GOVT. POLYTECHNIC MAYURBHANJ
LESSON PLAN

Discipline : Metallurgical Engineering	Semester: 2ND	Name of the Teaching Faculty : MANOJ KUMAR PRADHAN
Subject :	FUNDAMENTAL OF ELECTRICAL AND ELECTRONICS	
No. of Days / per week class allotted : 04	Semester From date : 04.02.2025	To Date : 17.05.2025

MONTH	Week	Day	UNIT	TOPICS
FEBRUARY	UNIT-1			Overview of Electronic Components & Signals
	Week 1	3RD	UNIT-1	Passive Components: Resistors. Types, Series and parallel Connection
		4TH		Passive Components: Resistors Colour code and simple problem on
		5TH		Passive Components: Capacitors, Basic principle, unit etc
	Week 2	1ST		Capacitance Series and parallel Connections with simple problems
		3RD		Passive Components: Inductor-Types, Basic principle, unit etc
		4TH		Inductance Series and parallel Connections with simple problems
		5TH		Active Components : PN Junction Diode
	Week 3	1ST		Diode-Forward bias, Reverse Bias
		3RD		Zener Diode and LED - Working and application
		4TH		Transistor - Construction and Working of NPN and PNP Transistor
		5TH		Transistor configuration - CE, CB, CC with amplification factor
	Week 4	1ST		MOS and CMOS and their Applications.
		4TH		Simple problems of Resistance, Capacitor & Inductor
		5TH		FET and Concept of MOS and CMOS
MARCH	Week 1	1ST		Signals: DC/AC, voltage/current, periodic/non-periodic signals, average, rms, peak values,
		4TH		Different types of signal waveforms, Ideal/non-ideal voltage/current sources,independent/dependent voltage current sources.
		5TH		REVISION
	UNIT-2			Overview of Analog Circuits:
	Week 2	1ST	UNIT - 2	Overview of Analog Circuits: Op Amp parameters
		3RD		Ideal Op Amp characteristics
		4TH		Op Amp open loop configuration, Op Amp close loop configuration
	Week 3	1ST		Op Amp Inverting mode amplifier, Op Amp Non-inverting mode amplifier
		3RD		Op Amp as an adder
		4TH		Op Amp as a differentiator, integrator
	UNIT-3			Overview of Digital Electronics
	Week 3	5TH	UNIT - 3	Overview of Digital Electronics - Number system and conversions
	Week 4	1ST		Boolean laws and theorem, Logic gates
		3RD		Flip flops and its types,
		4TH		1ST INTERNAL ASSESSMENT
		5TH		Use of flip flops as counter - asynchronous counters and synchronous counters
APRIL	Week 1	3RD		Introduction to Integrated Circuits - Transistor Transistor Logic (TTL)
	UNIT-4			Electric and Magnetic Circuits
	Week 1	4TH	UNIT - 4	Electric and Magnetic Circuits - EMF, Current, Potential Difference, Power and Energy
		5TH		M.M.F, magnetic force, permeability
	Week 2	1ST		hysteresis loop, reluctance, leakage factor and BH curve
		3RD		Electromagnetic induction, Faraday's laws of electromagnetic induction, Lenz's law
		4TH		Dynamically induced emf, Statically induced emf
		5TH		Equations of self and mutual inductance, Analogy between electric and magnetic circuits
	UNIT - 5			A.C. Circuits
	Week 3	3RD	UNIT - 5	A.C. Circuits:Cycle, Frequency, Periodic time, Amplitude, Angular velocity
		4TH		RMS value, Average value, Form Factor,Peak Factor
	Week 4	1ST		Impedance, phase angle, and power factor; Mathematical and phasor representation of alternating emf and current;
		3RD		Voltage and Current relationship in Star and Delta connections;
		4TH		A.C in resistors, inductors and capacitors;
		5TH		A.C in R-L series, R-C series, A.C in R-L-C series and parallel circuits
	Week 5	1ST		Power in A. C. Circuits, power triangle.
		3RD		REVISION
MAY	UNIT - 6			Transformer and Machines
	Week 1	4TH	UNIT - 6	Transformer and Machines: General construction and principle of different type of transformers
		5TH		2ND INTERNAL ASSESSMENT
	Week 2	1ST		Transformer and Machines: General construction and principle of different type of transformers
		3RD		Emf equation and transformation ratio of transformers
		4TH		Auto transformers
		5TH		Construction and Working principle of DC motors
	Week 3	3RD		Basic equations and characteristic of motors.
		4TH		Basic equations and characteristic of motors.
		5TH		REVISION