

# CURRICULUM PLAN 2021-2022

Even Semester: II, IV, VI

Dr Rashmi Menon

Dept of Physics

B.Sc. (GE)-II year

Name of Paper and Code	Allocation of Lectures	Month-wise Schedule followed by the department
<b>GE: THERMAL PHYSICS AND STATISTICAL MECHANICS (60)</b>		
<b>Laws of Thermodynamics: -</b> Thermodynamic Description of system: Zeroth Law of thermodynamics and temperature. First law and internal energy, conversion of heat into work, Various Thermodynamical Processes, Applications of First Law: General Relation between $C_p$ and $C_v$ , Work Done during Isothermal and Adiabatic Processes, Compressibility and Expansion Coefficient, Reversible and irreversible processes, Second law, Entropy, Carnot's cycle & theorem, Entropy changes in reversible and irreversible processes, Entropy temperature diagrams, Third law of thermodynamics, Unattainability of absolute zero.	22	1-Jan to 11-Feb
<b>Thermodynamical Potentials:</b> Enthalpy, Gibbs, Helmholtz and Internal Energy functions, Maxwell's relations and applications - Joule-Thompson Effect, Clausius- Clapeyron Equation, Expression for $(C_p - C_v)$ , $C_p/C_v$ , TdS equations	10	12-Feb to 2-March
<b>Kinetic Theory of Gases:</b> Derivation of Maxwell's law of distribution of velocities and its experimental verification, Mean free path (Zeroth Order), Transport Phenomena: Viscosity, Conduction and Diffusion (for vertical case), Law of equipartition of energy (no derivation) and its application to specific heat of gases.	10	4-March to 25-March
<b>Theory of Radiation:</b> Blackbody radiation, Spectral distribution, Concept of Energy Density, Derivation of Planck's	6	26-March to 6-April

law, Deduction of Wien's law, Rayleigh-Jeans Law, Stefan Boltzmann Law & Wien's displacement law from Planck's law		
<b>Statistical Mechanics:</b> Maxwell-Boltzmann law - distribution of velocity – Quantum statistics Macrostate and Microstate – Entropy and Thermodynamic Probability - Phase space - Fermi-Dirac distribution law - Bose-Einstein distribution law photon gas - comparison of three statistics.	12	8-April to 23-April