

**Govt. College for Women Lakhan Majra, Rohtak**  
**Lesson Plan (Odd Semester 2023-24)**

**Name of Assistant Professor: Dr. Anjali Maan**

**Class: - B.Sc. Ist Semester**

**Subject: Physics**

**Paper I – PHY-102: Electricity and Magnetism**

<b>Sr. No.</b>	<b>Date/Week/Month</b>	<b>Syllabus</b>
<b>1.</b>	<b>August 2023</b>	Scalars and vectors, dot and cross product, Triple Vector Product, Scaler and vector fields, Differentiation of a vector, Gradient of a scalar and its Physical Significance, Integration of a vector, Guass Divergence Theorem Stokes Theorem.
<b>2.</b>	<b>September 2023</b>	Derivation of E from potential as Gradient, Derivation of Laplace and Poisson equations, Electric Flux, Guass Law and its application to Spherical Shell, Uniformly charged infinite plane sheet and uniformly charged straight wire, Mechanical force of charged surface, Energy per unit volume. Test of Unit 1 Magnetic Induction, magnetic flux, solenoidal nature of vector field of Induction.
<b>3.</b>	<b>October 2023</b>	Properties of B. Electronic Theory of Dia and Paramagnetism. Domain Theory of Ferromagnetism. Cycle of magnetization and Hyteresis. Hyteresis loss and Determination, Hyteresis Curve. Test of Unit 2 Maxwell Equations and their derivations, Displacement Current and Scaler Potentials, Boundary Conditions at Interface between two different media.
<b>4.</b>	<b>November 2023</b>	Propagation of Electromagnetic wave, Poynting Vector and Poynting Theorem. Assignments. Test of Unit 3. Revision of Whole Syllabus.

**Govt. College for Women Lakhan Majra, Rohtak**  
**Lesson Plan (Odd Semester 2023-24)**

Name of Assistant Professor: Dr. Anjali Maan

Class: - B.Sc. 3<sup>rd</sup> Semester

Subject: Physics

Paper I – PHY-302: Optics 1

Sr. No.	Date/Week/Month	Syllabus
1.	August 2023	Speed of Transverse Waves in a string, Speed of Longitudinal Waves in fluid, Superposition of Waves, Fourier Analysis of complex waves and application to solution of triangular and Rectangular Waves. Half Wave and Full wave Rectifier outputs Fourier Transforms and its applications. Test of Unit 1.
2.	September 2023	Matrix Methods in Paraxial Optics, Effect of Translation and Refraction, Derivation of thick and thin lens Formulae, Unit Planes and Nodal Planes, System of thin lenses, Chromatic, Spherical Abberation, Astigmatism and distortion Aberrations and Remedies. Test of Unit 2.
3.	October 2023	Interference by Division of wavefront: Fresnel Biprism and application in determining wavelength and thickness of mica Sheet. Lloyds Mirror. Phase Change on reflection. Test of Unit 3
4.	November 2023	Assignment and Revision of whole Syllabus.

**Govt. College for Women Lakhan Majra, Rohtak**  
**Lesson Plan (Odd Semester 2023-24)**

**Name of Assistant Professor: Dr. Anjali Maan**

**Class: - B.Sc. 5<sup>th</sup> Semester**

**Subject: Physics**

**Paper I – PHY-502: Quantum Mechanics**

<b>Sr. No.</b>	<b>Date/Week/Month</b>	<b>Syllabus</b>
<b>1.</b>	<b>August 2023</b>	Failure of Classical E.M. Theory, Quantum Theory of Radiation, Photon, Photoelectric Effect, Compton Effect, Inadequacy of old Quantum Theory, De Broglie Hypothesis, Davisson and Germer Experiment, G.P. Thomson Experiment, Phase Velocity , Group Velocity, Heisenberg Uncertainty Principle, Time and angular Momentum, Position Uncertainty, Uncertainty principle from de Broglie wave, gamma ray microscope, Electron Diffraction from slit. Test of Unit 1.
<b>2.</b>	<b>September 2023</b>	Derivation of Time-independent Schrodinger Wave Equation, Derivation of Time-dependent Schrodinger Wave Equation, Eigen Values, Eigen Function, Wave functions and its significance. Normalisation of function, Concept of observer and operator. Test of Unit 2
<b>3.</b>	<b>October 2023</b>	Applications of Schrodinger Equation 1. Free Particle 2. One dimensional Potential Barrier, $E < V_0$ 3. One dimensional Potential Barrier, $E > V_0$ 4. Harmonic Oscillator
<b>4.</b>	<b>November 2023</b>	Test of Unit 3, Revision of Whole Syllabus and Assignments

**Govt. College for Women Lakhan Majra, Rohtak**  
**Lesson Plan (Odd Semester 2023-24)**

**Name of Assistant Professor: Dr. Sunil Dhankhar**

**Class: - B.Sc. Ist Semester**

**Subject: Physics**

**Paper I – PHY-101: Mechanics**

<b>Sr. No.</b>	<b>Date/Week/Month</b>	<b>Syllabus</b>
<b>1.</b>	<b>August 2023</b>	Mechanics of single and system of particles, conservation of laws of linear momentum, angular momentum and mechanical energy, Centre of mass and equation of motion, constrained motion
<b>2.</b>	<b>September 2023</b>	Degrees of freedom, Generalised coordinates, displacement, velocity, acceleration, momentum, force and potential. Hamilton's variational principle, Lagrange's equation of motion from Hamilton's Principle, Linear Harmonic oscillator, simple pendulum, Atwood's machine.
<b>3.</b>	<b>October 2023</b>	Rotation of Rigid body, moment of inertia, torque, angular momentum, kinetic energy of rotation. Theorems of perpendicular and parallel axes with proof. Moment of inertia of solid sphere, hollow sphere, spherical shell, solid cylinder, hollow cylinder and solid bar of rectangular cross-section.
<b>4.</b>	<b>November 2023</b>	Acceleration of a body rolling down on an inclined plane. Revisions and Tests.

**Govt. College for Women Lakhan Majra, Rohtak**  
**Lesson Plan (Odd Semester 2023-24)**

Name of Assistant Professor: Dr. Sunil Dhankhar

Class: - B.Sc. 3<sup>rd</sup> Semester

Subject: Physics

Paper I – PHY-301: Computer Programming, Thermodynamics

Sr. No.	Date/Week/Month	Syllabus
1.	August 2023	<b>Computer Programming:</b> Computer organisation, Binary representation, Algorithm development, flow charts and their interpretation. Fortran Preliminaries; Integer and floating point arithmetic expression, built in functions executable and non-executable statements, input and output statements, Formats.
2.	September 2023	I.F. DO and GO TO statements, Dimension arrays statement function and function subprogram. <b>Thermodynamics-I :</b> Second law of thermodynamics, Carnot theorem, Absolute scale of temperature, Absolute Zero, Entropy, show that $dQ/T=O$ , T-S diagram Nernst heat law, Joule's free expansion, Joule Thomson (Porous plug) experiment. Joule - Thomson effect.
3.	October 2023	Liquefaction of gases, Air pollution due to internal combustion Engine. <b>Thermodynamics-II :</b> Derivation of Clausius -Claperyron latent heat equation. Phase diagram and triple point of a substance. Development of Maxwell thermodynamical relations. Application of Maxwell relations in the derivation of relations between entropy, specific heats and thermodynamic variables.
4.	November 2023	Thermodynamic functions: Internal energy (U), Helmholtz function (F), Enthalpy (H), Gibbs function (G) and the relations between them. Revisions and Tests.

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**Lesson Plan (Odd Semester 2023-24)**

**Name of Assistant Professor: Dr. Sunil Dhankhar**

**Class: - B.Sc. 5<sup>th</sup> Semester**

**Subject: Physics**

**Paper I – PHY-501: Solid State Physics**

<b>Sr. No.</b>	<b>Date/Week/Month</b>	<b>Syllabus</b>
<b>1.</b>	<b>August 2023</b>	Crystalline and glassy forms, liquid crystals. Crystal structure, periodicity, lattice and basis, crystal translational vectors and axes. Unit cell and primitive cell, Winger Seitz primitive Cell, symmetry operations for a two dimensional crystal, Bravais lattices in two and three dimensions.
<b>2.</b>	<b>September 2023</b>	Crystal planes and Miller indices, Interplaner spacing, Crystal structures of Zinc sulphide, Sodium Chloride and diamond, X-ray diffraction, Bragg's Law and experimental x-ray diffraction methods, K-space.
<b>3.</b>	<b>October 2023</b>	Reciprocal lattice and its physical significance, reciprocal lattice vectors, reciprocal lattice to a simple cubic lattice, b.c.c and f.c.c. <b>Specific heat:</b> Specific heat of solids, Einstein's theory of specific heat.
<b>4.</b>	<b>November 2023</b>	Debye model of specific heat of solids. Revisions and Tests.