

Lesson Plan

Name of the Faculty : Komal

Discipline : ECE

Semester : 1st

Subject : Fundamentals of Electrical Engineering

Lesson plan duration : 16 weeks

Work Load (Lecture/Practical) per week (In hours): Lecture- 03, Practical -08

	Theory		Practical	
Week	Lecture Day	Topics (Including assignment/test)	Practical Day	Topic
1st	1st	Electrical Fundamentals Introduction to syllabus and importance of knowing fundamentals of Electrical Engineering.	1st	Familiarization of measuring instruments viz voltmeter, ammeter, CRO, Wattmeter and multi-meter and other accessories.
	2nd	Nature of Electricity, Charge, free electrons, Electric current, Electric potential and potential difference.	2nd	To measure (very low) resistance of an ammeter and (very high) resistance of a voltmeter.
	3rd	Electric current, Electrical Energy, Electrical power and their unit.	3rd	Familiarization of measuring instruments viz voltmeter, ammeter, CRO, Wattmeter and multi-meter and other accessories.
			4th	To measure (very low) resistance of an ammeter and (very high) resistance of a voltmeter.
2nd	1st	Resistance: Definition, Unit, Laws of resistance, conductivity and resistivity.	1st	To verify Ohm's law by drawing a graph between voltage and current.
	2nd	Effect of temperature on resistance, Temperature coefficient of resistance.	2nd	Practice of first three experiments, Viva-Voce
	3rd	Types of resistance & their applications, Color coding of resistance.	3rd	To verify Ohm's law by drawing a graph between voltage and current.
			4th	Practice of first three experiments, Viva-Voce
3rd	1st	Inductors and capacitors with their wattage consideration.	1st	To observe change in resistance of a bulb in hot and cold conditions, using voltmeter and ammeter.
	2nd	Factors affecting capacitance of a capacitor. Capacitors in series and parallel.	2nd	To determine the value of resistance using colour coding method
	3rd	DC Circuits & Theorems Ohm's law and its verification.	3rd	To observe change in resistance of a bulb in hot and cold conditions, using voltmeter and ammeter.
			4th	To determine the value of resistance using colour coding method

4th	1st	Kirchhoff's current law and Kirchhoff's voltage law.	1st	Verification of Kirchhoff's Current and Voltage Laws in a DC circuit on bread board.
	2nd	Star – Delta connections. Voltage and current source, symbol and graphical representation.	2nd	Verification of Thevenin's theorem.
	3rd	Characteristics of ideal and practical sources.	3rd	Verification of Kirchhoff's Current and Voltage Laws in a DC circuit on bread board.
			4th	Verification of Thevenin's theorem.
5th	1st	Mesh and Loop analysis.	1st	Verification of Norton's theorem.
	2nd	Thevenin's theorem, Norton's theorem.	2nd	Verification of Superposition theorem.
	3rd	Superposition Theorem, Maximum Power Transfer Theorem.	3rd	Verification of Norton's theorem.
			4th	Verification of Superposition theorem.
6th	1st	Revision of Unit 1 and 2.	1st	Verification of Maximum Power theorem.
	2nd	AC Circuits AC Fundamentals: Cycle, frequency, time period, amplitude, difference between AC and DC.	2nd	Alternating voltage applied to resistance and inductance, resistance and capacitance in series.
	3rd	Instantaneous value, average value, r.m.s. value, maximum value, form factor and peak factor.	3rd	Verification of Maximum Power theorem.
			4th	Alternating voltage applied to resistance and inductance, resistance and capacitance in series.
7th	1st	Concept of conductance, susceptance, admittance.	1st	Revision and Viva-Voce
	2nd	Impedance and concept of inductive and capacitive reactance.	2nd	Revision and Viva
	3rd	RL-RC Circuits	3rd	Revision and Viva
			4th	Revision and Viva
8th	1st	Introduction to series and parallel resonance and its conditions.	1st	To find the voltage current relationship in a single phase R-L circuits and draw their impedance triangles.
	2nd	Power in pure resistance, inductance and capacitance.	2nd	Measurement of power and power factor in a single phase R,L,C. circuit
	3rd	Power in combined RLC circuits.	3rd	To find the voltage current relationship in a single R-C Series circuits, and draw their impedance triangles.
			4th	Measurement of power and power factor in a single phase R,L,C. circuit
9th	1st	Power factor, active and reactive power: Definition and their significance.	1st	Calculation of active and reactive powers in the circuit.
	2nd	Revision of Unit 3	2nd	Calculation of active and reactive powers in the circuit.
	3rd	Electro Magnetic Circuit Concept of electro-magnetic field produced by flow of electric current.	3rd	Calculation of active and reactive powers in the circuit.
			4th	Calculation of active and reactive powers in the circuit.
10th	1st	Magnetic circuit, concept of magneto-motive force (MMF).	1st	To test a lead - acid storage battery and measure its specific gravity.

	2nd	Flux, reluctance, permeability.	2nd	Care and maintenance of lead-acid battery.
	3rd	analogy between electric and magnetic circuit.	3rd	To test a lead - acid storage battery and measure its specific gravity.
			4th	Care and maintenance of lead-acid battery.
11th	1st	Faraday's laws of electro-magnetic induction.	1st	Revision and Viva
	2nd	Principles of self and mutual induction.	2nd	Revision and Viva
	3rd	Self and mutually induced emf.	3rd	Revision and Viva
			4th	Revision and Viva
12th	1st	Energy stored in an inductor, series and parallel combination of inductors.	1st	Visit to a nearby Power Station.
	2nd	Revision of Unit 4	2nd	Revision and Viva
	3rd	Batteries Basic idea of primary and secondary cells.	3rd	Visit to a nearby Power Station.
			4th	Revision and Viva
13th	1st	Construction, working principle and applications of Lead-Acid, Nickel-Cadmium, LiIon batteries.	1st	Practice
	2nd	Series and parallel connections of batteries.	2nd	Practice
	3rd	Introduction to maintenance of free batteries.	3rd	Practice
			4th	Practice
14th	1st	Disposal of batteries.	1st	Practice
	2nd	General idea of solar cells,.	2nd	Practice
	3rd	Solar panels and their applications.	3rd	Practice
			4th	Practice
15th	1st	Revision of Unit 5	1st	Practice and Viva-Voce
	2nd	Revision	2nd	Practice and Viva-Voce
	3rd	Revision	3rd	Practice and Viva-Voce
			4th	Practice and Viva-Voce
16th	1st	Revision of all syllabus	1st	Practice and Viva-Voce
	2nd	Revision	2nd	Practice and Viva-Voce
	3rd	Revision	3rd	Practice and Viva-Voce
			4th	Internal Practical