

DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY	
ELECTRICAL ENGG.	1ST	MISS SINDHUJA PANIGRAHI, GF(ELECTRICAL)	
<u>SUBJECT:</u> FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGG(TH-4A)		NO. OF DAYS PER WEEK CLASS ALLOTED : 04	SEMESTER FROM 09/01/2026 TO 08/05/26
		NO. OF WEEKS : 15 NOS.	
WEEKS	CLASS DAYS	THEORY TOPICS	
1ST WEEK	1ST	Basic Concept of Electronics and its application	
	2ND	Basic Concept of voltage, current and power & Electronics components and their classification	
	3RD	Explain about passive and active components	
	4TH	Define passive components and basic concept of Resistor, Capacitor, Inductor and Transformer	
2ND WEEK	1ST	Concept and simple problems of Resistance, Capacitor & Inductor	
	2ND	Concept and simple problems of Resistance, Capacitor & Inductor	
	3RD	Define Active components and explain some basic concept of Diodes, Transistors, FET, MOS and CMOS	
	4TH	Definition, classification and Working of PN junction diode, LED, Zener diode	
3RD WEEK	1ST	Definition, classification and Working of transistor, FET	
	2ND	Define Signals. Explain basic concept of alternating current and direct current	
	3RD	Classification of signals. And definitions of different types of signals & explain it	
	4TH	Define waveforms and explain the different types of signal waveforms	
4TH WEEK	1ST	Definition of average, rms, peak values, amplitude, frequency, time period, wave length of different types of signal waveforms	
	2ND	Definition of Ideal/non-ideal voltage/current sources, independent/dependent voltage current sources.	
	3RD	Introduction to Operational Amplifiers. Pin configuration of OPAMP	
	4TH	Basic concept of Ideal OPAMP & Practical OPAMP	
5TH WEEK	1ST	Explain Open loop and closed loop configuration of OPAMP	
	2ND	Application of OPAMP as ADDER, AMPLIFIER	
	3RD	Application of OPAMP as differentiator and integrator	
	4TH	Introduction to Boolean Algebra	
6TH WEEK	1ST	Electronic implementation of Boolean operation	
	2ND	Introduction to Number system and Simple problems of Number system	
	3RD	Introduction to Logic gates and explain the Gates-Functional Block Approach	
	4TH	Explain the combinational and sequential circuit	
7TH WEEK	1ST	Introduction to storage element such as Flip Flop, Counter, Register	
	2ND	Explain Functional Block Approach of Flip Flop	
	3RD	Introduction to the Functional Block Approach of Ripple counter	
	4TH	Introduction to the Functional Block Approach of Up/Down counter	
8TH WEEK	1ST	Introduction to the Functional Block Approach of Decade counter	
	2ND	Introduction to digital IC gates (of TTL Type)	
	3RD	Electric and Magnetic Circuits: Introduction to Basic Principles of Electricity	
	4TH	Introduction to Generation, transmission & Distribution	
	1ST	Definitions of EMF, Current, Potential Difference, Power and Energy	

9TH WEEK	2ND	Definitions of EMF, Current, Potential Difference, Power and Energy
	3RD	Introduction to Magnetic Circuit & Definition of M.M.F, magnetic force, permeability & susceptibility.
	4TH	Introduction to Magnetic Circuit & Definition of M.M.F, magnetic force, permeability & susceptibility.
10TH WEEK	1ST	Definition of reluctance, leakage factor and BH curve
	2ND	Description of Hysteresis loop
	3RD	Electromagnetic induction & Faraday's laws of electromagnetic induction
	4TH	Lenz's law; Dynamically induced emf; Statically induced emf
11TH WEEK	1ST	Equations of self and mutual inductance
	2ND	Analogy between electric and magnetic circuits.
	3RD	A.C. Circuits: Basic terminology Cycle, Frequency, Periodic time, Amplitude, Angular velocity,
	4TH	RMS value, Average value, Form Factor Peak Factor
12TH WEEK	1ST	Impedance, phase angle, and power factor
	2ND	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 circuit
13TH WEEK	1ST	A.C in Capacitive Circuit, A.C in R-L series Circuit
	2ND	R-C series, R-L-C series Circuit
	3RD	A.C in R-L parallel
	4TH	A.C in R-C Parallel, R-L-C Parallel Circuit.
14TH WEEK	1ST	Power in A. C. Circuits, power triangle
	2ND	Transformer and Machines: General construction and principle of Transformer
	3RD	Classification of transformer with construction and principle
	4TH	Emf equation transformers
15TH WEEK	1ST	Transformation ratio of transformers
	2ND	Auto transformers
	3RD	Construction and Working principle of DC motors
	4TH	Basic equations and characteristic of motors