403102	Title: Optics and Modern Physics	45 L
Unit 1		**15 L**
	Reflection and Refraction of light: The Nature of Light, The Ray Model in Geometric Optics, The Wave Under Reflection, The Wave Under Refraction, dispersion and Prisms, Huygens's Principle, Total Internal Reflection. Ref.: SJ2 Chapter 10 ***Image Formation by Mirrors and Lenses:*** Images Formed by Flat Mirrors, Images Formed by Spherical Mirrors, Images Formed by Refraction, Thin Lenses. Ref.: SJ2 11.	
Unit 2		**15 L**
	Wave Optics: Conditions for Interference, Young's Double-Slit Experiment, Light Waves in interference, Change of Phase Due to Reflection, Interference in Thin Films, Diffraction Patterns, Resolution of Single-Slit and Circular Apertures,The Diffraction Grating, Diffraction of X-Rays by Crystals. Ref.: SJ2 Chapter 12 ***Quantum Physics:*** Blackbody Radiation and Planck's Theory, The Photoelectric Effect ,The Compton Effect , Photons and Electromagnetic Waves, The Wave Properties of Particles , The Quantum Particle, The Double-Slit Experiment Revisited , The Uncertainty Principle, An interpretation of Quantum Mechanics , Particle in a Box ,The Quantum Particle Under Boundary Conditions , The Schrodinger Equation, Tunnelling Through a Potential Energy Barrier. Ref.: SJ2 Chapter 13	
Unit 3		**15 L**
	Atomic Physics: Early Structural Models of the Atom, The Hydrogen Atom Revisited ,The Wave Functions for Hydrogen, Physical Interpretation of the Quantum Numbers, The Exclusion Principle and the Periodic Table, More on Atomic Spectra: Visible and X-Ray. Ref.: SJ2 Chapter 14 ***Nuclear Physics:***	

	Some Properties of Nuclei, Binding Energy, Radioactivity The Radioactive Decay Processes. Ref.: SJ2 Chapter 15	

	Particle Physics: The fundamental forces in Nature, Positrons and other particles, Mesons and the beginning of particle physics, Classifications of particles, Conservation laws, Strange particles and strangeness, Measuring particles life time, Finding patterns in the particles, Quarks, Colored quarks, The standard model. Ref.: SJ2 Chapter 16	
References:		
Physics: A Calculus based approach (Volume II) by Serway and Jewett (SJ2)		
Additional References:		
3) Physics: (Volumes I and II) H. C. Verma. 4) Physics: (Volumes I and II) by Resnick, Halliday and Krane- Wiley India Edition (5^{th} Edition)		