

LESSON PLAN (2025-26)	
Name of the Assistant Professor: DR. S. B. BHARDWAJ	
Class and Section: B.Sc.I (1st Sem)	
Subject: Physics (Mechanics) (July 2025-Dec 2025)	
Week	Topics
1	Discussion of NEP scheme, syllabus and pattern of the theory examination, working in physics lab etc
	Unit-1: Rigid body, Moment of Inertia, Radius of Gyration, Theorems of perpendicular and parallel axis with proofs
	Determination of Moment of Inertia of ring, Disc and Angular Disc
2	Determination of M.I. of Solid cylinder and Hollow cylinder
	Determination of M.I. of Solid sphere and Hollow sphere
	Determination of M.I. of Rectangular plate, Square plate and Solid cone
3	Revision of M.I. of Solid cone and Determination of Triangular plate
	Basics of Torque, Rotational Kinetic Energy, Angular momentum, Law of conservation of angular momentum
	Rolling motion, condition for pure rolling, acceleration of body rolling down an inclined plane
4	Determination of M. I. using Fly wheel and discussion
	Determination of M. I. of an irregular body using Torsion pendulum
	Revision of Unit-1
5	Class Test of Unit-1
	Unit-2: Basics of Elasticity: Deforming force, Elastic limit, stress, strain and their types, Hooke's law
	Young's Modulus, Modulus of rigidity, Bulk Modulus, Relation between shear angle and angle of twist
6	Elastic energy stored/volume in an elastic bodies
	Elongation produced in heavy rod due to its own weight and elastic potential energy stored in it
	Tension in rotating rod, Poisson's ratio and its limiting value
7	Elastic Constants and their relations.
	Torque required for twisting cylinder, Hollow shaft is stiffer than solid one. Bending of beam
	Bending of beam, bending moment and its magnitude, Flexural rigidity
8	queries & doubts of Unit-2 till now
	Geometrical moment of inertia for beam of rectangular cross-section and circular cross-section.
	Bending of cantilever (loaded by a weight W at its free end), weight of cantilever uniformly distributed over its entire length
9	Depression of a centrally loaded beam supported at its ends

	Determination of elastic constants for material of wire by Searle's method
	Revision of Unit-2
10	Unit-3: Michelson Morley experiment and its outcomes, Postulates of special theory of relativity
	Lorentz Transformations, Simultaneity and order of events
	Length contraction, Time dilation, Relativistic transformation of velocity, relativistic addition of velocities
11	Variation of mass-energy equivalence, relativistic Doppler effect
	Queries and doubts of Unit-3 and numerical problems
	Relativistic kinematics, transformation of energy and momentum
12	Transformation of force, Problems of relativistic dynamics.
	Revision of Unit-3
	Class Test of Unit-3
13	Discussion on Unit-4: Gravitation and central force motion
	Law of gravitation, Potential and field due to spherical shell and solid sphere.
	Motion of a particle under central force field
14	Two body problem and its reduction to one body problem and its solution
	Compound pendulum or physical pendulum in form of elliptical lamina and expression of time period
	determination of g by means of bar pendulum
15	Normal coordinates and normal modes, Normal modes of vibration for given spring mass system
	possible angular frequencies of oscillation of two identical simple pendulums of length (l) and small bob of mass (m) joined together with spring of spring constant (k)
	Revision of Unit-4
16	Class Test of Unit-4

Dr. S. B. Bhardwaj