

Physics Curriculum for Semester II

I	Course Code	PH 181002			
II	Course Title	Physics- II			
III	Credit Structure	L	T	P	C
		3	2	0	5
IV	Prerequisite(If any for the student)	Nil			
V	Course Content	<p>Vector Calculus: Gradient, Divergence, Curl and Laplacian, Line, Surface and Volume integrals, Gauss-divergence and Stokes theorems, Spherical polar and Cylindrical coordinate systems.</p> <p>Electrostatics: Electric field and Gauss's law, Electrostatic potential, Multipole expansion, Electrostatic energy, Conductors, Uniqueness theorem, Laplace's solution, Image method, Electrostatic boundary conditions, Electrostatic Fields in matter, Capacitors.</p> <p>Magnetostatics: Lorentz force law, Continuity equation, The Biot- Savart's law, Ampere's law, Magnetic vector potential, Magnetism in materials, Magnetostatic boundary conditions.</p> <p>Electrodynamics: Electromotive force, Faraday's law and Lenz's law, Inductance, Displacement current, Maxwell's equations, Electromagnetic (EM) waves in vacuum and media.</p>			
VI	Text/References	<ol style="list-style-type: none"> 1. D. J. Griffiths, Introduction to Electrodynamics, 3rd Edition, PHI Learning, 2009. 2. J. R. Reitz, F. J. Milford, R.W. Christy: Foundations of Electromagnetic Theory, 4th Edition, Pearson Addison Wesley, 2009. 3. A. Mahajan, A. Rangwala, Electricity and Magnetism, 1st Edition, Tata McGraw Hill, 1988. 4. E. M. Purcell, Berkeley Physics Course, Electricity and Magnetism, Volume 2, 2nd Edition, Tata McGraw Hill, 2007. 5. R. P. Feynman, R.B. Leighton, and M. Sands, The Feynman Lectures on Physics -Vol II, Narosa Publishing House, 2010. 			