

Govt. Polytechnic Nanakpur (Panchkula) Haryana

Lesson plan				
Name of Faculty		Gulvender		
Discipline		Electrical Engineering		
Semester		1ST		
Subject		Principles of Electrical Engineering		
Lesson Plan Duration		From 30/07/2026 to 23/11/2026		
Work load		[Theory + Practical] Per Week[03+04]		
Week	Theory		Practical	
	Lecture Day	Topic (Including assignment/test)	Practical	Topic
1 st	1 st	Nature of Electricity, Charge, free electrons, Electric potential and potential difference, Electric current, Electrical Energy, Electrical power and their unit	1 st	Familiarization of basic Components/equipment like ammeter, voltmeter, watt meter, resistance, capacitor, inductor, energy meter, power factor meter, CRO, multi-meter etc and their operation, uses ..
	2 nd	Resistance: Definition, Unit, Laws of resistance, conductivity and resistivity, Effect of temperature on resistance		
	3 rd	Temperature coefficient of resistance, Types of resistance & their applications, Color coding of resistance.		
2 nd	4 th	Rating and wattages of Electrical appliances, heating effect of Electrical current.		
	5 th	Introduction to Capacitors, capacitance, Variable capacitor, Factors affecting capacitance of a capacitor		
	6 th	Capacitance of parallel plate capacitor		
3 rd	7 th	Grouping of capacitors: capacitors in series, parallel, series-parallel	2 nd	Determine the value of resistance using colour coding method
	8 th	Energy stored in capacitor, Charging and discharging of a capacitor.		
	9 th	Ohm's law with practical implementation. Definition of DC circuit, types of DC circuits: series circuit, parallel circuit, seriesparallel circuit		
4 th	10 th	Concept of voltage source & current source, connections and their conversions.		
	11 th	Wheatstone Bridge. Kirchhoff's Laws-KVL and KCL		
	12 th	Star – Delta connections and their conversion.		
5 th	13 th	Revision of unit 2nd and problems to be discussed.	4 th	Observation of change in resistance of a bulb in hot and cold conditions, using voltmeter and ammeter
	14 th	Concepts of Electrostatics, Coulomb's law		
	15 th	Concept of magnetism, Magnetic field, Magnetic lines of force		
6 th	16 th	Magnetic field due to circular coil, solenoid,	5 th	Verification of laws of capacitors in series and parallel.
	17 th	Force between two parallel current carrying conductors. Analogy between electric		
		and magnetic circuit. Definition of Magnetic circuit, terms related to magnetic circuits:		
	18 th	magneto-motive force (MMF), flux, magnetic flux density, reluctance, permeability, field intensity, relation between magnetic flux density, permeability, field intensity		
7 th	19 th	Revision of unit 3rd and problems to be discussed.	6 th	To verify ohm's law by drawing a graph between voltage and current.
	20 th	Determination of Ampere Turns, Series & parallel magnetic circuits,		
	21	Concept of magnetic leakage, useful flux & Air Gap.		
8 th	22	Magnetic curve (B-H curve) - cause of Hysteresis, Hysteresis loss, significance of Hysteresis loss, magnetic hysteresis loop for hard and soft magnetic materials.		
	23	Faraday's laws of electro- magnetic induction.		
	24	Direction of Induced emf and current: Lenz's law, Fleming's right Hand rule		
9 th	25	E.M.F induced in a conductor: Dynamically induced emf, Statically induced emf: Self- induced emf and Mutual induced emf,	7 th , 8 th	Verification of Kirchhoff's Current Law in a dc circuit.
	26	Expression for self-inductance, mutual inductance.		
	27	Energy stored in an Inductor, Eddy currents, Eddy current losses.		
10 th	28	Revision of unit 4th and problems to be discussed.	8 th	Verification of Kirchhoff's Voltage /current Laws in a dc circuit.
	29	Electrolysis, Faradays law of electrolysis, important terms related to electrolysis, electroplating.		
	30	Concept of Cell: definition, emf of cell, internal resistance of cell, terminal potential of cell,		

11th	31	Types of cell (primary and secondary cell), grouping of cell (series grouping, parallel grouping, series-parallel)	9th,10th	Measurement of current and voltage in series/parallel resistive circuit.
	32	Concept of Battery: Definition, types of battery like Lead-Acid, Lithium ion batteries with their Construction, working principle and applications.		
	33	Nickel-Cadmium, Lithium ion batteries with their Construction, working principle and applications.		
12th	34	Condition for minimum distortion and minimum attenuation of signal on-the-line	11th	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.
	35	Charging methods of storage battery and charging indications.		
	36	Characteristics of battery: voltage, capacity, efficiency		
13th	37	Care and maintenance of battery		
	38	Introduction to Standing wave Ratio		
	39	Introduction to maintenance free batteries.		
14th	40	Disposal of batteries.	12th	Demonstration of parts of a battery and find the specific gravity of battery.
	41	Revision of unit 5th and problems to be discussed.		
	42	Rapid Revision of whole syllabus		
15th	43	Rapid Revision of whole syllabus		
	44	Rapid Revision of whole syllabus		
	45	Rapid Revision of whole syllabus		