LESSON PLAN

Session: 2024-2025 **Class: BSc II**

Subject: Thermodynamics & Statistical Physics **Paper Code: B23-PHY-301**

Name of the Faculty: Mrs. Narinder Pal Kaur

Month	Week	Topics to be covered
July	22.07.24-27.07.24	Thermodynamics Systems ,variables and equation of state, equilibrium and Zeroth law of thermodynamics ,Concept of heat , work and path dependence, First law of thermodynamics and limitations.
	29.07.24-31.07.24	Internal energy as state function, Types of processes , Second law of thermodynamics and significance, Carnot theorem ,absolute scale of temperature and absolute zero.
August	01.08.24-03.08.24	Joule Thomson effect , joule porous plug experiment, analytical treatment of joule Thomson effect, Entropy and TS diagram , Nernest law
	05.08.24-10.08.24	Liquefaction of gases, solidification of He, Cooling by adiabatic demagnetization, Derivation of Clausius –clapeyron and clausius latent heat equation, Specific heat of vapours , phase diagrams, triple point, development of Maxwell thermodynamical relation
	12.08.24-17.08.24	Thermodynamical functions and relation between them, application of Maxwell relations , relation between two specific heats of gas,derivation of clausius clapeyron equation, variation of intrinsic energy with volume.
	19.08.24-24.08.24	Stefan law, adiabatic compression and deduction of theory of joule Thomson effect , Distribution of N distinguishable and indistinguishable particles in two boxes of equal size, microstate and macrostate.

	26.08.24-31.08.24	Thermodynamical probability, Constraints and accessible states, Statistical fluctuations, general distribution of distinguishable particles in compartments of different size
September	02.09.24-07.09.24	Entropy and probability, concept of phase space.Division of phase space into cells, Postulates of statistical mechanics , Basic approach of classical and quantum statistics
	09.09.24-14.09.24	Maxwell Boltzmann statistics applied to ideal gas equilibrium- energy distribution law.
	16.09.24-21.09.24	Maxwell distribution of speed and velocity
	23.09.24-30.09.24	Most probable speed , average and R.M.S speed , mean energy of Maxwellian distribution
October	01.10.24-05-10.24	Dulong and petit law, derivation of dulong and petit law from classical Physics
	07.10.24-12.10.24	Need of quantum statistics – Classical versus quantum statistics, Bose – Einstein energy distribution Law.
	14.10.24-19.10.24	Application of B-E statistics to Planck's radiation law, degeneracy and B-E condensation.
	21.10.24-26.10.24	Fermi-dirac energy distribution law, F-D gas and degeneracy.
Vacations	27.10.24-03.11.24	Diwali Vacations
November	04.11.24-09.11.24	Fermi energy and Fermi temperature , F.D Distribution law for electron gas in metals , Zero point energy, average speed of electron gas.
	11.11.24-16.11.24	Revision

LESSON PLAN

Session: 2024-25 **Class: B.Sc. III**

Subject: Quantum and Laser Physics **Paper Code: PH-501**

Name of the Faculty: Mrs. Twinkle Sharma

Month	Week	Topics to be covered
August	01.08.24-03.08.24	Overview ,scale of quantum physics ,Photoelectric effect, Compton effect
	05.08.24-10.08.24	Frank hertz experiment, de- Broglie hypothesis, Davisson and germer experiment ,G.P THOMSON Experiment, Phase and group velocity
	12.08.24-17.08.24	Heisenberg uncertainity principle ,Wave particle duality, Gamma ray microscope, Electron diffraction from a slit
	19.08.24-24.08.24	Derivation of 1-D time dependent Schrodinger wave equation ,Time independent Schrodinger wave equation, Eigen value ,Eigen function
	26.08.24-31.08.24	Wave function and its significance , Orthogonality and Normalization of a function, Expectation value
September	02.09.24-07.09.24	Free particle in 1-D BOX, One dimensional step potential E>V
	09.09.24-14.09.24	One dimensional step potential E<V, One Dimensional potential barrier E>V
	16.09.24-21.09.24	One Dimensional potential barrier E<V , Solution of Schrodinger wave equation for Harmonic oscillator
	23.09.24-30.09.24	LASER basic and features (DIRECTIONALITY, INTENSITY,MONOCHROMTICITY,COHERENCE)
October	01.10.24-05-10.24	Einstein coefficients , momentum, transfer ,population inversion ,life time of a level.
	07.10.24-12.10.24	Kinetics of optical absorption (Fuchbauer Landerburg formula), Laser pumping, Resonator cavity
	14.10.24-19.10.24	Threshold condition ,Line broadening and Doppler broadening
	21.10.24-26.10.24	He-Ne laser (Principle , construction and working), Ruby Laser(Principle , construction and working)
Vacations	27.10.24-03.11.24	

November	04.11.24-09.11.24	Semiconductor Laser (Principle, construction and working), Optical properties of semiconductor. Application of lasers
	11.11.24-16.11.24	Revision

LESSON PLAN

Session: 2024-2025 **Class: BSc III**

Subject: Nuclear Physics **Paper Code: PH-502**

Name of the Faculty: Mrs. Narinder Pal Kaur

Month	Week	Topics to be covered
July	22.07.24-27.07.24	Introduction, Nuclear composition, proton electron and proton neutron theories, Nuclear stability and properties.
	29.07.24-31.07.24	Nuclear size and nuclear charge and their determination by Rutherford scattering and Mosley's law
August	01.08.24-03.08.24	Mass and binding energy, systematic of binding energy
	05.08.24-10.08.24	Mass and its determination by BAIN BRIDGE SPECTROGRAPH, spin, parity, magnetic dipole moment and electric quadrupole moment
	12.08.24-17.08.24	Alpha decay and its theory, its energetic, Beta decay, neutrino theory different types of beta decay and its energetics
	19.08.24-24.08.24	Gamma decay , its energetic , its applications
	26.08.24-31.08.24	Interaction of heavy charged particles ,Energy Loss, Interaction of light charged particles and energy loss.
September	02.09.24-07.09.24	Tandem accelerator and linear accelerator
	09.09.24-14.09.24	Cyclotron and betatron
	16.09.24-21.09.24	Ionization chamber and proportional counter
	23.09.24-30.09.24	GM counter and scintillation counter, semiconductor detector
October	01.10.24-05-10.24	Revision of important topics
	07.10.24-12.10.24	Nuclear reactions , Elastic and inelastic scattering ,Nuclear disintegeration
	14.10.24-19.10.24	Photonuclear reaction, Radiative capture , Direct reaction, Heavy ion reactions.
	21.10.24-26.10.24	Conservation Laws, Q-Value and reaction threshold
Vacations	27.10.24-03.11.24	Diwali Vacations
November	04.11.24-09.11.24	Nuclear reactors, Nuclear fission and fusion Reactors
	11.11.24-16.11.24	Revision

LESSON PLAN

Session: 2024-25 **Class: BSc I**

Nomenclature of the Paper: Mechanics **Paper Code: B23- PHY-101**

Name of the Faculty: Mrs. Twinkle Sharma

Month	Week	Topics to be covered
August	01.08.24	Introduction
	02.08.24-03.08.24	Rigid body, Moment of inertia, Radius of gyration
	05.08.24-10.08.24	Theorem of perpendicular axis and theorem of parallel axis ,Moment of inertia of ring, Disc and annular disc Solid cylinder and hollow cylinder
	12.08.24-17.08.24	Moment of inertia of rectangular plate and triangular plate, Solid sphere and hollow sphere, Rotational kinetic energy
	19.08.24-24.08.24	Angular momentum and law of conservation of angular momentum, Fly wheel and moment of inertia of irregular body
	26.08.24-31.08.24	Introduction, Deforming force, elastic limit, stress, strain and Hooks law
September	02.09.24-07.09.24	Modulus of rigidity, relation between angle of shear and strain ,Elastic energy stored in an elastic body,
	09.09.24-14.09.24	Elongation produced in heavy rod, tension in rotating rod ,Elastic constants and relation between them
	16.09.24-21.09.24	Torque required for twisting cylinder and hollow shaft is much stronger than solid one
	23.09.24-30.09.24	Bending of beam and moment, flexural rigidity cantilever and depression produced in centrally loaded beam, Elastic constants by searle's method
October	01.10.24-05-10.24	Special Theory of relativity and its postulates , Michelson Morley experiment
	07.10.24-12.10.24	Lorentz transformation , Simulataneity and order of events, time dilation and length contraction
	14.10.24-19.10.24	Relativistic velocity and velocity addition , mass energy equivalence and Doppler effect, Transformation of energy and momentum, force

	21.10.24-26.10.24	Four vectors, Problems of relativistic dynamics, Acceleration of charge particle by constant electric field, Transverse Electric field **ASSIGNMENT TOPICS**: Law of gravitation, Potential and field due to spherical shell and solid sphere, Motion of particle under central force field ,g by bar pendulum.
Vacations	27.10.24-03.11.24	Diwali Vacations
November	4.11.24- 09.11.24	Two body problem and its reduction to one body problem, compound pendulum and its expression, Normal coordinates and normal modes
	11.11.24-16.11.24	Normal modes of vibration for given mass system, possible angular frequencies of oscillation of two identical simple pendulum