

## Lesson Plan

Name of Faculty		Sh. Mohan		
Discipline		Electrical Engineering		
Semester		First Semester		
Subject		PRINCIPLES OF ELECTRICAL ENGINEERING		
Lesson Plan Duration		From Sept.2023 to Jan 2024		
Work load (Theory + Practical) Per Week		[03+04G1+04G2]		
Week	Day	Theory Topic/ Assignment/ Test	Practical Day	Topics
1	1	<b>I Electrical Fundamentals</b> Nature of Electricity, Charge, free electrons, Electric potential and potential difference Electric current, Electrical Energy, Electrical power and their unit	Day1	Familiarization of basic components/equipment like ammeter, voltmeter, watt meter, resistance, capacitor,
	2	Resistance: Definition, Unit, Laws of resistance, conductivity and resistivity, Effect of temperature on resistance, Temperature coefficient of resistance	Day2	Inductor, energy meter, power factor meter, CRO, multi-meter etc and their operation, uses.
	3	Types of resistance & their applications, Color coding of resistance.		
2	1	Rating and wattages of Electrical appliances,	Day1	Determine the value of resistance using colour coding method.
	2	heating effect of Electrical current		
	3	Introduction to Capacitors, capacitance,.	Day2	Revision
3	1	Variable capacitor, Factors affecting capacitance of a capacitor	Day1	Observation of change in resistance of a bulb in hot
	2	Capacitance of parallel plate capacitor		
	3	Grouping of capacitors: capacitors in series, parallel, series-parallel.	Day2	and cold conditions, using voltmeter and ammeter
4	1	Energy stored in capacitor,	Day1	Revision
	2	Charging and discharging of a capacitor	Day2	Revision
	3	Class test /Assignment		
5	1	<b>II DC Circuits</b> , Ohm's law with practical implementation. Definition of DC circuit	Day1	To charge and discharge a capacitor and to show the graph on C.R.O
	2	types of DC circuits: series circuit, parallel circuit, seriesparallel circuit	Day2	Verification of laws of capacitors in series and parallel
	3	Concept of voltage source & current source, connections and their conversions		
6	1	Wheatstone Bridge. Kirchhoff's Laws-KVL and KCL.	Day1	To verify ohm's law by drawing a graph between voltage and current
	2	Star – Delta connections and their conversion		
	3	Class test /Assignment	Day2	Revision
7	1	<b>III Electrostatics &amp; Magneto statics</b> 3.1 Concepts of Electrostatics, Coulomb's law. 3.2 Concept of magnetism, Magnetic field, Magnetic lines of force	Day1	Revision
	2	Definition of Electromagnetism, magnetic effect of electric current, direction of magnetic field and current: right hand rule, right hand cork screw rule	Day2	Verification of Kirchhoff's Current Law in a dc circuit.
	3	Magnetic field due to circular coil, solenoid		

8	1	Current carrying conductors in a magnetic field and methods to find its direction, applications.	Day1	Verification of Kirchhoff's Voltage Laws in a dc circuit
	2	Force between two parallel current carrying conductors. Analogy between electric and magnetic circuit.	Day2	Measurement of current and voltage in series resistive circuit
	3	Definition of Magnetic circuit, terms related to magnetic circuits: magneto-motive force (MMF), flux, magnetic flux density, reluctance, permeability, field intensity, relation between magnetic flux density, permeability, field intensity.		
9	1	Class test /Assignment	Day1	Revision and file checking
	2	<b>IV Electro-Magnetic Induction</b> 4.1 Determination of Ampere Turns, Series & parallel magnetic circuits, Concept of magnetic leakage, useful flux & Air Gap.	Day2	Measurement of current and voltage in parallel resistive circuit.
	3	Magnetic curve (B-H curve) - cause of Hysteresis, Hysteresis loss		
10	1	Significance of Hysteresis loss, magnetic hysteresis loop for hard and soft magnetic materials.	Day1	Revision and file checking
	2	Faraday's laws of electro-magnetic induction. 4.4 Direction of Induced emf and current: Lenz's law,	Day2	To find the ratio of inductance of a coil having air-core and iron-core respectively and to observe the effect of introduction of a magnetic core on coil inductance.
	3	Fleming's right Hand rule, E.M.F induced in a conductor: Dynamically induced emf,		
11	1	Statically induced emf: Selfinduced emf and Mutual induced emf, Expression for self-inductance, mutual inductance.	Day1	Revision and file checking
	2	Energy stored in an Inductor, Eddy currents, Eddy current losses.	Day2	Verification of Faraday's law of electromagnetic induction
	3	<b>V Batteries</b> , Electrolysis, Faradays law of electrolysis,		
12	1	Important terms related to electrolysis, electroplating.	Day1	Revision and file checking
	2	Concept of Cell: definition, emf of cell, internal resistance of cell, terminal potential of cell,	Day2	Demonstration of parts of a battery and find the specific gravity of battery.
	3	Types of cell (primary and secondary cell),		
13	1	Grouping of cell (series grouping, parallel grouping, and series-parallel grouping).	Day1	Revision and file checking
	2	Concept of Battery: Definition, types of battery like Lead-Acid,	Day2	Revision and file checking
	3	Nickel-Cadmium, Lithium ion batteries with their Construction, working principle and applications.		
14	1	Charging methods of storage battery and charging indications.	Day1	Revision and file checking
	2	Characteristics of battery: voltage, capacity, efficiency,	Day2	
	3	Care and maintenance of battery		Revision and file checking
15	1	Introduction to maintenance free batteries. Disposal of batteries	Day1	Internal practical evaluation
	2	Class test /assignment 4th unit		
	3	Practice Paper	Day2	