

Lesson Plan 2025-26 Odd Semester (Semester-I)

Name of the Assistant Professor: Dr. Vijay Kumar

Class: B.Sc. I

Semester: 1st

Subject: Physics

JULY. 2025 Week-4	UNIT-I, Rigid body, Moment of Inertia, Radius of Gyration, Torque, Angular momentum.
AUG. 2025 Week-1	Rotational kinetic energy, law of conservation of angular momentum, theorem of perpendicular and parallel axis (with proof).
AUG. 2025 Week-2	Moment of Inertia of Ring, Disc, solid cylinder, hollow cylinder, solid sphere, hollow sphere.
AUG. 2025 Week-3	Moment of Inertia of Fly wheel, Moment of inertia of an irregular body, Spherical Shell, solid bar of rectangular cross section.
AUG. 2025 Week-4	Unit-2 Elasticity: Elasticity, acceleration of a body rolling down on an inclined plane.
SEPT. 2025 Week-1	Stress and Strain, Hook's Law, Elastic constants and their relations, Poisson's ratio, Torsion of cylinder and twisting couple
SEPT. 2025 Week-2	Determination of Coefficients of modulus of rigidity for the material of wire by Maxwell's needle, Bending of beam (bending moment and its magnitudes).
SEPT. 2025 Week-3	Cantilever and centrally loaded beam, Determination of Young's modulus for the material of the beam and Elastic constants for the material of the wire by Searle's method
SEPT. 2025 Week-4	Unit-3 Theory of Relativity: Reference frames, Inertial and non-Inertial frames of references, Galilean Transformation.
OCT. 2025 Week-1	Galilean Invariance and principle of Newtonian relativity, Michelson-Morley's experiment and its findings.
OCT. 2025 Week-2	Postulates of special theory of relativity, Lorentz, Transformations, UNIT TEST
OCT. 2025 Week-3	RIVISION OF UNIT-1
OCT. 2025 Week-4	RIVISION OF UNIT-2
NOV. 2025 Week-1	RIVISION OF UNIT-3



NOV. 2025 Week-2	CLASS TEST OF UNIT-1
NOV. 2025 Week-3	CLASS TEST OF UNIT-2
NOV. 2025 Week-4	CLASS TEST OF UNIT-3



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Lesson Plan 2025-26 Odd Semester (Semester-III)

Name of the Assistant Professor: Dr. Vijay Kumar

Class: B.Sc. **II**

Semester: 3rd


Subject: Physics

JULY. 2025 Week-4	UNIT-I, Young's double slit experiment, Coherence. Conditions of interference. Fresnel's biprism and its
AUG. 2025 Week-1	Applications to determine the wavelength of sodium light and thickness of a mica sheet phase change on reflection.
AUG. 2025 Week-2	Interference by Division of Amplitude: Plane parallel thin film. production of colours in thin films
AUG. 2025 Week-3	Interference due to transmitted light and reflected light. wedge shaped film. Newton's rings and its applications.
AUG. 2025 Week-4	Unit-2 Fresnel Diffraction: Fresnel's half period zones, zone plate, diffraction at a straight edge
SEPT. 2025 Week-1	Diffraction at rectangular slit. Fraunhofer diffraction: single slit diffraction.
SEPT. 2025 Week-2	double slit diffraction, Plane Diffraction grating. limit of resolution. Rayleigh's criterion
SEPT. 2025 Week-3	Resolving power of telescope and a grating. Unit-3 Polarization: Polarisation by reflection, refraction and scattering. Malus Law
SEPT. 2025 Week-4	Phenomenon of double refraction, Huygens's wave theory of double refraction. Nicol prism
OCT. 2025 Week-1	Quarter wave plate and half wave plate. production and detection of (i) Plane polarized light (ii) Circularly polarized light and (iii)
OCT. 2025 Week-2	Elliptically polarized light, Optical activity, Fresnel's theory of optical rotation. Specific rotation.
OCT. 2025 Week-3	RIVISION UNIT-I
OCT. 2025 Week-4	RIVISION UNIT-II
NOV. 2025 Week-1	RIVISION UNIT-III



NOV. 2025 Week-2	UNIT TEST-I
NOV. 2025 Week-3	UNIT TEST-II
NOV. 2025 Week-4	UNIT TEST-III


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Lesson Plan 2025-26 Odd Semester (Semester-V)

Name of the Assistant Professor: Dr. Vijay Kumar

Class: B.Sc. III

Semester: 5th

Subject: Physics

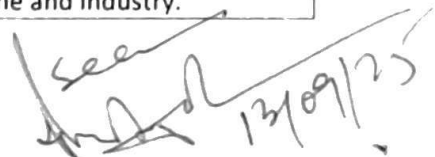
JULY. 2025 Week-4	Unit I: Nuclear Structure and Properties of Nuclei Nuclear composition (p-e and p-n hypotheses), Nuclear properties; Nuclear size, spin, parity
AUG. 2025 Week-1	Statistics, magnetic dipole moment, quadruple moment (shape concept). Determination of mass by Bain-Bridge, Bain-Bridge and Jordan mass spectrograph. Determination of charge by Mosley Law.
AUG. 2025 Week-2	Determination of size of nuclei by Rutherford Back Scattering. mass and binding energy, systematic of nuclear binding energy, nuclear stability
AUG. 2025 Week-3	Unit II: Nuclear Radiation decay Processes Alpha-disintegration and its theory. Energetics of alpha-decay, Origin of continuous beta spectrum (neutrino hypothesis),
AUG. 2025 Week-4	Types of beta-decay and energetics of beta-decay. Nature of gamma rays, Energetics of gamma rays.
SEPT. 2025 Week-1	Interaction of heavy charged particles (Alpha particles); Energy loss of heavy charged particle (idea of Bethe formula, no derivation), Range and straggling of alpha particles. Geiger-Nuttal law. Interaction of light charged particle (Beta-particle), Energy loss of beta-particles (ionization),
SEPT. 2025 Week-2	Range of electrons, absorption of beta-particles. Interaction of Gamma Ray; Passage of Gamma radiations through matter (Photoelectric, Compton and pair production effect) electron-positron annihilation. Absorption of Gamma rays (Mass attenuation coefficient) and its application. Unit III: Nuclear Accelerators Linear accelerator, Tandem accelerator, Cyclotron and Betatron accelerators.
SEPT. 2025 Week-3	Nuclear Radiation Detectors. Gas filled counters; Ionization chamber, proportional counter, G.M. Counter (detailed study), Scintillation counter and semiconductor detector. Unit IV: Nuclear reactions. Nuclear reactions, Elastic scattering, Inelastic scattering, Nuclear disintegration, Photonuclear reaction, Radiative capture, Direct reaction,
SEPT. 2025 Week-4	Heavy ion reactions and spallation Reactions. Conservation laws, Q-value and reaction threshold. Nuclear Reactors. Nuclear Reactors, General aspects of Reactor Design. Nuclear fission and fusion reactors, (Principle, construction, working and use).
OCT. 2025 Week-1	Overview, scale of quantum physics, boundary between classical and quantum phenomena, Photon, Photoelectric effect, Compton effect (theory and result), FrankHertz experiment, de-Broglie hypothesis. Davisson and Germer experiment, -G.P. Thomson experiment. Phase velocity, group velocity and their relation. Heisenberg's uncertainty principle.
OCT. 2025 Week-2	Time energy and angular momentum, position uncertainty. Uncertainty principle from de Broglie wave. (Wave-particle duality). Gamma Ray Microscope, Electron diffraction from a slit. Derivation of 1-D time-dependent Schrodinger wave equation (subject to force, free particle). Time-independent Schrodinger wave equation, eigen values, eigen functions, wave functions and its significance.



OCT. 2025 Week-3	Orthogonality and Normalization of function, concept of observer and operator. Expectation values of dynamical quantities, probability current density Unit II: Application of Schrodinger wave equation: (i) Free particle in one-dimensional box (solution of Schrodinger wave equation, eigen functions, eigen values, quantization of energy and momentum, nodes and anti nodes, zero point energy).
OCT. 2025 Week-4	One dimensional step potential $E > V_0$ (Reflection and Transmission coefficient) (iii) One dimensional step potential $E < V_0$ (penetration depth calculation). (iv) One dimensional potential barrier, $E > V_0$ (Reflection and Transmission coefficient) (v) One-dimensional potential barrier, $E < V_0$ (penetration or tunneling coefficient). (vi) Solution of Schrodinger equation for harmonic oscillator (quantization of energy, Zero-point energy, wave equation for ground state and excited states).
NOV. 2025 Week-1	Unit III: Laser Physics –I Absorption and emission of radiation, Main features of a laser: Directionality, high intensity, high degree of coherence, spatial and temporal coherence,
NOV. 2025 Week-2	Einstein's coefficients and possibility of amplification, momentum transfer life time of a level, kinetics of optical absorption ((two and three level rate equation,
NOV. 2025 Week-3	, Fuchbauer landerburg formula).population inversion: A necessary condition for light amplification, resonance cavity, laser pumping, Threshold condition for laser emission, line broadening mechanism, homogeneous and inhomogeneous line broadening (natural, collision and Doppler broadening).
NOV. 2025 Week-4	Laser Physics – II He-Ne laser and RUBY laser (Principle, Construction and working), Optical properties of semiconductor, Semiconductor laser (Principle, Construction and working), Applications of lasers in the field of medicine and industry.



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