**GOVT COLLEGE HODAL, PALWAL**

**LESSON PLAN (SESSION 2023-24) Odd SEMESTER**

**Class:** B.Sc. 1st Semester **Subject: *Physics* Faculty: *MR. Suneel Kumar***

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| **Months** | **Week 1** | **Week 2** | **Week 3** | **Week 4** |
| **July** | **Admission** | **Admission** | **Admission** | Mechanics of single and system of particles, conservation of laws of linear momentum, |
| **August** | Angular momentum and mechanical energy, Centre of mass and equation of motion. | Constrained motion, degrees of freedom and Numerical Problems. | Generalized coordinates, displacement, velocity, acceleration, momentum, force and Potential. | Hamilton’s variational principle , Lagrange’s equation of motion from  Hamilton’s Principle. |
| **September** | Linear Harmonic oscillator, simple pendulum, Atwood’s machine. | Atwood’s machine and Numerical Problems. **Assignment & Presentation** | Rotation of Rigid body, moment of inertia, torque, angular momentum, and **Monthly Test** | Kinetic energy of Rotation. Theorems of perpendicular and parallel axes with proof. |
| **October** | Moment of inertia of  solid sphere, hollow sphere, spherical shell, s | Moment of inertia of solid cylinder, hollow cylinder. | Moment of inertia of solid bar of rectangular cross-section. | Numerical Problems and **Monthly Test and Assignment.** |
| **November** | Acceleration of a body rolling down on an inclined plane. | **Revision** | **Revision** |  |

**Date: Signature:**

**GOVT COLLEGE HODAL, PALWAL**

**LESSON PLAN (SESSION 2023-24) Odd SEMESTER**

**Class:** B.Sc. 3rd Semester **Subject: *Physics* Faculty: *Dr. Anil Kumar Ojha***

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| **Months** | **Week 1** | **Week 2** | **Week 3** | **Week 4** |
| **July** | **Admission** | **Admission** | **Admission** | Computer Programming : Computer organisation, Binary representation, |
| **August** | 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, I.F. DO and GO TO statements, Dimension arrays statement  Function and function subprogram. | Thermodynamics-I : Second law of thermodynamics, Carnot theorem, |
| **September** | 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. Liquefaction of gases. Air pollution due to internal combustion Engine. **Assignment and Monthly Test** | Thermodynamics-II : Derivation of Clausius - Claperyron latent heat equation. |
| **October** | Phase diagram and triple point of a substance. Development of Maxwell  Thermodynamically relations. | Application of Maxwell relations in the derivation of  relations between entropy, | Specific heats and thermodynamic variables.  Thermodynamic functions : Internal energy (U), | Helmholtz function (F), Enthalpy (H),  **Monthly Test and Assignment.** |
| **November** | Gibbs function (G) and the relations between them. | **Revision** | **Revision** |  |

**Date: Signature:**

**GOVT COLLEGE HODAL, PALWAL**

**LESSON PLAN (SESSION 2023-24) Odd SEMESTER**

**Class:** B.Sc. 1st Semester **Subject: *Physics* Faculty: *MR. Ravi Riwariya***

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| **Months** | **Week 1** | **Week 2** | **Week 3** | **Week 4** |
| **July** | **Admission** | **Admission** | **Admission** | **Mathematical Background :** Scalars and Vectors, dot and cross product, Triple vector product, Scalar and Vector fields |
| **August** | Differentiation of a vector, Gradient of a scalar and its  physical significance, Integration of a vector (line, surface and volume integral and their physical significance), | Gauss’s divergence theorem and Stocks theorem. **Electrostatic Field :** Derivation of field E from potential as gradient, derivation of  Laplace and Poisson equations. | Electric flux, Gauss’s Law and its application to spherical shell, uniformly charged infinite plane and uniformity charged straight wire, | Mechanical force of charged surface, Energy per unit volume. |
| **September** | **Magneto statistics :** Magnetic Induction, magnetic flux, solenoid nature of Vector field of induction | Properties of B (i) .B = 0 (ii) xB= J. Electronic theory of dia and  para magnetism (Langevin’s theory). Domain theory of ferromagnetism. | Cycle of Magnetization - Hysteresis (Energy dissipation, Hysteresis loss and importance of Hysteresis curve). **Assignment and Monthly Test** | **Electromagnetic Theory :** Maxwell equation and their derivations, |
| **October** | Displacement  Current. Vector and scalar potentials | boundary conditions at interface between two different media | Propagation of electromagnetic wave (Basic idea, no derivation). | **Monthly Test and Assignment.** |
| **November** | Poynting vector and Poynting theorem. | **Revision** | **Revision** |  |

**Date: Signature:**

**GOVT COLLEGE HODAL, PALWAL**

**LESSON PLAN (SESSION 2023-24) Odd SEMESTER**

**Class:** B.Sc. 5th Semester **Subject: *Physics* Faculty: *Dr. Anil Kumar Ojha***

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| **Months** | **Week 1** | **Week 2** | **Week 3** | **Week 4** |
| **July** | **Admission** | **Admission** | **Admission** | Crystalline and gallssy forms, liquid crystals. |
| **August** | 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 tattices in two and three dimensions. **Monthly Test and Assignment.** | Crystal planes and Miller indices, Interplanner spacing, |
| **September** | Crystal structures of Zinc sulphide, Sodium Chloride and diamond, X-ray diffraction. | Bragg's Law and experimental x-ray diffraction methods, K-space | Reciprocal lattice and its physical significance,. | reciprocal lattice vectors, reciprocal lattice to a simple cubic lattice, |
| **October** | b.c.c and f.c.c. Specific heat : Specific heat of solids. | Einstein's theory of specific heat, | Debye model of specific heat of solids | **Monthly Test and Assignment.** |
| **November** | **Revision** | **Revision** | **Revision** |  |

**Date: Signature:**

**GOVT COLLEGE HODAL, PALWAL**

**LESSON PLAN (SESSION 2023-24) Odd SEMESTER**

**Class:** B.Sc. 5th Semester **Subject: *Physics* Faculty: *Mr. Ravi Riwariya***

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| **Months** | **Week 1** | **Week 2** | **Week 3** | **Week 4** |
| **July** | **Admission** | **Admission** | **Admission** | Failure of (Classical) E.M. Theory. quantum theory of radiatio (old quantum theory), Photon, |
| **August** | Photoelectric effect and Einsteins photoelectric equation compton effect (theory and result). Inadequancy of old quantum theory, | De-Broglie hypothesis. Davisson and Germer experiment. G.P. Thomson experiment. Phase velocity group velocity, | Heisenberg's uncertainty principle. Time-energy and angular momentum, position uncertainty Uncertainty principle from de-Broglie wave, | Wave-partice duality. Gamma Ray Maciroscope, Electron diffraction from a slit. **Monthly Test and Assignment.** |
| **September** | Derivation of time dependent Schrodinger wave equation, eigen values, eigen functions, | Wave functions and its significance. Normalization of wave function, concept of observable and operator. | Solution of Schrodinger equation for harmonic oscillator ground states and excited states. | Application of Schrodinger equation in the solution of the following one-dimensional problems |
| **October** | Free particle in one dimensional box (solution of schrodinger wave equation, eigen function, eigen values, | Quantization of energy and momentum, nodes and antinodes, zero point energy | i) One-dimensional potential barrie E>V0 (Reflection and Transmission coefficient | ii) One-dimensional potential barrier, E>V0 (Reflection Coefficient  **Monthly Test and Assignment.** |
| **November** | Penetration of leakage coefficient, penetration depth). | **Revision** | **Revision** |  |

**Date: Signature:**

**GOVT COLLEGE HODAL, PALWAL**

**LESSON PLAN (SESSION 2023-24) Odd SEMESTER**

**Class:** B.Sc. 3rd Semester **Subject: *Physics* Faculty: *Sh. Suneel Kumar***

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| **Months** | **Week 1** | **Week 2** | **Week 3** | **Week 4** |
| **July** | **Admission** | **Admission** | **Admission** | Fourier Analysis and Fourier Transforms: Speed of transverse waves on a uniform string. Speed of longitudinal waves in a fluid |
| **August** | Superposition of waves. Fourier Analysis of complex waves and its application for the solution of triangular and rectangular waves, | Half and full wave rectifier out puts. Fourier transforms and its properties. Application of fourier transform to following function. | Geometrical Optics : Matrix methods in paraxial optics, effects of translation and  refraction, | Derivation of thin lens and thick lens formulae, unit plane, nodal planes, system of thin lenses.  **Monthly Test and Assignment.** |
| **September** | Chromatic, spherical coma, astigmatism. | Distortion aberrations and their remedies. Physical Optics | Interference : Interference by Division of Wave front : | Fresnel’s Biprism and its  Applications to determination of wave length of sodium light. |
| **October** | Thickness of a mica sheet. And Numerical Problems | Lioyd’s mirror, phase change on reflection. | **Monthly Test** | **Assignment and Presentation.** |
| **November** | **Revision** | **Revision** | **Revision** |  |

**Date: Signature:**