GENERIC ELECTIVES

DEPARTMENT OF PHYSICS

LEARN:

Simple harmonic oscillation and superposition principle.

Different types of waves and their velocities: plane, spherical, transverse, longitudinal.

Concept of normal modes in transverse and longitudinal waves: their frequencies and configurations.

Interference as superposition of waves from coherent sources derived from same parent source.

Concepts of diffraction: superposition of wavelets diffracted from aperture, understand Fraunhoffer and Fresnel diffraction.

LABORATORY COURSE:

Gain hands-on experience of using various optical instruments

Offered to students of Semester III

Waves and Optics

4 Lectures + 4 Lab classes @week

LEARN:

Concepts of thermodynamics, the first and the second law of Thermodynamics, the concept of entropy and the associated theorems, the Thermodynamic potentials and their physical interpretations.

Maxwell's thermodynamic relations.

Fundamentals of the kinetic theory of gases, Maxwell-Boltzman Distribution

Law, equipartition of energies, mean free path of molecular collisions, viscosity, thermal

Conductivity, diffusion and Brownian motion.

Black body radiations, Stefan- Boltzmann's law, Rayleigh-Jean's law, Planck's law and their significances.

Quantum statistical distributions, viz., Bose-Einstein statistics and the

Fermi-Dirac statistics.

LABORATORY COURSE:

Experiments designed for measurements of various constants and thermal properties of different material.

Offered to students of Semester IV

Thermal Physics and Statistical Mechanics

4 Lectures + 4 Lab classes @week