| Code | Subject Title | Cr. Hrs | Semester |
|---|---|---|---|
| **PHY-401** | **STATISTICAL MECHANICS** | **3** | **VII** |

| Year | Discipline |
|---|---|
| **4** | **Physics** |

**Course Outlines:**

Classical statistical mechanics, phase space description of physical systems, macro systems and microsystems, ensembles, entropy in statistical mechanics, micro canonical ensemble, canonical ensemble, grand canonical ensemble, diatomic molecules, heat capacities of diatomic gasses and crystals. Quantum statistics, basic concept of quantum statistics, Pauli exclusion principle, Bose-Einstein and Fermi-Dirac distributions, frequency spectrum of a black body and Planck's radiation law, Liouville's theorem, equality of probability for the perfect gas, energy distribution of conduction electrons in metals, degree of gas degenerations, completely degenerate Fermi-Dirac gas, concept of fluctuations, Bose-Einstein condensation, introduction to density matrix approach.

**Books Recommended:**


1. *Elementary Statistical Physics* by C. Kittle John Wiley, New York, 1958.
2. *Fundamentals of Statistical and Thermal Physics* by R. Reif McGraw-Hill Education - Europe; January 1, 1965.
3. *Modern Physics An Introducing to its Mathematical Language* by William A. Blanped.
4. *Statistical Physics* by A.J. Pointon, publisher Longman, 1967.