical networks. To introduce the methods of analysis of AC circuits and to propose advanced circuit analysis methods.	
9.	**Course Content:** Review of DC circuit analysis methods: voltage and current laws, nodal and mesh analysis, concepts of linearity and superposition, circuit theorems; Capacitors and inductors; Basic RL, RC, RLC transients; AC circuits: sinusoids and phasors, sinusoidal steady state analysis, AC power analysis; 3-phase circuits, magnetically coupled circuits; Concept of resonance; Frequency response; Circuit analysis in S domain: concept of complex frequency, review of Laplace transforms and inverse Laplace transforms, properties of Laplace transforms, convolution, nodal and mesh analysis in S domain, transfer functions, state variable method of circuit analysis; Fourier circuit analysis; Two-port networks: admittance, impedance, transmission and hybrid parameters.	
10.	**Textbook(s):** 1. Alexander C K and Sadiku M N O, Fundamentals of Electric Circuits, 7th Edition, McGraw Hill Education (2022). 2. Hayt W H, Kemmerly J and Durbin S M, Engineering Circuit Analysis, 10th Edition, McGraw Hill Education (2023).	
11.	**Reference(s):** 1. Kuo F F, Network Analysis and Synthesis, 2nd Edition, Wiley (2006). 2. Valkenburg M E V, Network Analysis, 3rd Edition, Pearson Education (2019).	