Govt. Polytechnic Hamirpur (H.P.)

Lesson Planning (Theory)

Branch : Electrical Engg. Semester : Second

Subject : Applied Physics-II Session : 27th January 2025- 29th May2025

Teacher: Pritam Singh Dogra Class Room:

Proposed Lesson Plan:

Period:27/01/24 to 29/05/24				Total Lectures Planned: 61		
Sr. No.	**Week**	**No. of Lectures**	**Chapter/ Unit Description**	**Detail of Contents**	**Reference Resources**	**Remarks**
1	5th Jan.	2	Wave motion and its applications	Introduction of Applied Physics-II Wave motion, transverse and longitudinal waves with examples definitions of wave velocity, frequency and wave length and their relationship, Sound and light waves and their properties	R1, R2, R3 and R4	
	1st Feb.	1		wave equation (y = r sin ωt) amplitude, phase, phase difference, Principle of superposition of waves and beat formation Simple Harmonic Motion (SHM): definition, expression for displacement, velocity etc.		
	2nd Feb.	3		Definition, expression for acceleration, time period, frequency etc. Free, forced and resonant vibrations and their examples. Acoustics of buildings – reverberation, reverberation time, echo, noise		
	3rd Feb.	4		coefficient of absorption of sound, methods to control reverberation time and their applications. Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic Revision of whole Chapter		
2	4th feb.	4	Optics	Basic optical laws- reflection and refraction, refractive index Images and image formation by mirrors, lens and thin lenses, lens formula Power of lens, magnification,Total internal reflection, Critical angle and conditions for total internal reflection Applications of total internal reflection in optical fiber	R1, R2, R3 and R4	
	5th Feb.	2		Optical Instruments- simple microscope Optical Instruments- compound microscope astronomical telescope in normal adjustment and their magnifying powers		
	1st Mar.	1		Revision of whole Chapter		
3	2nd Mar.	3	Electrostatics	Coulomb's law, unit of charge Electric field, Electric lines of force and their properties Electric flux, Electric potential and potential difference, Gauss's law	R1, R2, R3 and R4	
	3rd Mar.	3		Capacitor and its working, Capacitance and its units, Capacitance of a parallel plate capacitor Class Test-I Series and parallel combination of capacitors (related numerical), dielectric and its effect on capacitance, dielectric break down Revision of whole Chapter		

4	4th Mar.	4	Current Electricity	Electric Current and its units, Direct and alternating current Resistance and its units, Specific resistance, Conductance, Specific conductance, Series and parallel combination of resistances Factors affecting resistance of a wire, carbon resistances and colour coding, Ohm's law and its verification, Kirchhoff's laws. Concept of terminal potential difference and Electro motive force (EMF)	R1, R2, R3 and R4	
	5th Mar.	4		Heating effect of current, Electric power, Electric energy and its units (related numerical problems), Advantages of Electric Energy over other forms of energy.		
5	1st April	4	Electromagnetism	Types of magnetic materials: dia, para and ferromagnetic with their properties Magnetic field and its units, magnetic intensity, magnetic lines of force magnetic flux and units, magnetization Lorentz force (force on moving charge in magnetic field), Force on current carrying conductor	R1, R2, R3 and R4	
	2nd April	3		Moving coil galvanometer; principle, construction and working Conversion of a galvanometer into ammeter and voltmeter. Revision of whole Chapter		
6	3rd April	3	Semiconductor Physics	Energy bands in solids Class Test-II	R1, R2, R3 and R4	
	4th April	4		Types of materials (insulator, semi-conductor, conductor) intrinsic and extrinsic semiconductors. p-n junction, junction diode, V-I characteristics Diode as rectifier – half wave and full wave rectifier (centre taped).		
	5th April	1		Photocells, Solar cells; working principle and engineering applications		
7	1st May	3	Modern Physics	Lasers: Energy levels ionization and excitation potentials spontaneous and stimulated emission population inversion, pumping methods, optical feedback Types of lasers; Ruby He-Ne and semiconductor, laser characteristics	R1, R2, R3 and R4	
	2nd May	3		Engineering and medical applications of lasers and Fiber Optics: Introduction to optical fibers House Test light propagation, acceptance angle and numerical aperture fiber types, applications in; telecommunication medical and sensors		
	3rd May	4				
	4th May	4		Revision of whole Chapter		
	5th May	1		Revision of whole Chapter		

REFERENCE RESOURCES

- Applied -Physics-II by R.A. Banwat {R1}
- Dinesh Publication (A.P.-II) {R2}
- Modern ABC of Physics-II {R3}
- Hiteshi Publications (A.P.-II) {R4}

27/1/25

Signature of Teacher with Date

Signature of H.O.D. with Date

Govt. Polytechnic Hamirpur (H.P.)
Practical Planning & Coverage

Branch : Electrical Engg.
Subject : Applied Physics-II lab
Teacher: Pritam Singh Dogra

Semester : Second
Session : 27th January 2025- 29th May2025
Labortary: Applied Physics-II

Pract. No.	Description of Practical	Reference for Procedure/ Write up	Likely Dates	Actual Dates	Signature
1	To determine and verify the time period of a cantilever.	Applied Physics-II lab manual-2022 scheme/ Applied Physics-By RA BANWAT	5th week of January and 1st week of Feb.		
2	To verify laws of reflection from a plane mirror/ interface.	Applied Physics-II lab manual-2022 scheme/ Applied Physics-By RA BANWAT	2nd and 3rd week of Feb.		
3	To verify laws of refraction (Snell's law) using a glass slab.	Applied Physics-II lab manual-2022 scheme/ Applied Physics-By RA BANWAT	4th and 5th week of Feb.		
4	To determine focal length and magnifying power of a convex lens.	Applied Physics-II lab manual-2022 scheme/ Applied Physics-By RA BANWAT	1st and 2nd week of March		
5	To verify Ohm's law by plotting graph between current and potential difference.	Applied Physics-II lab manual-2022 scheme/ Applied Physics-By RA BANWAT	1st and 2nd week of April		
6	To verify laws of resistances in series and parallel combination.	Applied Physics-II lab manual-2022 scheme/ Applied Physics-By RA BANWAT	3rd, 4th and 5th week of March		
7	To find resistance of a galvanometer by half deflection method.	Applied Physics-II lab manual-2022 scheme/ Applied Physics-By RA BANWAT	1st and 2nd week of April		
8	To draw V-I characteristics of a semiconductor diode (Ge, Si) and determine its knee voltage.	Applied Physics-II lab manual-2022 scheme/ Applied Physics-By RA BANWAT	3rd and 4th week of April		
9	To measure numerical aperture (NA) of an optical fiber.	Applied Physics-II lab manual-2022 scheme/ Applied Physics-By RA BANWAT	5th week of April, 1st and 2nd week of May		
10	To verify Kirchhoff's laws using electric circuits.	Applied Physics-II lab manual-2022 scheme/ Applied Physics-By RA BANWAT	3rd and 4th week of May		

Signature of Teacher

Signature of H.O.D.