



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad – 500043

Electrical and Electronics Engineering

List of Laboratory Experiments

ELECTRICAL CIRCUITS LABORATORY								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AEED04	Foundation	L	T	P	C	CIA	SEE	Total
		0	0	2	1	40	60	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 45			Total Classes:45			
Branch: EEE	Semester: I	Academic Year: 2023-24			Regulation: BT23			
Course overview:								
<p>The course is designed to provide students with hands-on experience and practical skills in the field of electrical engineering. The course serves as a complement to theoretical concepts learned in the concurrent electrical circuits course. Through a series of structured experiments, students gain an in-depth understanding of fundamental electrical circuits, components, measurement techniques, and troubleshooting procedures.</p>								
Course objectives:								
<p>I. The gap between theoretical knowledge and practical applications by exposing students to a wide range of electrical components and circuit configurations.</p> <p>II. The essential skills in circuit design, measurement, testing, and analysis using laboratory equipment such as multimeters, and power supplies.</p> <p>III. The basic laws, network reduction techniques and theorems for different circuits.</p>								
Course outcomes:								
<p>CO1: Solve the source resistance, currents, voltage and power using various laws associated with electrical circuits</p> <p>CO2: Analyze the alternating quantities for different periodic waveforms.</p> <p>CO3: Perform the superposition principle, reciprocity and maximum power transfer condition for the electrical network with DC excitation.</p> <p>CO4: Demonstrate Thevenin's and Norton's theorems to reduce complex networks into simple equivalent networks with DC excitation.</p> <p>CO5: Apply Faraday's laws of electromagnetic induction for calculating the various performance parameters in magnetic circuits.</p> <p>CO6: Make use of two port network parameters for enumerating the symmetry, reciprocity, internal voltages and currents in the various electrical circuits.</p>								
WEEK NO	EXPERIMENT NAME							CO
WEEK – I	OHM'S LAW							CO1
	Verification of Ohm's law.							
WEEK – II	KIRCHOFF'S CURRENT LAW AND VOLTAGE LAW							CO1
	Verification of Kirchhoff's current and voltage laws.							
WEEK – III	MESH ANALYSIS							CO1
	Determination of mesh currents in complex electrical circuit. .							
WEEK – IV	NODAL ANALYSIS							CO4
	Determination of nodal voltages in complex electrical circuit.							
WEEK – V	CHARACTERISTICS OF PERIODIC WAVEFORMS							CO3
	Calculate Instantaneous, Peak, Peak to peak, Average and RMS values of periodic wave form.							
WEEK – VI	DETERMINATION OF CIRCUIT IMPEDANCE							CO3

	Find the impedance of series RL, RC and RLC circuits.	
WEEK – VII	THEVENIN’S THEOREM	CO4
	Determine load or unknown current using Thevenin’s equivalent circuit.	
WEEK –VIII	NORTON’S THEOREM	CO4
	Determine load or unknown current using Norton’s equivalent circuit.	
WEEK - IX	SUPERPOSITION THEOREM	CO4
	Verification of superposition theorem.	
WEEK - X	RECIPROACITY THEOREM	CO5
	Verification of reciprocity theorem.	
WEEK - XI	SERIES AND PARALLEL RESONANCE	CO6
	Verification of series and parallel resonance.	
WEEK - XII	MAXIMUM POWER TRANSFER THEOREM	CO6
	Verify of maximum power transfer theorem.	
WEEK - XIII	Z AND Y PARAMETERS	CO6
	Determine the open circuit and short circuit parameters for two port networks.	
WEEK - XIV	H AND ABCD PARAMETERS	CO6
	Determine the hybrid and transmission line parameters for two port networks.	