

First year of Five Years integrated M.Sc. (Physics / Chemistry / Mathematics)**M.Sc. – I, Semester – II****MP 102 : Physics – II Kinetic theory, Thermodynamics & Statistical Physics**

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- **KINETIC THEORY OF GASES** (04 Hours)
Postulates of kinetic theory of gases, velocity of gas molecules, Molecular energy, Kinetic-molecular model of an ideal-gas, kinetic interpretation of temperature, Degree of freedom of gas molecules, Maxwell's law of equipartition of energy.
- **INTERMOLECULAR FORCES & TRANSPORT PHENOMENA** (04 Hours)
Viscosity of a gas, Thermal conductivity of gases, Van der Waals' equation of state, Brownian motion
- **LAWS OF THERMODYNAMICS,** (12 Hours)
Zeroth law of Thermodynamics, Ist and IInd laws of Thermodynamics, concepts of Temperature, internal energy and entropy, calculations of change of internal energy, and Entropy in various thermodynamic processes
- **THERMODYNAMICS POTENTIALS, HELMHOLTZ & GIBBS FUNCTIONS, MAXWELL RELATIONS** (12 Hours)
Gibbs and Helmholtz energy, Gibbs paradox, Enthalpy, and Maxwell's thermodynamic relations
- **ELEMENTS OF STATISTICAL PHYSICS** (08 Hours)
Fermi Dirac, Maxwell Boltzmann, & Bose Einstein distributions
- **THERMODYNAMICS OF BLACK BODIES** (04 Hours)
Black body and characteristics, radiation principles like Rayleigh Jeans, Weins and Planck's law of black body radiation

(Total Contact Time (Theory) : 44 Hours)**BOOKS RECOMMENDED :**

1. **Sears F.W. & Salinger**, *Thermodynamics, Kinetic theory and Statical Thermodynamics* 3rd Ed. Addison-Wesley/Pearson, 1975.
2. **Young & Freedman**, *Sears and Zemansky's University Physics* : Pearson Education, Singapore. 2004.
3. **Feynman R. P., Leighton R. B. and Sands M.**: *The Feynman Lectures in Physics* Vol. 1 Narosa Publishers, 2008.
4. **Zemansky M. W.**, *Heat and Thermodynamics* (McGraw Hill), 1957
5. **Carter A.**, *Classical and Statistical Thermodynamics*, Pearson Education, 1999.