Govt. Polytechnic for Women Rehan
Distt. – Kangra (H.P.) - 176022
Department of Applied Sciences
LESSON PLAN

Program Name	Civil Engineering
Subject Name	Applied Physics-II
Subject Code	BS104
Semester	2nd
Subject Teacher Name	Mrs Bandna Devi

Sr. No.	Subject Name	Study scheme (Hrs/Week)		Marks in Evaluation Scheme					
				Internal Assessment			External Assessment		
		Th	Pr	Th	Pr	Total	Th	Pr	Total
1.	Applied Physics-II	4	4	40	40	80	60	60	120
Reference Books		(iii) Text Book of Physics for Class XI& XII (Part-I, Part-II): N.C.E.R.T., Delhi.							
		(iv) Concepts in Physics by HC Verma, Vol. I & II, Bharti Bhawan Ltd. New Delhi.							

Evaluation Scheme

Course Outcomes (COs)

CO – 1	Applied Physics aims to give an understanding of this world both by observation and by prediction of the way in which objects behave.
CO – 2	Concrete use of physical principles and analysis in various fields of engineering and technology are given prominence in the course content.
CO – 3	The course will help the diploma engineers to apply the basic concepts and principles.
CO – 4	To solve broad-based engineering problems and to understand different technology based applications.
CO-5	Apply the knowledge of diodes in rectifiers, power adapters and various electronic circuits. Use the knowledge of semiconductors in various technical gadgets like mobile phones, computers, LED, photocells, solar lights etc.

Teaching Plan

Unit No.	Name of Topic	Proposed Date	Actual Date	Remarks
UNIT - 1: Wave motion and its applications	Wave motion, transverse and longitudinal waves with examples, definitions of wave velocity, frequency and wave length and their relationship,	29/01/26 30/01/26 31/01/26		
	Sound and light waves and their properties, wave equation ($y = r \sin \omega t$) amplitude, phase, phase difference, Principle of superposition of waves and beat formation.	02/02/26 05/02/26		
	Simple Harmonic Motion (SHM): definition, expression for displacement, velocity, acceleration, time period, frequency etc. Free,	06/02/26 09/02/26 12/02/26		

	forced and resonant vibrations and their examples.			
	Acoustics of buildings reverberation, reverberation time, echo, noise, coefficient of absorption of sound, methods to control reverberation time and their applications. Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic.	13/02/26 16/02/26 19/02/26 20/02/26		
UNIT - 2: 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.	21/02/26 23/02/26 26/02/26		
	Total internal reflection, Critical angle and conditions for total internal reflection,	27/02/26 28/02/26		
	Applications of total internal reflection in optical fiber.	02/03/26		
	Optical Instruments- simple and compound microscope,	05/03/26 06/03/26 07/03/26		
Class Test-I		09/03/26		
	Astronomical telescope in normal adjustment and their magnifying powers.	12/03/26		
UNIT - 3: Electrostatics	Coulomb's law, unit of charge.	13/03/26		
	Electric field, Electric lines of force and their properties.	16/03/26		
	Electric flux, Electric potential and potential difference, Gauss's law.	19/03/26 20/03/26		
	Capacitor and its working, Capacitance and its units. Capacitance of a parallel plate capacitor,	23/03/26		
	Series and parallel combination of capacitors (related numerical)	27/03/26		
	Dielectric and its effect on capacitance, dielectric break down.	28/03/26		
UNIT-4: Current Electricity	Electric Current and its units, Direct and alternating current.Resistance and its units, Specific resistance.	30/3/26		
	Conductance, Specific conductance, Series and parallel combination of resistances	02/04/26		
	Factors affecting resistance of a wire, carbon resistances and colour coding.	04/04/26		
	Ohm's law and its verification, Kirchhoff's laws.	06/04/26		
	Concept of terminal potential difference and Electro motive force (EMF)			

	Heating effect of current, Electric power, Electric energy and its units (related numerical problems). Advantages of Electric Energy over other forms of energy.	09/04/26		
Class Test -II		10/04/26		
UNIT - 5: Electromagnetism	Types of magnetic materials: dia, para and ferromagnetic substance. magnetic materials: dia, para and ferromagnetic with their properties.	13/04/26 16/04/26		
	Magnetic field and its units, magnetic intensity.	17/04/26		
	magnetic lines of force, magnetic flux and units, magnetization.	18/04/26		
	Lorentz force (force on moving charge in magnetic field). Force on current carrying conductor	20/04/26		
	Moving coil galvanometer; principle, construction and working.	23/04/26		
	Conversion of a galvanometer into ammeter and voltmeter.	24/04/26 25/04/26		
UNIT - 6: Semiconductor Physics	Energy bands in solids, Types of materials (insulator, semi-conductor, conductor), intrinsic and extrinsic semiconductors.	27/04/26		
	p-n junction, junction diode and V-I characteristics.	30/04/26		
	Diode as rectifier – half wave and full wave rectifier (centre taped).	02/05/26 04/05/26		
	Photocells, Solar cells; working principle and engineering applications.	07/05/26 08/05/26		
House Test				
UNIT - 7: Modern Physics	Lasers: Energy levels, ionization and excitation potentials; spontaneous and stimulated emission; population inversion, pumping methods, optical feedback.	15/05/26 16/05/26		
	Types of lasers; Ruby, He-Ne and semiconductor.	18/05/26		
	laser characteristics, engineering and medical applications of lasers.	21/05/26		
	Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aperture	22/05/26		
	fiber types, applications in; telecommunication, medical and sensors.	23/05/26 25/05/26		

Assignments

Assignment No	Contents of Syllabus Covered	Proposed Date	Actual Date	Remarks
A-1	Unit-1 and Unit-2	07/03/26		
A-2	Unit-3 and Unit-4 Unit-5	06/04/26		
A-3	Unit-6, Unit-7	16/05/26		

House Test/Class Test

Name of test	Syllabus for Tests	Proposed Date	Actual Date	Remarks
Class Test -1	Unit-1 and Unit-2	As per HPTSB Academic Schedule		
Class Test -2	Unit-3 and Unit-4,Unit-5			
House Test - 1	Unit-1, Unit-2, Unit-3 and Unit-4, Unit-5.			

Lab Plan

Sr.no	Name of Practicals	Proposed Date		Actual Date		Remarks
		G-1	G-2	G-1	G-2	
1	To verify laws of refraction (Snell's law) using a glass slab.	28/01/26 04/02/26	28/01/26 04/02/26			
2	To verify law of reflection of light by using plane mirror.	11/02/26 18/02/26	11/02/26 18/02/26			
3	To verify Ohm's law by plotting graph between current and potential difference.	25/02/26 04/03/26	25/02/26 04/03/26			
4	To verify laws of resistances in series and parallel combination.	11/03/26 18/03/26	11/03/26 18/03/26			
5	To verify Kirchhoff's laws using electric circuits.	25/03/26 01/04/26	25/03/26 01/04/26			
6	To convert a galvanometer into a voltmeter..	08/04/26 15/04/26	08/04/26 15/04/26			
7	To convert a galvanometer into an ammeter.	22/04/26 29/04/26	22/04/26 29/04/26			
8	To draw V-I characteristics of a semiconductor diode (Ge, Si) and determine its knee voltage	06/05/26 20/05/26	06/05/26 20/05/26			

(Signature of Teacher)

27/01

(Signature of HOD/OIC)

Principal 27/1/25

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