

PHYSICS COURSES OFFERED IN ENGINEERING & OTHER DISCIPLINES

PH-122 Applied Physics

Introduction: Types of errors and error calculation, Graphical Techniques (Log, semi-log and other non-linear graphs).

Vectors: Review of vectors, vector differentiation (ordinary and partial differentiation)

Mechanics: Motion under constant acceleration, Newton laws and their application, frictional forces, Work and Energy Theorem, Law of conservation of energy, Angular momentum.

Electrostatics And Magnetism: Coulombs Law. Electrostatic potential energy of discrete charges, Continuous charge distribution, Gauss's Law. Electric field around conductors, Magnetic fields, Magnetic force on current, Hall effect, Biot-Savart Law. Ampere's Law, Fields of rings and coils. Magnetic dipole, Diamagnetism, Para magnetism and Ferromagnetism.

Semiconductor Physics: Energy levels in a semiconductor, Hole concept, Intrinsic and Extrinsic regions, Law of Mass Action, P-N junction, Transistor.

Waves And Oscillations: Simple Harmonic oscillation, damped harmonic oscillation, forced oscillation and Resonance, Types of waves and superposition principle, wave speed on a stretched string.

Optics And Lasers: Two-slit interference. Huygens Principle, Single-slit diffraction. Resolving power of optical instruments Principles of laser action, Types of Laser, Application of laser.

Modern Physics: Planck's explanations of black body radiation Photoelectric effect, Compton effect. Bohr theory of Hydrogen atom, atomic spectra, Reduce mass, De-Broglie hypothesis, Electron microscope, Atomic nucleus and property of nucleus, Radioactive Decay and Radioactive, Radiation detection instruments, Nuclear reaction and Nuclear Reactors, Nuclear Fusion

Recommended Books:

1. D. Halliday, R. Resnick and J. Walker, "Fundamentals of Physics", John Wiley & Sons, 9th ed. 2010.
2. R. A. Serway and J. W. Jewett, "Physics for Scientists and Engineers", Golden Sunburst Series, 8th ed. 2010.
3. R. A. Freedman, H. D. Young, and A. L. Ford (Sears and Zeemansky), "University Physics with Modern Physics", Addison-Wesley-Longman, 13th International ed. 2010.
4. D. C. Giancoli, "Physics for Scientists and Engineers, with Modern Physics", Addison-Wesley, 4th ed. 2008.