

Phy 1213

Physics

Contact Hours/Week: 3 Hours

Credit Hour: 3.0

Course Contents:

Structure of Matter: Structure of Matter. Different Types of Bonds in Solids: Metallic, Van Der Waals', Covalent and Ionic Bond. Packing in Solids: Inter Atomic Distances and Forces of Equilibrium, X-Ray Diffraction, Bragg's Law, Distinction among Insulator, Semiconductor and Conductor.

Atomic Physics: Atom Models: Thomson Atom Model, Rutherford Atom Model, Rutherford Scattering Formula, Electron Orbits, Bohr Atom Model, Energy Levels and Spectra, Particle Properties of Waves: Photoelectric Effect, Einstein's Photoelectric Equation, Laws of Photoelectric Emission, Photovoltaic Cells, Compton Effect, Wave Properties of Particle: De Broglie Waves, Group Velocity, Phase Velocity.

Waves and Oscillations: Oscillations: Simple Harmonic Motion, Composition of Simple Harmonic Motions and Lissajous' Figures, Damped and Forced Oscillations, Resonance. Waves: Traveling and Standing waves, Energy Calculation of Traveling and Standing Waves, Intensity of Waves, Beats, Doppler Effect.

Physical Optics: Theories of Light: Wave theory: Huygen's Wave Theory, Huygen's Principle and Construction, Superposition of Light Waves, Electromagnetic Theory, Particle Theory: Newton's Corpuscular Theory, Quantum Theory of Light.

Interference: Introduction, Conditions of Interference, Young's Double Slit Experiment, Fresnel's Bi-prism, Thin Film Interference, Interference Due to Multiple Reflection, Newton's Ring.

Diffraction: Fresnel and Fraunhofer Diffraction, Diffraction by Single and Double Slit, Diffraction Gratings.

Polarization: Introduction, Methods of Producing Polarized Light, Polarization by Reflection and Refraction, Polarization by Double Refraction, Construction of Nicol Prism. Production and Analysis of Polarized Light, Optical Activity, Optics of Crystals, Polarimeter.