Second year of Five Years integrated M.Sc. (Physics)

M.Sc. – II, Semester – III		**L**	**T**	**P**	**C**
MP 201 :	**Electromagnetics**	**3**	**1**	**2**	**5**

- **VECTOR CALCULUS** **(04 Hours)**
  Vector Algebra, Differential calculaus, Integral Calculus, Coordinate systems,

- **ELECTROSTATICS** **(06 Hours)**
  Electric field, Divergence and curl of electrostatic field, Electric potential, Work and energy in electrostatics, conductors.

- **LAPLACE EQUATIONS, UNIQUENESS THEOREM & METHOD OF IMAGES** **(06 Hours)**
  Laplace equation in one-, two- and three-dimensions, 1st and 2nd uniqueness theorem, Classic image problem, Induced surface charge, Force and energy, Other image problems, Separation of variables, Multipole expansion.

- **ELECTRIC FIELDS IN MATTER** **(06 Hours)**
  Polarization, The field of polarized object, The electric displacement, Linear dielectrics.

- **MAGNETOSTATICS** **(06 Hours)**
  The Lorentz Force law, Biot-Savert's law, The divergence and curl of B, Magnetic vector potential.

- **MAGNETIC FIELDS IN MATTER** **(06 Hours)**
  Magnetization, The field of a magnetized object, The auxiliary field H, Linear and non-linear media,

- **ELECTRON OPTICS & APPLICATIONS** **(08 Hours)**

(Total Contact Time (Theory) : 42 Hours)

BOOKS RECOMMENDED :

1. **Griffiths D. J**., *Introduction to the Electrodynamics*, 3rd Ed. Prentice – Hall of India Private Limited 1999.
2. **Edminister J. A**., *Schaum's Outline series, Theory and Problems of Electromagnetics*, McGraw Hill, 1993.
3. **Sadiku M. N. O**., *Elements of Electromagnetics*, 3/E, Oxford Uni. Press, 2003..
4. **Stewart J. V.,** *Intermediate Electromagnetic Theory*, Allied Publishers(with World Scientific), 2005.
5. **Jackson J.D**., *Classical Electrodynamics*, Wiley Eastern, 2005.