

Name of the Course: S.Y.B.Sc. SEM-III
Paper II: MJ 4: Electrodynamics-I (2 Credits)

1.	Course Objectives (CO): After successful completion of this course students will be able to: CO 1.ExplainCoulomb'slaw,Line, surface, volume integrals, Fundamental theorms of Gradientand able to solve problems using them. CO 2. Learn the Dirac Delta function,electric field, Divergence of E and Curl of E. CO 3. Understand potential, Poisson's equation and Laplace's equation CO 4. Describe Properties of 2D and 3D Laplace equation, First & Second Uniqueness theorem, BiotSavart law and its application.
2.	Course outcomes(OC):After successful completion of this course OC 1.students understand basic concept Fundamental theorems of Gradient and able to solve problems using them. OC 2. Students Comprehend the Dirac Delta function, electric field, Divergence of E and Curl of E and able to solve problems using them. OC 3. Understand potential, Poisson's equation and Laplace's equation OC 4. Students understand concept of Electrostatics and Magnetostatics and develops the problem solving skills OC5. Student develop quantitative problem-solving skills in all the topics covered
3.	Unit I: Electrodynamics and Vector calculus: (15 lectures)
	Coulomb's law, Line integrals (electric potential), surface integrals (Gauss Law), volume integrals (Electrostatics energy), Fundamental theorems of Gradient, Introduction to Dirac Delta function (1-D only), Electric Field due to point charge, Divergence of E and Curl of E.
4.	Unit II Electromagnetism (15 lectures)
	Comments on potential, Poisson's equation and Laplace's equation. Solution and properties of 1D Laplace equation with problem. Properties of 2D and 3D Laplace equation (without proof). First & Second Uniqueness theorem, Biot-Savart Law, magnetic field due to a straight conductor, magnetic field along the axis of a circular current-carrying coil,magnetic field due to solenoid.
5.	References: 1. Introduction to Electrodynamics : David J. Griffiths (4th Ed) Prentice Hall of India. Additional References: 2. Introduction to Electrodynamics: A. Z. Capria and P. V. Panat. Narosa Publishing House. 3. Engineering Electrodynamics: William Hayt Jr. & John H. Buck (TMH).

	4. Electricity and Magnetism: Navina Wadhwani (PHI – 2010).	
6.	Internal Continuous Assessment: 40% (20 marks) Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.(at least 3)	Semester End Examination: 60% (30 marks) paper pattern attached
Format of Question Paper: 30 Marks Duration: ONE Hour		
Unit –I (15Marks)	Q:1 A) Attempt any Two (5 Marks each) 10Marks i)Theory ii)Theory iii)Theory iv) Theory B) Attempt any One 05 Marks i)Theory/ Problem ii)Problem	
Unit -II (15Marks)	Q:2 A) Attempt any Two (5 Marks each)10Marks i)Theory ii)Theory iii)Theory iv)Theory B) Attempt any One 05 Marks i)Theory/Problem ii)Problem	