Govt. Polytechnic Hamirpur (H.P.)
Lecture Planning (Theory)

Branch : Electrical Engg. Semester: 2nd

Subject : FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGINEERING Session: Jan-Jun-2026

Teacher: Vivek Kishore Class Room :

Sr. No.	No. of Lectures	Chapter/ Unit Description	Detail of Contents	Reference Resources	Remarks
1.	12	Overview of Electronic Components & Signals:	Passive Active Components: Resistances, Capacitors, Inductors, Diodes, Transistors, FET, MOS and CMOS and their Applications. Signals: DC/AC, voltage/current, periodic/nonperiodic signals, average, rms, peak values, different types of signal waveforms, Ideal/non-ideal voltage/current sources, independent/dependent voltage current sources....	R1,R4,R5	
2.	8	Overview of Analog Circuits:	Operational Amplifiers-Ideal Op-Amp, Practical op amp, Open loop and closed loop configurations, Application of Op-Amp as amplifier, adder, differentiator and integrator.	R5	
3.	10	Overview of Digital Electronics	Introduction to Boolean Algebra, Electronic Implementation of Boolean Operations, Gates-Functional Block Approach, Storage elements-Flip Flops-A Functional block approach, Counters: Ripple, Up/down and decade, Introduction to digital IC Gates (of TTL Type).	R6	
4.	12	Electric and Magnetic Circuits	EMF, Current, Potential Difference, Power and Energy; M.M.F, magnetic force, permeability, hysteresis loop, reluctance, leakage factor and BH curve; Electromagnetic induction, Faraday's laws of electromagnetic induction, Lenz's law; Dynamically induced emf; Statically induced emf; Equations of self and mutual inductance; Analogy between electric and magnetic circuits	R1,R2,R3	
5.	14	A.C. Circuits	Cycle, Frequency, Periodic time, Amplitude, Angular velocity, RMS value, Average value, Form Factor Peak Factor, impedance, phase angle, and power factor; Mathematical and phasor representation of alternating emf 48 and current; Voltage and Current relationship in Star and Delta connections; A.C in resistors, inductors and capacitors; A.C in R-L series, R-C series, R-L-C series and parallel circuits; Power in A. C. Circuits, power triangle	R1,R2,R3	

6.	8	Transformer and Machines	General construction and principle of core and shell type of transformers; Emf equation and transformation ratio of transformers; Auto transformers; Basic principle of Electromechanical energy conversion	R1,R2,R3	

Teaching Resources:

R1: Textbook of Electrical technology Vol-I By S. Chand's
R2: Basic Electrical Engg. By VK Mehta
R3: Basic Electrical Engg. By CL Wadhwa
R4: Electronics and devices Circuits by JB Gupta
R5: Linear Integrated Circuits by Gykward
R6: Modern Digital Electronics by R.P. Jain

27/1/2026
Signature of Teacher with Date

Signature of H.O.D.