

Hour	Unit	Topic	Teaching Methodology	Remarks
1	I	Introduction to Wave Optics & Principle of Superposition	Whiteboard	
2	I	Interference of Light – Conditions & Coherent Sources	Whiteboard	
3	I	Interference in Thin Films (Reflection Geometry)	Whiteboard	
4	I	Applications: Colors in Thin Films & Newton's Rings	Whiteboard	
5	I	Determination of Wavelength and Refractive Index using Interference	Whiteboard	
6	I	Diffraction: Introduction & Types (Fresnel and Fraunhofer)	Whiteboard	
7	I	Fraunhofer Diffraction due to Single Slit	Whiteboard	
8	I	Fraunhofer Diffraction due to Double Slit	Whiteboard	
9	I	Diffraction Grating (Qualitative)	Whiteboard	
10	I	Introduction to Polarization	Whiteboard	
11	I	Types of Polarization & Polarization by Reflection	Whiteboard	
12	I	Double Refraction	Whiteboard	
13	I	Half-wave and Quarter-wave Plates	Whiteboard	
14	I	Applications of Polarization	Whiteboard	
15	II	Introduction to Crystallography, Space Lattice, Basis & Unit Cell	Whiteboard	
16	II	Lattice Parameters & Bravais Lattices (3D Crystal Systems)	Whiteboard	
17	II	Coordination Number & Packing Fraction (SC, BCC, FCC)	Whiteboard	
18	II	Miller Indices – Notation and Examples	Whiteboard	
19	II	X-ray Diffraction – Introduction	Whiteboard	
20	II	Crystal Structure Determination – Laue Method	Whiteboard	
21	II	Crystal Structure Determination – Powder Method	Whiteboard	
22	III	Dielectric Materials – Introduction & Definitions	Whiteboard	
23	III	Dielectric Polarization & Types of Polarizations	Whiteboard	
24	III	Electronic and Ionic Polarizability (Quantitative)	Whiteboard	

25	III	Orientation Polarization (Qualitative)	Whiteboard	
26	III	Lorentz Internal Field & Clausius–Mossotti Equation	Whiteboard	
27	III	Magnetic Materials – Introduction & Classification	Whiteboard	
28	III	Magnetic Dipole Moment, Magnetization & Magnetic Susceptibility	Whiteboard	
29	III	Dia, Para, Ferro, Antiferro & Ferri Magnetic Materials	Whiteboard	
30	III	Domain Concept for Ferromagnetism & Hysteresis	Whiteboard	
31	III	Soft and Hard Magnetic Materials	Whiteboard	
32	IV	Quantum Mechanics – Dual Nature of Matter	Whiteboard	
33	IV	Wave Function – Significance & Properties	Whiteboard	
34	IV	Time-independent and Time-dependent Schrödinger Equations	Whiteboard	
35	IV	Particle in a One-dimensional Infinite Potential Well	Whiteboard	
36	IV	Classical Free Electron Theory – Merits & Demerits	Whiteboard	
37	IV	Quantum Free Electron Theory & Electrical Conductivity	Whiteboard	
38	IV	Fermi-Dirac Distribution & Temperature Dependence	Whiteboard	
39	V	Introduction to Semiconductors & Formation of Energy Bands	Whiteboard	
40	V	Intrinsic Semiconductors: Density of Charge Carriers & Conductivity	Whiteboard	
41	V	Extrinsic Semiconductors: Density of Charge Carriers	Whiteboard	
42	V	Drift and Diffusion Currents	Whiteboard	
43	V	Hall Effect & Applications	Whiteboard	
44	All	Recap & Revision of Units I–V	Whiteboard	
45	All	Practice Problems & Discussion	Whiteboard	