

Sr. No.	Date	Topics to be covered
1.	01/09/2021-20/09/2021	Basic ideas of statistical physics, Scope of statistical physics, Basic ideas about probability, distribution of four distinguishable particles in two compartment of equal size. Concept of macro states, microstates, thermodynamic probability, Effects of constraints on the system,
2.	21/09/2021-10/10/2021	Distribution of n particles in two compartments, Deviation from the state of maximum probability, equilibrium state of dynamic system, Distribution of distinguishable n particles in k compartments of unequal sizes. Phase space and its division into elementary cells,
3.	11/10/2021-30/10/2021	Three kinds of statistics. The basic approach in the three statistics, Maxwell Boltzman (MB) statistics applied to an ideal gas in equilibrium. Experimental verification of Maxwell Boltzman law of distribution of molecular speeds, Need for quantum statistics-Bose-Einstein (B.E.) statistics, Derivation of Planck's law of radiation
4.	01/11/2021-20/11/2021	Deduction of Wien's displacement law and Stefan's law from Planck's law, Fermi-Dirac (F.D.) statistics, Comparison of M.S., B.E. and F.D. statistics. Interference: Concept of coherence, Spatial and temporal coherence. MST WILL BE HELD
5.	21/11/2021-5/12/2021	Coherence time, Coherence length, Area of coherence, Conditions for observing interference fringes, Interference by wave front division and amplitude division, Michelson's interferometer-working, Principle and nature of fringes,
7.	28/01/2022-15/02/2022	Interference in thin films, Role of interference in anti-reflection and high reflection dielectric coatings. Multiple beam interference, Fabry-Perot interferometer, Nature of fringes, Newton Rings.
8.	16/02/2022-01/03/2022	Statistical definition of entropy, Change of entropy of a system, Additive nature of entropy, Law of increase of entropy, Reversible and irreversible process and their examples. Work done in a reversible process. Examples of increase of entropy in natural processes, Entropy and disorder, Brief review of terms and laws of thermodynamics, Carnot's cycle, Entropy changes in Carnot cycle.
9.	02/03/2022-15/03/2022	Applications of thermodynamics to thermoelectric effect. Change of entropy along a reversible path in a P.V diagram, Entropy of a perfect gas, Equation of state of an ideal gas from simple statistical consideration, Heat death of the universe. Derivation of Maxwell's thermo dynamical relations, Cooling produced by adiabatic stretching, Adiabatic compression, Change of internal energy with volume, specific heat at constant pressure and constant volume,
10.	16/03/2022-01/04/2022	Expression for $C_p - C_v$, Change of state and Clayperon equation, Thermo dynamical treatment of Joule-Thomson effect,

Teaching Plan (Session 2021-22)

Class- B.Sc 2

Teacher Name-Sunita Saini

Subject-Physics

Period No. 5

Name of Paper -Statistical physics and thermodynamics, Optics and lasers

		Use of Joule-Thomson effect, liquefaction of helium, Production of very low temperature by adiabatic demagnetization. Laser Fundamentals : Derivation of Einstein's relations. Concept of stimulated emission and population inversion. Broadening of spectral lines, natural, collision and Doppler broadening. MST WILL BE HELD
11.	02/04/2022-25/04/2022	. Line width, Line profile, Absorption and amplification of a parallel beam of light passing through a medium. Threshold condition, Introduction of three level and four level laser schemes, elementary theory of optical cavity, Longitudinal and transverse modes.

Principal

Signature of teacher