

## LESSON PLAN

<b>Discipline :Common to all branch</b>	<b>Semester-2 nd (S-2026)</b>	<b>Name of the Teaching Faculty-Mrs Pragyna Parimita Swain</b>
<b>Subject: Applied Physics -II</b>	<b>No. of Days/per week class allotted-4</b>	<b>Semester From Date:09-01-2026 To date:08-05-2026</b>
<b>Week</b>	<b>Day</b>	<b>Topics</b>
1	1	Unit-1:Wave motion, transverse and longitudinal waves with examples, definitions of wave velocity, frequency and wave length and their relationship
	2	Sound and light waves and their properties, wave equation ( $y = r \sin t$ ) amplitude, phase, phase difference
	3	Principle of superposition of waves and beat formation
	4	Simple Harmonic Motion (SHM): definition, expression for displacement, velocity, acceleration
2	1	Time period, frequency etc. Simple harmonic progressive wave and energy transfer
	2	Study of vibration of cantilever and determination of its time period
	3	Free, forced and resonant vibrations with examples.
	4	Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound
3	1	Methods to control reverberation time and their applications
	2	Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic
	3	UNIT - 2: Optics Basic optical laws; reflection and refraction, refractive index, Images and image formation by mirrors
	4	Lens and thin lenses, lens formula, power of lens, magnification and defects.
4	1	Total internal reflection, Critical angle and conditions for total internal reflection
	2	Applications of total internal reflection in optical fiber.
	3	Optical Instruments; simple and compound microscope, astronomical telescope in normal adjustment, magnifying power
	4	Resolving power, uses of microscope and telescope, optical projection systems.
5	1	UNIT - 3: Electrostatics Coulombs law, unit of charge, Electric field, Electric lines of force and their properties
	2	Electric flux, Electric potential and potential difference
	3	Gauss law: Application of Gauss law to find electric field intensity of straight charged conductor
	4	Plane charged sheet and charged sphere

6	1	Capacitor and its working, Types of capacitors, Capacitance and its units. Capacitance of a parallel plate capacitor
	2	Series and parallel combination of capacitors (related numerical)
	3	dielectric and its effect on capacitance, dielectric break down
	4	UNIT - 4: Current Electricity Electric Current and its units
7	1	Direct and alternating current, Resistance and its units, Specific resistance, Conductance
	2	Specific conductance, Series and parallel combination of resistances
	3	Factors affecting resistance of a wire, carbon resistances and colour coding
	4	Ohm's law and its verification, Kirchhoff's laws, Wheatstone bridge and its applications (slide wire bridge only)
8	1	Concept of terminal potential difference and Electromotive force (EMF)
	2	Heating effect of current, Electric power, Electric energy and its units (related numerical problems)
	3	Advantages of Electric Energy over other forms of energy.
	4	UNIT - 5: Electromagnetism Types of magnetic materials; dia, para and ferromagnetic with their properties
9	1	Magnetic field and its units, magnetic intensity
	2	magnetic lines of force, magnetic flux and units, magnetization
	3	Concept of electromagnetic induction, Faraday's Laws
	4	Lorentz force (force on moving charge in magnetic field)
10	1	Force on current carrying conductor, force on rectangular coil placed in magnetic field
	2	Moving coil galvanometer; principle, construction and working, Conversion of a galvanometer into ammeter and voltmeter
	3	UNIT - 6: Semiconductor Physics Energy bands in solids, Types of materials (insulator, semi-conductor, conductor)
	4	intrinsic and extrinsic semiconductors, p-n junction, junction diode and V-I characteristics
11	1	Types of junction diodes. Diode as rectifier – half wave and full wave rectifier (centre taped)
	2	Transistor; description and three terminals, Types- pnp and npn, some electronic applications (list only)
	3	Photocells, Solar cells; working principle and engineering applications
	4	UNIT - 7: Modern Physics Lasers: Energy levels
12	1	pumping methods, optical feedback, Types of lasers; Ruby, HeNe and semiconductor, laser characteristics, engineering and medical applications of lasers

	2	Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aperture, fiber types, applications in; telecommunication, medical and sensors
	3	Revision of Unit-1
	4	Revision of Unit-2
13	1	Revision of Unit-3
	2	Revision of Unit-4
	3	Revision of Unit-5
	4	Revision of Unit-6
14	1	Revision of Unit-7
	2	Revision of Unit-1
	3	Revision of Unit-2
	4	Revision of Unit-3
15	1	Revision of Unit-4
	2	Revision of Unit-5
	3	Revision of Unit-6
	4	Revision of Unit-7

Concerned Faculty: Mrs Pragyna Parimita Swain, Lecturer Stage-I in Physics