(Lesson Plan)

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Odd Semester)
Session – (2021-2022)

Name of the Teacher: **Dr. Swati Khatta**

Department: **Department of Physics**

Class: **B.Sc. I** **Subject:** **Electricity and Magnetism-I** **Section:** **N.M& Vocational**

S.No.	Date (Monthly) From	Date (Monthly) To	Topics to be Covered	Academic Activity Undertaken*
1.	1st Sept. 2021	30th Sept. 2021	Basic ideas of Vector Calculus, Gradient, Divergence, curl in Cartesian coordinates and their useful relations, physical significance and applications	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes (v) Numerical Problems
2.	1st Oct. 2021	31st Oct. 2021	Conservative field, Greens's theorem in a plane, divergence theorem. Stoke's theorem, Coulomb's Law for point charges and continuous distribution of charges.	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes (v) Numerical Problems
3.	1st Nov. 2021	30th Nov. 2021	Electric field due to dipole, line charge, charged ring, circular disc and sheet of charge. Gauss's Law and its differential form. Work and potential difference, Potential difference as line integral of field, Electric potential due to dipole and quadrupole and its applications in Electrostatic field, Electric field as gradient of scalar potential, curl $E = 0$. Calculation of E due to a point charge and dipole from potential. Poisson and Laplace's equation, Concept of Electrical images. Calculation of electric potential and field due to a point charge placed near an infinitely conducting sheet.	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes (v) Numerical Problems
4.	1st Dec. 2021	16th Dec.2021	Polarisation of matter, atomic and molecular dipoles, induced dipole moment and atomic polarizability. Electric susceptibility and polarization vector. Relation $K = 1 + \chi$, Gauss's law for dielectrics. Displacement vector, Div. $D = 0$, Energy stored in dielectric medium.	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes (v) Numerical Problems

(Lesson Plan)

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Even Semester)
Session – (2021-2022)
Name of the Teacher: Dr. Swati Khatta

Department: Department of Physics

Class:B.Sc.I Subject:Electricity and Magnetism-II Section:N.M& Vocational

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	**To**		
1	3rd Feb.2022	28th Feb.2022	Current and current density, equation of continuity. Microscopic form of Ohm's Law ($J = \sigma E$) and conductivity, Failure of Ohm's Law, Invariance of charge. E in different frames of reference, Field of a point charge moving with constant velocity,	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes (v) Numerical Problems
2	01st Mar.2022	31th Mar.2022	Force between parallel currents, Behaviour of various substances in magnetic field, Definition of M and H and their relation to free and bound currents. Permeability and susceptibility and their interrelationship, B-H curve and energy loss in hysteresis, Langevin theory of diamagnetism,	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes (v) Numerical Problems
3	01st Apr. 2022	30th Apr. 2022	Lorentz's force, Definition of B, Biot Savart's Law and its application to long straight wire, circular current loop and solenoid. Ampere's Circuital law and its application. Divergence and curl of B. Hall effect, expression and co-efficient, Vector potential. Definition and derivation.	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes (v) Numerical Problems
4	01stMay 2022	25th May 2022	Current density-definition, its use in calculation of change in magnetic field at a current sheet. Energy stored in magnetic field, Faraday's Law of EM induction, Displacement current, Mutual inductance& reciprocity theorem Self-inductance for Solenoid.	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes (v) Numerical Problems