

GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2025-26

Name of Assistant Professor: MANJU KUMARI

Class & Sem.: B.Sc II year III Sem (PS) Subject: Physics (DSC) OPTICS

Months	Topics/Chapters to be covered
August 2025	Unit-I Interference - Interference by division of wave front, young's double slit exp., coherence, conditions of interference, fresnell's biprism and its application to determine the wavelength of sodium light and thickness of amica sheet, Phase change on reflection, Interference by division of amplitude, Plane parallel thin film, production of colours in thin films, classification of fringes in films, Interference due to transmitted light and reflected light, wedge shaped film Newton's rings.
September 2025	Unit-II Diffraction fresnell's diffraction: Huygen's Fresnell's theory, fresnell's assumptions, rectilinear propagation of light, diffraction at a straight edge, rectangular slit and diffraction at a circular aperture, Fraunhofer diffraction Single slit diffraction, double slit diffraction, plane transmission grating spectrum, dispersive power of grating limit of resolution, Rayleigh's criterion, resolving power of telescope and a grating.
October 2025	Unit-III Polarization by reflection, refraction and scattering, Malus law, Phenomenon of double refraction, Huygen's wave theory of double refraction, Analysis of polarized light, Nicol prism, Quarter wave plate and wave plate, production and detection of (i) plane polarized light (ii) circularly polarized light (iii) Elliptically polarized light. Optical activity, Fresnell's theory of optical rotation, specific rotation, Polarimeters Unit-IV Lasers -
November 2025	Basic concepts of absorption and emission of radiations, amplification and population inversion, Main components of lasers i) active medium (ii) pumping (iii) optical Resonator, Properties of laser beam, Monochromaticity, Directionality, Intensity, coherence, metastable state, Excitation mechanism and Types of lasers Applications of lasers. FIBRE OPTICS:- optical fibres and their properties, principal of light propagation through a optical fibre, acceptance angle and numerical aperture, types of optical fibres, single mode and multimode fibre, Advantages and disadvantages of optical fibres

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Name of Assistant Professor: MANJU KUMARI

Class & Sem.: B.Sc. II Year (P.V) Sem Subject: Physics (S.E.C)

Months	Topics/Chapters to be covered
August 2025	Unit-I Measuring units, conversion to SI and CGS. Familiarization with meter scale, vernier calliper, screw gauge and their utility. measure the dimension of a solid block, volume of cylindrical beaker, diameter of a thin wire, thickness of metal sheet, use of Sextant to measure height of buildings, mountains etc.
September 2025	Unit-II Electrical and Electronic skill, use of multimeter, soldering of electrical circuits having discrete components and ICs on PCB Network Theorem superposition theorem, Thevenin's theorem, Norton's theorem. Maximum power transfer theorem.
October 2025	Unit-III Power supplies- Basic of power supplies. AC Power supplies, characteristics, use in basic circuit DC Power supplies, fixed voltage V or variable voltage supplies, component of power supplies, Transformers, rectifiers, filters and regulators, voltage Regulation and ripple Reduction, concepts of regulation, ripple and stability, use of capacitors, Zener diodes and IC voltage regulators
November 2025	Unit-IV Cathode Ray oscilloscope (C.R.O) Introduction to CRO, Basic structure and working of a C.R.O Electron gun, deflection systems and phosphor screen, Block diagrams and functions of each component operating a CRO Adjusting controls. Time base, volts, focus, intensity and trigger connecting probes and setting ground reference Application of C.R.O measurement of voltage frequency and Phase difference Observation of waveforms, sine square and triangular waves.

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Name of Assistant Professor: MANTU KUMARI

Class & Sem.: B.Sc. (H) (Physics) Subject: Physics (MIC)

Months	Topics/Chapters to be covered
August 2025	Unit-I Foundations of Quantum Physics, Planck's quantum hypothesis and concept of photons, Photoelectric effect, Qualitative explanation and applications, Compton scattering, Basic understanding De Broglie wavelengths and matter waves, Davisson and Germer exp.
September 2025	Unit-II Atomic structure and wave particle Duality Limitation of Rutherford's model, Atomic instability and discrete spectra Bohr's quantization rule and energy levels of H_2 like atoms wave particle duality and Heisenberg uncertainty principle simple examples Energy-time uncertainty principle.
October 2025	Unit-III Basic of quantum mechanics Two slit interference exp. Introduction to Schrodinger equation One dimensional infinitely rigid box Energy levels and relevance in quantum dots. step potential and applications.
November 2025	Unit-IV Nuclear Physics and applications Basic structure of the nucleus, size, atomic weight and binding energy, Radioactivity stability of nucleus, laws of decay and half life overview of α decay and γ ray emission Introduction to nuclear fission and fusion Energy generation, mass deficit and thermonuclear reactions Application of nuclear energy, Brief on nuclear reactors and their principles

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Name of Assistant Professor: MANTU KUMARI

Class & Sem.: B.Sc IIIrd V Sem

Subject: Physics (Solid state Physics)

Months	Topics/Chapters to be covered
August 2025	Crystalline and glassy forms, liquid crystal. Crystal structure, periodicity, lattice and basis, crystal translational vector and axes. Unit cell and primitive cell, wigner seitz primitive cell, symmetry operations for a two dimensional crystal, Bravais lattices in two and three dimensions.
September 2025	Unit-II Crystal plane and miller indices, Interplanar spacing, Crystal structures of zinc sulphide, sodium chloride and diamond, x-ray diffraction, Bragg's law and experimental x-ray diffraction methods,
October 2025	K-space. Unit-III Reciprocal lattice and its physical significance, Reciprocal lattice vectors, reciprocal lattice to a simple cubic lattice, b.c.c and f.c.c
November 2025	specific heat - specific heat of solids, Einstein's theory of specific heat, Debye model of sp heat of solids. Revision & UT

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