

(Lesson Plan)

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Odd Semester)
Session – (2024-2025)

Name of the Teachers: Dr. Kulwinder Kaur and Dr. Monika

Department: Department of Physics

Class: B.Sc. I

Subject: Mechanics

Section(s): N.M & Vocational

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1.	15/07/2024	31/08/2024	Cartesian, plane polar and spherical polar co-ordinate systems, area, volume, displacement, velocity, and acceleration in these systems, Relationship of conservation laws of linear momentum, angular momentum and energy, symmetries of space and time.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems (v) Class test
2.	01/09/2024	30/09/2024	Various forces in nature, relative strengths and spatial dependence, Motion under force obeying inverse square law, equivalent one-body problem. Motion under central forces, equation of motion under central force, equation of orbit and turning points, Kepler's Laws. Elastic collision in lab and C.M. systems, relationships of velocities, angles, and kinetic energies in these two systems.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems (v) Class test
3.	01/10/2024	31/10/2024	Galilean transformations and Invariance, Non-Inertial frames. Fictitious forces in a rotating frame of reference, Centrifugal and Coriolis forces due to rotation of earth. Concept of stationary universal frame of reference and ether, Michelson-Morley experiment, and its results.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems (v) Class test
4.	01/11/2024	18/11/2024	Postulates of special theory of relativity, Lorentz transformations, Kinematical consequences of Lorentz transformations – length contraction and time dilation, Twin paradox, Transformation of velocities, Relativistic Doppler effect. Variation of mass with velocity, mass-energy equivalence.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems (v) Class test

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Even Semester)
Session – (2024-2025)

Name of the Teachers: Dr. Kulwinder Kaur and Dr. Monika

Department: Department of Physics

Class: B.Sc. I Subject: Electricity and Magnetism

Section: N.M & Vocational

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*	
	From	To			
1.	10/01/2025	28/2/2025	Basic ideas of Vector Calculus, Del Operator, Gradient, Divergence, curl in Cartesian coordinates, physical significance and applications, Conservative field, Laplacian in Rectangular coordinates. Stoke's theorem, Gauss's divergence theorem, Coulomb's Law for point charges and continuous distribution of charges, electric field due to dipole, line charge, charged ring, circular disc, spherical shell, solid sphere, Gauss's Law and its differential form, Applications of Gauss's Law.	(i) (ii) (iii) (iv) (v)	Lecture method Group discussion Notes Numerical Problems Class tests and doubt sessions
2.	01/03/2025	31/03/2025	Work and potential difference, Potential difference as line integral of field, Electric potential due to uniformly charged wire, circular ring, spherical shell, dipole, linear quadrupole, Electric field as gradient of scalar potential, curl $E = 0$. Poisson and Laplace's equation. Polarisation of matter, atomic and molecular dipoles, induced dipole moment and atomic polarizability. Electric susceptibility and polarization vector. Relation $K=1+c$, Gauss's law for dielectrics. Displacement vector, Div. $D = 0$.	(i) (ii) (iii) (iv) (v)	Lecture method Group discussion Notes Numerical Problems Class Tests and doubt sessions
3.	01/4/2025	26/4/2025	Current density and equation of continuity. Microscopic form of Ohm's Law ($\mathbf{J} = \sigma \mathbf{E}$). Invariance of charge, E in different frames of reference. Behaviour of various substances in magnetic field. Definition of M and H , Permeability and susceptibility and their inter relationship. Lorentz's force. Definition of $\mathbf{B}$. Biot Savart's Law and its application to long straight wire, circular current loop and solenoid. Ampere's Circuital law and its applications. Divergence and curl of $\mathbf{B}$. Faraday's Law of EM induction, Self and Mutual inductance and reciprocity theorem.	(i) (ii) (iii) (iv) (v)	Lecture method Group discussion Notes Numerical Problems Class tests and doubt sessions

