

Lesson Plan (2025-2026)

Name: Dr. Meena

Paper Code:240/PHYP/MD102

Class:1 semester (MDC)

Subject:Rational Thinking and Science

July 16th onwards	Unit -1 Scientific Approach and Rational Thinking: Fundamentals of rational thinking, faith vs belief, the scientific method: observation, hypothesis, experimentation, and conclusion, origin of science through curiosity and inquiry. Assignments
August	Unit-1 myth-busting discoveries in physics: 1) Heliocentrism (Copernicus, Galileo), 2) Gravity and motion (Newton), 3) Theory of relativity (Einstein), 4) Nature of lightning (Benjamin Franklin), 5) Vacuum and air pressure (Evangelista Torricelli, Otto von Guericke) Assignments.
September	Unit-2 Myths and Scientific Thinking: Science vs faith, science vs pseudoscience, definition, origin, and types of myths and beliefs, evolution of myths and misconceptions in explaining natural phenomena, influence of cultural and social beliefs on scientific progress, Darwin's theory as a case study in scientific thinking. MID TERM TEST
October	Unit-3 The Paradox of Science & Technology: Distinction between science and technology, understanding the science-technology acceptance paradox, case studies: 1) acceptance and rejection of new technologies, 2) rejection and resistance to scientific ideas, the future of Artificial Intelligence (AI) and its societal acceptance, potential problems in AI
November	Unit-4 Challenges in Promoting Rational Thinking: Barriers to rational thinking, role of education and media in promoting or hindering rationality, scientific temper, and constitutional duty: relevance in Indian context (Article 51A(h)), case studies: superstition and blind beliefs (e.g., astrology, miracle claims), science communication: importance of clear communication of science to the public. FULL SYLLABUS TEST

Name: Dr. Meena

Paper Code:240/PHY/CC-A1

Class: B.Sc. 1st Year(Physical science)

Subject: Mechanics

July 16th onwards	Unit -1 Time derivative of a vector, Motion in Plane Polar coordinates, Newton's Law, Mechanics of single and system of particles.
August	Unit-1 Conservation of laws of linear momentum, angular momentum and mechanical energy, Central forces, fictitious forces, Centrifugal force, Coriolis force and its applications. Assignments
September	Unit-2 Centre of mass and equation of motion, Constrained motion, degrees of freedom, Generalised coordinates, displacement, velocity, acceleration, momentum, force and potential. Hamilton's variational principle, Lagrange's equation of motion from Hamilton's Principle. Linear Harmonic oscillator, simple pendulum, Atwood's machine. MID TERM TEST
October	Unit-3 Rotation of rigid body, moment of inertia, torque, angular momentum, kinetic energy of rotation. Theorems of perpendicular and parallel axes with proof. Moment of inertia of solid sphere, 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. Assignments
November	Unit-4 Inertial and Non-Inertial Frames and their examples, Invariance of Newton's Laws of motion under Galilean transformations. Postulates of Special Theory of Relativity, Length Contraction, Time Dilation, Variation of Mass with Velocity, Mass-Energy Equivalence. FULL SYLLABUS TEST

GOVT. COLLEGE JATAULI HAILYMANDI GURUGRAM		
LESSON PLAN FOR THE ODD SESSION 2025-26		
DEPARTMENT OF PHYSICS		
NAME OF THE TEACHER: DR. PREMLATA YADAV		
SUBJECT:Waves and Optics (Semester-III)		
Course ID: 240/PHYP/CC301		
WEEKS	DATES	TOPICS
1	16-19 JULY 25	UNIT-I: Waves: Oscillatory motion; Simple Harmonic Motion; Wave Motion;
2	21-26 JULY 25	Transverse & Longitudinal Waves; Wave Equation and its solution
3	28 JULY-2AUG 25	Superposition of waves; Stationary waves; Stretched string with fixed ends
4	4-9 AUG 25	Phase velocity & group velocity; Light as a transverse wave
5	11-16 AUG 25	UNIT-II: Interference:Division of wavefront: Young's double-slit experiment; Conditions of
6	18-23 AUG 25	Fresnel's biprism; Applications to measure wavelength and thickness
7	25-30 AUG 25	Division of amplitude: Thin films, colour in films, wedge-shaped film, Newton's rings
8	1 -6 SEPT 25	Interference in transmitted & reflected light
9	8-13 SEPT 25	UNIT-III: Diffraction:Fresnel's diffraction; Huygens-Fresnel theory; Fresnel assumptions;
10	15-20 SEPT 25	Fraunhofer diffraction: single slit, double slit, diffraction at circular aperture;
11	22-27 SEPT 25	Transmission grating, dispersive power of grating
12	29 SEPT -4 OCT 25	Rayleigh's criterion, resolving power of telescope and grating
13	6-11 OCT 25	UNIT-IV: Polarisation:Polarisation by reflection, refraction & scattering;
14	13-17 OCT 25	Malus' law; Phenomenon of double refraction; Huygens' wave theory
15	27-31 OCT 25	Analysis of polarised light: Nicol prism; Quarter-wave plate; Half-wave plate;
16	3-8 NOV 25	Detection of plane, circular & elliptical polarisation
17	10-15 NOV25	Optical activity; Fresnel's theory; Specific rotation; Polarimeters (half-shade & biquartz)
18	17-22 NOV 25	Revision & Problem Solving
19	24-29 NOV 25	Review of all units; Numerical problem sessions; Past paper discussion