Engineering Physics		
Course code	EPHY101	
Category	Basic science Course	
Course title	Engineering Physics (Theory)	
Scheme and Credits	Credits: 3+0	
Pre-requisites (if any)	-	
Unit-1	**Relativistic Mechanics:** Inertial & non-inertial frames, Galilean transformations, Michelson-Morley experiment and importance of negative results, Postulates of special theory of relativity, Lorentz transformations, Length contraction, Time dilation, Velocity addition theorem, Variation of mass with velocity, Einstein's mass energy relation, Relativistic relation between energy and momentum.	**9 (Lectures)**
Unit-2	**Electromagnetic Theory:** Gauss's Theorem of Electrostatics, Ampere's law of Magnetostatics, Ohm's Law, Laws of Electromagnetic Induction, Self and Mutual induction and Displacement Current, Maxwell's Equations in free space and dielectric media, Propagation of EM-waves in free space.	**9 (Lectures)**
Unit-3	**Wave Optics:** Interference: Condition of interference Necessity of extended sources, Newton's Rings and its applications, Wedge shaped thin films, Diffraction: Fraunhoffer diffraction at single slit and double slit, Diffraction grating, Spectra with grating, Resolving power of grating, Rayleigh's criterion of resolution. **Laser:** Spontaneous and stimulated emission of radiation, Einstein's coefficients, Ruby Laser, He-Ne Laser, Laser applications, Optical fiber, and its uses.	**9 (Lectures)**
Unit-4	**Quantum Mechanics:** Black body spectrum, Stefan's law, Wien's law, Rayleigh-Jeans law and Planck's law, Wave particle duality, Matter waves, Time-dependent and time-independent Schrodinger wave equation, Interpretation of wave function, Solution of Schrodinger equation for one-dimensional particle in a box.	**9 (Lectures)**

Reference Books:

1. Aurthur Beiser, Concepts of Modern Physics, McGraw Hill
2. Robert Resnick , Introduction to Special Theory of Relativity, Wiley.
3. Ajoy Ghatak ,Optics, 4th Edition, Tata Mcgraw Hill.
4. Katiyar and Pandey, Engineering Physics: Theory and Practical, Wiley India.
5. D.J. Griffith, Introduction to Electrodynamics by Pearson Publ.
6. Neeraj Mehta, Applied Physics for Engineers, PHI Learning.
7. Malik H Kand Singh AK ,Engineering Physics, McGraw Hill.
8. Halliday, David, Robert Resnick, and Jearl Walker. Fundamentals of Physics. New York: Wiley.
9. B. K. Mathur , Principles of Optics, Gopala Printing.
10. P.A.M. Dirac, "The Principles of Quantum Mechanics" by. Oxford University Press.
11. L. I. Schiff "Quantum Mechanism" , TMH.
12. Practical Physics- K. K. Dey & B. N. Dutta (Kalyani Publishers New Delhi)
13. Engineering Physics-Theory and Practical- Katiyar & Pandey (Wiley India)
14. Engineering Physics Practical- S K Gupta (Krishna Prakashan Meerut)