CURRICULUM PLAN 2022-2023
Even Semester: VI, IV, II
Dr. Rashmi Menon
Dept. of Physics

B.Sc.(H)-IIIrd year

Name of Paper and Code	Allocation of Lectures	Month-wise Schedule followed by the department
CC-XII: Statistical Mechanics (32221602) -60 Periods		
Classical Statistics: Microstates and Microstates, Phase Space, Entropy and Thermodynamic Probability, Maxwell-Boltzmann Distribution Law, Partition Function, Thermodynamic Functions of an Ideal Gas, Classical Entropy Expression, Gibbs Paradox, Sackur-Tetrode equation. Saha's Ionization Formula. Law of Equipartition of Energy (with proof)– Applications to Specific Heat of gas and solids and its Limitations, Thermodynamic Functions of a Finite Level System, Negative Temperature.	24	2-Jan to 10-Feb
Bose-Einstein Statistics: B-E Distribution law, Thermodynamic functions of a strongly degenerate Bose Gas, Bose Einstein condensation, properties of liquid He (qualitative description), Radiation as a photon gas and Thermodynamic functions of photon gas. Bose derivation of Planck's law.	12	13-Aug to 4-March
Fermi-Dirac Statistics: Fermi-Dirac Distribution Law, Thermodynamic functions of a Completely and strongly degenerate Fermi Gas, Fermi Energy Electron gas in a Metal, Specific Heat of Metals, Relativistic Fermi gas, White Dwarf Stars, Chandrasekhar Mass Limit.	12	6-March to 24-March
Theory of Radiation: Properties of Thermal Radiation and Radiation Pressure. Blackbody Radiation and its	12	27-March to 14-April

spectral distribution. Kirchhoff law. Stefan-Boltzmann law and its Thermodynamic proof. Wien's Displacement law. Wien's Distribution Law. Rayleigh-Jean's Law. Ultraviolet Catastrophe. Planck's Quantum Postulates. Planck's Law of Blackbody Radiation Deduction of Wien's Distribution Law, Rayleigh-Jeans Law, Stefan-Boltzmann Law, and Wien's Displacement law from Planck's law.		