Lesson Plan

Name of the Assistant/ Associate Professor... JASVINDER.....
Class and Section:.....B.Sc. I (IST Sem).....
Subject:.....MECHANICS AND THEORY OF RELATIVITY

Week	Date	Topics
1	15-21 July	BASICS OF MECHANICS :- Mechanics of single and system of particles, conservation of linear momentum, angular momentum and mechanical energy for a particle and a system of particles, centre of mass and equation of motion, constrained motion, work and kinetic energy theorem, conservative and non-conservative forces, potential energy, Energy diagram, Stable and Unstable equilibrium, Elastic Potential energy, force as gradient of potential energy, work and energy work done by non-conservative forces, law of conservation of energy.
	21-26 July	
	28-02 Aug.	
2		
	4-9 Aug.	
	11-16 Aug.	
3		GENERALIZED NOTATIONS :→ Degree of freedom and Generalised Coordinates, Transformation equations, Generalised coordinates { Displacement, velocity, Acceleration, momentum, force, potential } components of velocity and acceleration in cylindrical and spherical coordinate system, Hamilton's Variational principle, Lagrange's eq^{n} of motion from Hamilton's principle. Linear Harmonic Oscillators, Simple pendulum Atwood's machine.
	18-23 Aug.	
	25-30 Aug.	
4	1-6 Sept.	
	8-13 Sept.	
		ROTATIONAL DYNAMICS :→ Rotation of rigid body, moment of inertia, torque, angular momentum, kinetic energy of rotation. Theorem of
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	15-20 Sept.	

Lesson Plan

Name of the Assistant/ Associate Professor..... JASVINDER.....

Class and Section:...B.Sc. I (Ist Sem.).....

Subject:.MECHANICS...AND.....THEORY OF RELATIVITY

Week	Date	Topics
1		Perpendicular and parallel axes with proof. Moment of inertia of solid sphere,
	22-27 Sept.	hollow sphere, spherical shell, solid cylinder, hollow cylinder and solid bar of rectangular cross-section,
		Acceleration of a body rolling down on an inclined plane, Kinetic energy of
2		rotation, Motion involving both
	29-4 Oct.	translation and rotation.
		Test Class / Group decission
		SPECIAL THEORY OF RELATIVITY:→
		Non-inertial frame and fictitious
	6-13 Oct.	forces, uniformly rotating frames,
		law of physics in rotation coordinate
3		system. Centrifugal force, coriolis
		force and its applications, Michelson-
	23-31 Oct.	Morley experiment and its outcome.
		Postulates of Special Theory of relativity
		Lorentz Transformation. Simultaneity
		and Order of event, Lorentz Contraction,
		Time Dilation, Relativistic Transformation
4		(velocity, frequency, wave number).
	1-8 Nov.	variation of mass with velocity;
		Massless particle, Mass - Energy equivalence
		Relativistic Doppler effect, Relativistic
		kinematics, Transformation of
		energy and momentum,
		Energy - Momentum four vector.
5	10-15 Nov.	class test & Presentation.

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Lesson Plan

Name of the Assistant/ Associate Professor: JASVINDER/PARMJEET

Class and Section: B.A. (I), MDC

Subject: PHYSICS - FUNDAMENTAL - I

Week	Date	Topics
1	15-21 July.	Physics - Nature, Scope and excitement, Major discoveries in physics, major contribution by Indian Physicisit. Fundamental
	21-26 July	physical constants, Physics in relation to Other sciences, impact of physics on society. System of measuring units - Need for measurement, measuring process, concept of
2	28 July.	mass, length, time; System of units.
	02 Aug.	Fundamental and derive units - concepts of error, types of error; Accuracy, Precision in measurements. least Count,
	4-9 Aug.	Applications of measuring instruments - Vernier calliper, Screw - gauge. [Presentation] Motion of objects in one - dimensional
3		position of the object. Origin/reference point.
	11-16 Aug.	Frame of reference, Definitions and example of motion in one, two and three dimensions. Scalar, vector quantities.
		Description of motion along a straight
	18-23 Aug.	in distance and displacement, uniform motion and non-uniform motion,
4		Average and instantaneous speed,
	25-30 Aug.	Average and instantaneous velocity, acceleration, graphical analysis of
		straight line motion - distance - time
	1-6 Sept.	graph, velocity - time graph,
		eqn of motions and their application
5	8-13 Sept.	Causes of motion - Concept of force, Newton's 1st law of motion, inertia
		and mass Newton's 2nd law of motion.

Class Test

Lesson Plan

Name of the Assistant/ Associate Professor: JASVINDER/PARMJEET

Class and Section: B.A.(I) 9 MDC

Subject:

Week	Date	Topics
1	15-20 Sept	momentum and force; 3rd law of motion
		daily life applications of Newton's laws
	22-27 Sept	of motion. universal law of gravitation;
		Acceleration due to gravity and free-fall
	29-04 Sept Oct	of a body; mass and weight of an
		object on earth and moon, Buoyancy,
		concept of thrust and pressure and
2	6-13 Oct.	importance in daily life. Archimedes
		principle the physics behind floating
		of objects on water.
	23-31 Oct.	work, energy, types of energy-kinetic
		energy and potential energy. Potential
		energy of an object at a height;
3		law of conservation of energy
		and its applications. Conservation of
	1-08 Nov.	linear and angular momentum.
		Collision (elastic and inelastic) and
		conservation laws in collisions -
		importance in daily life. Concepts
		of centre of mass - Physics behind
4	10-15 Nov.	cycling, rock climbing and
		skating.
		class test
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Lesson Plan

Name of the Assistant/ Associate Professor: JASVINDER

Class and Section: B.Sc. III (5th Sem.)

Subject: QUANTUM MECHANICS

Week	Date	Topics
1	15 July. 24	Failure of (Classical) F.M. Theory. Quantum
	28 July. 26	theory of Radiation, Photons, Photo-
		-electric effect and Einstein Photo-
	28 July. 02 Aug.	electric equation, Compton effect.
		De-Broglie Hypothesis. Davission and
		Germer experiment, Phase velocity
		and group velocity. Heisenberg's
2		uncertainty principle. Time-energy
	04 Aug. 09 Aug.	and angular momentum, position
		uncertainty. wave-particle duality,
	11 Aug. 16	Gamma-Ray microscope, Electron
		diffraction from a slit.
		Class Test.
	18 Aug.	Derivation of time-dependent and
3	23 Aug.	time-independent Schrodinger wave
	25 Aug. 30	equation, eigen values, eigen
	1-6 Sept.	functions, wave functions and it's
		significance. Normalization of wave
	8-13 sept.	function, concept of observable and
	15-20 sept	operator. Solution of Schrodinger eqn
		for harmonic oscillator.
4	22-27 sept	Application of Schrodinger equation in
	29 Sept. 4 Oct	the solution of the following one-
		dimensional problems:- Free particle
	6-13 Oct.	in one dimensional box. Solution of
		Schrodinger wave eqn, eigen function,
	23-31. Oct	eigen values, nodes, antinodes, Zero-point
		energy.
5	01-08 Nov.	i) one-dimensional potential barrier ($E > V_0$)
		ii) one-dimensional potential barrier
	10-15 Nov	($E < V_0$) (Reflection, transmission
		coefficient, Penetration Depth)

Group decision.

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