ABVGIE&T PRAGATINAGAR (Poly Wing)

District Shimla H. P. 171202

Department of Applied Sciences &Humanities

LESSON PLAN

Academic Year	2026
Semester	2nd
Scheme	N-2022
Subject Code	BS104
Subject Title	Applied Physics-II
Name of Faculty	Mohan Negi, Lecturer (Applied Physics)
Semester Start & End Dates	27.01.2026 & 27.05.2026
Branch	Common to all branches

Study and Evaluation Scheme:

Sr. No.	Name of Subject	Th.		Pr.	Internal Assessment			External Assessment					Total Marks
		L	DCS		Th.	Pr.	Total	Th.	Hrs.	Pr.	Hrs.	Total	
2	Applied Physics-II	3	1	2	40	40	80	60	3	60	3	120	200

Course Objectives:

Applied Physics aims to give an understanding of this world both by observation and by prediction of the way in which objects behave. Concrete use of physical principles and analysis in various fields of engineering and technology are given prominence in the course content. The course will help the diploma engineers to apply the basic concepts and principles to solve broad-based engineering problems and to understand different technology based applications.

Day	Topic of Discussion	Topic Details	Delivery Method
Unit-I	**Wave motion and its applications**		
Day 1	Wave motion	Wave motion, transverse and longitudinal waves with examples.	Chalk and Talk
Day 2	Wave motion	Definitions of wave velocity, frequency and wave length and their relationship, Sound and light waves and their properties.	Chalk and Talk
Day 3	Wave motion	Wave equation ($y = r \sin \omega t$) amplitude, phase, phase difference	Chalk and Talk
Day 4	**DCS**		
Day 5	Wave motion	Principle of superposition of waves and beat formation.	Chalk and Talk
Day 6	Simple Harmonic Motion	Simple Harmonic Motion (SHM): definition and expression for displacement.	Chalk and Talk
Day 7	Simple Harmonic Motion	expression for velocity, acceleration, time period, frequency etc.	Chalk and Talk
Day 8	**DCS**		
Day 9	Vibrations	Free, forced and resonant vibrations and their examples.	Chalk and Talk
Day 10	Acoustics	Methods to control reverberation time and their applications.	Chalk and Talk

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Day 11	Ultrasonic waves	Ultrasonic waves – Introduction and properties, Engineering and medical applications of ultrasonic.	Chalk and Talk
Day 12	**DCS**		
Unit-2	**Optics**		
Day 13	Basic optical laws	Reflection and refraction, refractive index	Chalk and Talk
Day 14	Images and image formation	Images and image formation by mirrors, lens and thin lenses.	Chalk and Talk
Day 15	Lens & Total internal reflection	Lens formula, power of lens, magnification, Total internal reflection and Critical angle.	Chalk and Talk
Day 16	**DCS**		
Day 17	Total internal reflection	Conditions for total internal reflection, applications of total internal reflection in optical fiber.	Chalk and Talk
Day 18	Optical Instruments	Optical Instruments- Simple Microscope and their magnifying powers.	Chalk and Talk
Day 19	Optical Instruments	Compound microscope and their magnifying powers.	Chalk and Talk
Day 20	**DCS**		
Day 21	**Class Test-1st**	**30% of syllabus covered**	
Unit-3	**Electrostatics**		
Day 22	Optical Instruments & Coulomb's law	Astronomical telescope in normal adjustment and their magnifying powers, Coulomb's law, unit of charge.	Chalk and Talk
Day 23	Electric field	Electric field, Electric lines of force and their properties.	Chalk and Talk
Day 24	Electric field & Capacitor	Electric flux, Electric potential and potential difference, Gauss's law Capacitor and its working, Capacitance and its units.	Chalk and Talk
Day 25	**DCS**		
Day 26	Capacitor	Capacitance of a parallel plate capacitor, Series and parallel combination of capacitors (related numerical)	Chalk and Talk
Day 27	Capacitor and Electric Current	Dielectric and its effect on capacitance, dielectric break down, Electric Current and its units, Direct and alternating current.	Chalk and Talk
Unit-4	**D. C. Circuits**		
Day 28	Electric Current and resistance	Resistance and its units, Specific resistance. Conductance, Specific conductance, Series and parallel combination of resistances.	
Day 29	**DCS**		
Day 30	Resistance, Ohm's law and Kirchhoff's laws.	Factors affecting resistance of a wire, carbon resistances and colour coding.Ohm's law and its verification, Kirchhoff's laws.	Chalk and Talk
Day 31	Electric Current	Concept of terminal potential difference and Electro motive force (EMF), Heating effect of current, Electric power.	Chalk and Talk
Day 32	Electric energy	Electric energy and its units (related numerical problems), Advantages of Electric Energy over other forms of energy.	Chalk and Talk
Day 33	**DCS**		
Unit-5	**Electromagnetism**		
Day 34	Magnetic materials	Types of magnetic materials: dia, para and ferromagnetic with their properties.	Chalk and Talk
Day 35	Magnetic field	Magnetic field and its units, magnetic intensity, magnetic lines of force.	Chalk and Talk
Day 36	Class Test-IInd	**Next 30% Syllabus Coverage**	
Day 37	Magnetic flux & Current carrying	Magnetic flux and units, magnetization. Lorentz force (force on moving charge in	Chalk and Talk

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	conductor	magnetic field). Force on current carrying conductor.	
Day 38	**DCS**		
Day 39	Galvanometer	Moving coil galvanometer; principle, construction and working	Chalk and Talk
Day 40	Galvanometer	Conversion of a galvanometer into ammeter and voltmeter.	Chalk and Talk
Unit-6	**Semiconductor Physics**		
Day 41	Energy bands in solids, Types of materials	Energy bands in solids, Types of materials (insulator, semi-conductor, conductor)	Chalk and Talk
Day 42	**DCS**		
Day 43	Semiconductor & Junction diode	Intrinsic and extrinsic semiconductors, p-n junction, Junction diode and V-I characteristics.	Chalk and Talk
Day 44	Diode	Diode as rectifier – half wave and full wave rectifier (centre taped).	Chalk and Talk
Day 45	Photocells	Photocells, Solar cells; working principle and engineering applications.	Chalk and Talk
Day 46	**DCS**		
Day 47	**House Test (80 % of the syllabus)**		
Unit-7	**Modern Physics**		
Day 47	Lasers	Lasers: Energy levels, ionization and excitation potentials	Chalk and Talk
Day 48	Lasers	spontaneous and stimulated emission; population inversion	Chalk and Talk
Day 49	Lasers	Pumping methods, optical feedback and Types of lasers; Ruby laser.	Chalk and Talk
Day 50	**DCS**		
Day 51	Lasers	He-Ne and semiconductor Lasers.	Chalk and Talk
Day 52	Lasers	Laser characteristics, engineering and medical applications of lasers.	Chalk and Talk
Day 53	Fiber Optics	Fiber Optics: Introduction to optical fibers	Chalk and Talk
Day 54	**DCS**		
Day 55	Fiber Optics	Light propagation, acceptance angle and numerical aperture	Chalk and Talk
Day 56	Fiber Optics	Fiber types, applications in; telecommunication, medical and sensors.	Chalk and Talk
Day 57	DCS		
Day 58	DCS		
Day 59	DCS		
Day 60	DCS		
Day 61	DCS		
Day 62	DCS		
Day 63	DCS		
Day 64	DCS		

	Name of Book	Author Name	Publication
Prescribed Books	Concepts of Physics	H. C. Verma	Bharati Bhawan
	Principles of Physics	Jearl Walker, David Halliday and Robert Resnic	Wiley
	Text book of Physics for Class XII	A.W. Joshi	NCERT

Mohan Negi
27.01.2026

Faculty
(Mohan Negi)

HoD/ OIC
(Sh. Gyan Chand)