KUMARI VIDYAVATI ANAND D.A.V.COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Odd Semester
(July to November, 2025)

Name of the Teacher – Ms. Vandana & Dr. Geetanjali Chaudhary
Class – B.Sc.3rd year (5TH SEM)
Subject - Modern Physics
Paper– B23 -PHY-501

July,2025 **4thWeek** **22July–26July**	**Introductory Quantum Mechanics:** Need of Quantum Mechanics**,** Planck's quantum hypothesis and radiation formula, quantization of EM radiation, de-Broglie hypothesis, de-Broglie wave
27July,2025	**Sunday**
5thWeek **28July–30 July**	Photoelectric effect, Compton effect
31 July	**Shaheed Udham Singh Martyrdom Day**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Odd Semester
(July to November, 2025)

Name of the Teacher – Ms. Vandana & Dr. Geetanjali Chaudhary
Class – B.Sc.3rd year (5TH SEM)
Subject - Modern Physics
Paper– B23 -PHY-501

3 Aug, 2025	**Sunday**
2nd Week **4Aug– 8Aug**	wave packet, phase and group velocities ,Time-dependent and time-independent Schrodinger equations Properties of wave function, Probability current density, linear momentum and energy operators, Commutator of position and linear momentum operator
9Aug, 2025 **10Aug, 2025**	**RakshaBandhan** **Sunday**
3rd Week **11Aug-14Aug**	expectation values of position and linear momentum, Particle confined in a one-dimensional infinite box: energy eigen functions and eigen values. Heisenberg's Uncertainty Principle and its applications
15 Aug, 2025 **16 Aug, 2025** **17Aug, 2025**	**Independence Day** **Janmashtmi** **Sunday**
4th Week **18Aug -23Aug**	**Solid State Physics:** Crystalline state, crystal lattice, basis, lattice translation vectors, primitive and non-primitive unit cells, symmetry operations, Bravais lattices in two and three dimensions
24Aug,2025	**Sunday**
5th Week **25Aug -30Aug**	Miller Indices, crystallographic planes, interplanar spacing, simple crystal structures: NaCl, CsCl, HCP, Zinc blende, Diamond,
31Aug, 2025	**Sunday**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Odd Semester
(July to November, 2025)

Name of the Teacher – Ms. Vandana & Dr. Geetanjali Chaudhary
Class – B.Sc.3rd year (5TH SEM)
Subject - Modern Physics
Paper– B23 -PHY-501

September,2025 **1st Week** **1Sept – 6 Sept**	diffraction of waves by crystals, Bragg's law, non-crystalline solids (introduction only)
7 Sept , 2025	**Sunday**
2ndWeek **8 Sept– 13Sept**	Idea of Reciprocal Lattice: Reciprocal lattice to sc, bcc and fcc lattices CLASS TEST
14 Sept , 2025	**Sunday**
3rdWeek **15Sept–20 Sept**	**Atomic and Molecular Physics:** Sommerfeld theory (qualitative), Relativistic correction, Fine structure of H_α line, Lamb shift, Larmor's theorem (qualitative),
21Sept,2025 **22Sept,2025** **23Sept,2025**	**Sunday** **Maharaja AgrasenJayanti** **Shaheedi Divas/Haryana War Heroes' Martyrdom Day**
4thWeek **24Sept–27 Sept**	Vector Atom Model, electron spin, space quantization
28Sept,2025	**Sunday**
5thWeek **29 Sept – 30 Sept,2025**	spin-orbit Interaction energy ,LS and JJ coupling

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Odd Semester
(July to November, 2025)

Name of the Teacher – Ms. Vandana & Dr. Geetanjali Chaudhary
Class – B.Sc.3rd year (5TH SEM)
Subject - Modern Physics
Paper– B23 -PHY-501

October,2025 **1st Week** **1Oct –4 Oct**	Spectral terms for equivalent and non-equivalent electrons CLASS TEST
2Oct, 2025 **5Oct,2025**	**Mahatma Gandhi Jayanti/Dussehra** **Sunday**
2ndWeek **6 Oct-11Oct**	Anomalous Zeeman effect, Lande's g-factor, splitting of D1 and D2 lines in weak magnetic field, Raman effect, Stoke and Anti-stoke lines
7Oct,2025 **12Oct,2025**	**Maharishi Valmiki Jayanti/Maharaja Ajmidh Jayanti** **Sunday**
3rdWeek **13 Oct-18 Oct**	**Nuclear and Particle Physics:** Composition of nucleus, stability of nucleus, nuclear properties, nuclear size, spin, parity, magnetic moment, quadrupole moment
19Oct – 26 Oct	**Vacations (Diwali)**
5thWeek **27Oct- 31 Oct**	Nuclear Models, Liquid Drop Model and Semi-empirical Mass formula, Nuclear shell model and magic numbers (qualitative idea only)

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Odd Semester
(July to November, 2025)

Name of the Teacher – Ms. Vandana & Dr. Geetanjali Chaudhary
Class – B.Sc.3rd year (5TH SEM)
Subject - Modern Physics
Paper– B23 -PHY-501

November,2025 **1st Week** **1Nov,2025** **2 Nov, 2025**	**Haryana Day** **Sunday**
2ndWeek **3 Nov-8Nov**	**SessionalExams**
5 Nov,2025 **9 Nov,2025**	**Guru Nanak Dev Jayanti** **Sunday**
3rdWeek **10 Nov-15 Nov**	classification of fundamental particles, Quark and Lepton quantum numbers, Hadrons, Baryons and Mesons
16Nov,2025	**Sunday**
4thWeek **17Nov-22 Nov**	Different types of interactions and their properties REVISION
23Nov,2025	**Sunday**
5thWeek **24November,2025** **Onwards**	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Odd Semester
(July to November, 2025)

Name of the Teacher – Ms. Priya kamboj
Class- B.Sc.-I (1st Sem)
Subject- Mechanics
Paper-B23-PHY-101

July,2025 **4thWeek** **22July–26July**	**Unit-I Fundamentals of Dynamics**: Rigid body, Moment of Inertia, Radius of Gyration, Theorems of perpendicular and parallel axis (with proof) Moment of Inertia of ring, Disc, Angular Disc, Solid cylinder, Solid sphere, Hollow sphere
27July,2025	**Sunday**
31 July	**Shaheed Udham Singh Martyrdom Day**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Odd Semester
(July to November, 2025)

Name of the Teacher – Ms. Priya kamboj
Class- B.Sc.-I (1st Sem)
Subject- Mechanics
Paper-B23-PHY-101

August,2025 **1stWeek** **1Aug – 2 Aug**	Rectangular plate, Square plate, Solid cone, Triangular plate, Torque, Rotational Kinetic Energy Angular momentum, Law of conservation of angular momentum
3 Aug, 2025	**Sunday**
2ndWeek **4Aug– 8Aug**	Rolling motion, condition for pure rolling, acceleration of body rolling down an inclined plane, Fly wheel, Moment of Inertia of an irregular body.
9Aug, 2025 **10Aug, 2025**	**RakshaBandhan** **Sunday**
3rdWeek **11Aug-14Aug**	**Classtest** **Unit-II Elasticity:** Deforming force, Elastic limit, stress, strain and their types, Hooke's law, Modulus of rigidity
15 Aug, 2025 **16 Aug, 2025** **17Aug, 2025**	**Independence Day** **Janmashtmi** **Sunday**
4thWeek **18Aug -23Aug**	Relation between shear angle and angle of twist, elastic energy stored/volume in an elastic body
24Aug,2025	**Sunday**
5thWeek **25Aug -30Aug**	Elongation produced in heavy rod due to its own weight and elastic potential energy stored in it, Tension in rotating rod, Poisson's ratio and its limiting value
31Aug, 2025	**Sunday**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Odd Semester
(July to November, 2025)

Name of the Teacher – Ms. Priya kamboj
Class- B.Sc.-I (1st Sem)
Subject- Mechanics
Paper-B23-PHY-101

September,2025 **1st Week** **1Sept – 6 Sept**	Elastic Constants and their relations. Torque required for twisting cylinder, Hollow shaft is stiffer than solid one Bending of beam, bending moment and its magnitude, Flexural rigidity, Geometrical moment of inertia for beam of rectangular cross-section and circular cross-section
7 Sept , 2025	**Sunday**
2nd Week **8 Sept– 13Sept**	Bending of cantilever (loaded by a weight W at its free end), weight of cantilever uniformly distributed over its entire length.
14 Sept , 2025	**Sunday**
3rd Week **15Sept–20 Sept**	Dispersion of a centrally loaded beam supported at its ends, determination of elastic constants for material of wire by Searle's method. **Revision and class test**
21Sept,2025 **22Sept,2025** **23Sept,2025**	**Sunday** **Maharaja AgrasenJayanti** **Shaheedi Divas/Haryana War Heroes' Martyrdom Day**
4th Week **24Sept–27 Sept**	**Unit-III Special Theory of Relativity:** Michelson's Morley experiment and its outcomes, Postulates of special theory of relativity, Lorentz Transformations, Simultaneity and order of events
28Sept,2025	**Sunday**

KUMARI VIDYAVATIANANDD.A.V.COLLEGEFORWOMEN, KARNAL

Lesson Plan for the Odd Semester
(July toNovember, 2025)

Name of the Teacher – Ms. Priya kamboj
Class- B.Sc.-I (1st Sem)
Subject- Mechanics
Paper-B23-PHY-101

October,2025 **1st Week** **1Oct –4 Oct**	Lorentz contraction, Time dilation, Relativistic transformation of velocity, relativistic addition of velocities, variation of mass-energy equivalence
2Oct, 2025 **5Oct,2025**	**Mahatma Gandhi Jayanti/Dussehra** **Sunday**
2ndWeek **6 Oct-11Oct**	Relativistic Doppler effect, relativistic kinematics, transformation of energy and momentum, transformation of force, Problems of relativistic dynamics
7Oct,2025 **12Oct,2025**	**Maharishi Valmiki Jayanti/Maharaja Ajmidh Jayanti** **Sunday**
3rdWeek **13 Oct-18 Oct**	**Unit-IV** **Gravitation and central force motion:** Law of gravitation, Potential and field due to spherical shell and solid sphere
19Oct – 26 Oct	**Vacations (Diwali)**
5thWeek **27Oct- 31 Oct**	Motion of a particle under central force field, Two body problem and its reduction to one body problem and its solution

KUMARI VIDYAVATIANANDD.A.V.COLLEGEFORWOMEN, KARNAL

Lesson Plan for the Odd Semester
(July toNovember, 2025)

Name of the Teacher – Ms. Priya kamboj
Class- B.Sc.-I (1st Sem)
Subject- Mechanics
Paper-B23-PHY-101

November,2025 **1st Week** **1Nov,2025** **2 Nov, 2025**	**Haryana Day** **Sunday**
2nd Week **3 Nov-8Nov**	**SessionalExams**
5 Nov,2025 **9 Nov,2025**	**Guru Nanak Dev Jayanti** **Sunday**
3rd Week **10 Nov-15 Nov**	compound pendulum or physical pendulum in form of elliptical lamina and expression of time period,determination of g by means of bar pendulum, Normal coordinates and normal modes, Normal modes of vibration for given spring mass system
16Nov,2025	**Sunday**
4th Week **17Nov-22 Nov**	Possible angular frequencies of oscillation of two identical simple pendulums of length (l) and small bob of mass (m_0 joined together with spring of spring constant (k). **Revision**
23Nov,2025	**Sunday**
5th Week **24November,2025** **Onwards**	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Odd Semester
(July to November, 2025)

Name of the Teacher – Ms. Vandana & Dr. Geetanjali Chaudhary
Class- B.Sc. II (3rd sem)
Subject- Thermodynamics and Statistical Physics
Paper- B23-PHY-301

August,2025 **1stWeek** **1Aug – 2 Aug**	Thermodynamic system ,variables and equation of state ,thermal equilibrium , Zeroth law of thermodynamics, concept of heat, work and its path dependence.
3 Aug, 2025	**Sunday**
2ndWeek **4Aug– 8Aug**	Law of thermodynamics – its significance and limitations, internal energy as a state function. Different types of processes-isochoric process, isobaric process, adiabatic process, isothermal process, cyclic process, reversible and irreversible process.
9Aug, 2025 **10Aug, 2025**	**RakshaBandhan** **Sunday**
3rdWeek **11Aug-14Aug**	First law, second law of thermodynamics and its significance, Carnot's theorem, absolute scale of temperature, absolute zero and magnitude of each division on thermodynamic scale and perfect gas scale.
15 Aug, 2025 **16 Aug, 2025** **17Aug, 2025**	**Independence Day** **Janmashtmi** **Sunday**
4thWeek **18Aug -23Aug**	Joule's free expansion, joule Thomson effect, joule-Thomson (porous plug) experiment conclusion and explanation analytical treatment of joule Thomson effect. Entropy, calculations of entropy of reversible and irreversible process, diagram, entropy of perfect gas
24Aug,2025	**Sunday**
5thWeek **25Aug -30Aug**	Nernst heat law (third law of thermodynamics), liquefication of gases (oxygen, air, hydrogen and helium), solidification below 4K, cooling by adiabatic demagnetization.
31Aug, 2025	**Sunday**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Odd Semester
(July to November, 2025)

Name of the Teacher – Ms. Vandana & Dr. Geetanjali Chaudhary
Class- B.Sc. II (3rd sem)
Subject- Thermodynamics and Statistical Physics
Paper- B23-PHY-301

September,2025 **1st Week** **1Sept – 6 Sept**	**Unit-II**:- Thermodynamics II Introduction of Clausius Clapeyron and Clausius latent heat equation and significance, specific heat of saturated vapours, phase diagram and triple point of a substance.
7 Sept , 2025	**Sunday**
2nd Week **8 Sept– 13Sept**	Development of Maxwell thermodynamical equations, Thermodynamical functions: internal energy(U), Helmholtz function(F), Enthalpy(H), Gibb's function(G) and relations between derivations of Maxwell thermodynamical relations from thermodynamical functions.
14 Sept , 2025	**Sunday**
3rd Week **15Sept–20 Sept**	Application of Maxwell relations: relations between two specific heats of gas, derivation of Clausius-Clapeyron equation, variation of intrinsic energy with volume for (i)perfect and Vander wall gas(ii) solid and liquids. Derivation of Stefan's law, Adiabatic compression and expansion of gas and deduction of theory of Thomson effect.
21Sept,2025 **22Sept,2025** **23Sept,2025**	**Sunday** **Maharaja Agrasen Jayanti** **Shaheedi Divas/Haryana War Heroes' Martyrdom Day**
4th Week **24Sept–27 Sept**	**Revision** **Unit III-Statistical Physics:-I** Distribution of N (for N=2,3,4) distinguishable and indistinguishable particle in two boxes of equal size, microstate and macrostates, thermodynamical probability.
28Sept,2025	**Sunday**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Odd Semester
(July to November, 2025)

Name of the Teacher – Ms. Vandana & Dr. Geetanjali Chaudhary
Class- B.Sc. II (3rd sem)
Subject- Thermodynamics and Statistical Physics
Paper- B23-PHY-301

October,2025 **1st Week** **1Oct –4 Oct**	Constraints and accessible state statistical fluctuations, general distribution of distinguishable particles in compartments of different sizes, ß-parameter, entropy and probability concept of phase space division of phase space into cells, postulates of statistical mechanics; classical and quantum statistics, basic approach to these statistics.
2Oct, 2025 **5Oct,2025**	**Mahatma Gandhi Jayanti/Dussehra** **Sunday**
2ndWeek **6 Oct-11Oct**	Maxwell Boltzmann statistical applied to an ideal gas in equilibrium energy distribution law.
7Oct,2025 **12Oct,2025**	**Maharishi Valmiki Jayanti/Maharaja Ajmidh Jayanti** **Sunday**
3rdWeek **13 Oct-18 Oct**	Maxwell's distribution of speed and velocity (derivation required) ,most probable speed average and rms speed mean energy for Maxwellian distribution.
19Oct – 26 Oct	**Vacations (Diwali)**
5thWeek **27Oct- 31 Oct**	**Unit-IV Statistical Physics-II** Dulong and Petit's law ,Derivation of Dulong and Petit's law from classical physics; Need of Quantum statistics, Classical versus Quantum statistics.

KUMARIVIDYAVATIANANDD.A.V.COLLEGEFORWOMEN, KARNAL

Lesson Plan for the Odd Semester
(July to November, 2025)

Name of the Teacher – Ms. Vandana & Dr. Geetanjali Chaudhary
Class- B.Sc. II (3rd sem)
Subject- Thermodynamics and Statistical Physics
Paper- B23-PHY-301

November,2025 **1st Week** **1Nov,2025** **2 Nov, 2025**	**Haryana Day** **Sunday**
2nd Week **3 Nov-8Nov**	**Sessional Exams**
5 Nov,2025 **9 Nov,2025**	**Guru Nanak Dev Jayanti** **Sunday**
3rd Week **10 Nov-15 Nov**	Bose-Einstein energy distribution law, Application of B.E Statistics to Planck's radiation law, degeneracy and B.E condensation
16Nov,2025	**Sunday**
4th Week **17Nov-22 Nov**	Fermi-Dirac energy distribution law, F.D gas and degeneracy, Fermi energy and Fermi temperature, F.D energy distribution law for electron gas in metals, zero point energy, average speed (at 0k)of electron gas. **Revision**
23Nov,2025	**Sunday**
5th Week **24November,2025** **Onwards**	**University Examinations**