

LESSON PLAN

SUB: FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGG.

BRANCH:- MECHANICAL ENGG.

SEMESTER: 2ND

NAME OF FACULTY: UMESH KUMAR DALAI



**GOVERNMENT POLYTECHNIC,
BHADRAK**

SESSION:2025-26

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02/10/2024

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Academic Co-ordinator

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Academic Co-ordinator

Principal

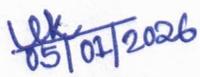
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Discipline: Mechanical Engg.	Semester: 2 ND	Name of the Teaching Faculty : UMESH KUMAR DALAI
Subject: Fundamentals of Electrical & Electronics Engg.	No. of Days/per week class allotted: 4	Semester from date: 09.01.2026 to 08.05.2026 No. of Weeks: 15
Week	Class Day	Theory
1 st	1 st	UNIT I Overview of Electronic Components & Signals: Passive Active Components: Resistances, Capacitors, Inductors
	2 nd	Passive Active Components: Resistances, Capacitors, Inductors
	3 rd	Diodes, Transistors, FET, MOS and CMOS and their Applications.
	4 th	Concept and simple problems of Resistance, Capacitor & Inductor
2 nd	1 st	Definition, classification and Working of diode
	2 nd	(PN junction, LED, Zener) diodes
	3 rd	transistor, FET, Concept of MOS and CMOS)
	4 th	Signals: DC/AC, voltage/current,
3 rd	1 st	periodic/non-periodic signals,
	2 nd	average, rms, peak values, different types of signal waveforms,
	3 rd	Ideal/non-ideal voltage/current sources
	4 th	independent/dependent voltage current sources
4 th	1 st	UNIT II Overview of Analog Circuits: Operational Amplifiers-Ideal Op-Amp
	2 nd	Practical op amp
	3 rd	Open loop and closed loop configurations
	4 th	Application of Op-Amp as amplifier
5 th	1 st	adder
	2 nd	differentiator
	3 rd	integrator
	4 th	UNIT III Overview of Digital Electronics: Introduction to Boolean Algebra
6 th	1 st	Introduction to Boolean Algebra
	2 nd	Electronic Implementation of Boolean Operations,
	4 th	Gates-Functional Block Approach (Simple problems of Number system)
	1 st	Gates-Functional Block Approach (Simple problems of Number system)

7 th	2 nd	Storage elements-Flip Flops ,A Functional block approach
	3 rd	counters: Ripple, Up/down and decade
	4 th	counters: Ripple, Up/down and decade
	5 th	Introduction to digital IC Gates (of TTL Type)
8 th	1 st	Unit IV Electric and Magnetic Circuits: EMF, Current, Potential Difference
	2 nd	Power and Energy
	3 rd	M.M.F, magnetic force, permeability
	4 th	hysteresis loop
9 th	1 st	reluctance, leakage factor and BH curve
	2 nd	Electromagnetic induction
	3 rd	Faraday's laws of electromagnetic induction, Lenz's law
	4 th	Dynamically induced emf; Statically induced emf
10 th	1 st	Equations of self and mutual inductance
	2 nd	Analogy between electric and magnetic circuits.
	3 rd	Unit V A.C. Circuits Cycle, Frequency, Periodic time, Amplitude, Angular velocity
	4 th	RMS value, Average value
11 th	1 st	Form Factor Peak Factor, impedance, phase angle, and power factor
	2 nd	Mathematical and phasor representation of alternating emf and current
	3 rd	Problems of RMS value, Average value, Form Factor Peak Factor, impedance, phase angle, and power factor
	4 th	Voltage and Current relationship in Star and Delta connections
12 th	1 st	Problems on Star and Delta connections
	2 nd	A.C in resistors
	3 rd	A.C in inductors
	4 th	A.C in Capacitors
13 th	1 st	A.C in R-L series
	2 nd	A.C in R-C series

	3 rd	A.C in R-L-C series and
	4 th	A.C in parallel circuits
14 th	1 st	Power in A. C. Circuits, power triangle.
	2 nd	Unit VI Transformer and Machines: General construction and principle of different type of transformers
	3 rd	Emf equation and transformation ratio of transformers, Auto transformers
	4 th	Construction and Working principle of DC motors
15 th	1 st	Basic equations and characteristic of motors
	2 nd	Previous year question Practice
	3 rd	Previous year question Practice
	4 th	Previous year question Practice


 Signature of Faculty