DEPARTMENT OF PHYSICS

Course Outcomes

For Physics as a Major Subject
CCF Course (UG Syllabus, 2023)

Semester 1:

DSC-1(Basic Physics-1)

(A) Mathematical Physics:
- To impart knowledge about various mathematical tools employed to study physics problems.
- To understand basics of vector calculus and application to simple cases.
- To understand differential equations i.e. ordinary differential equations with constant coefficients, first order ODE's with variable coefficients, second order ODE's partial differential equations, the wave equation and the heat equation, and application of Green's function.
- To study Curvilinear coordinates for application in different physical systems.

(B) Classical Mechanics:
- To understand the motion of objects in different frame of references.
- To study the Newtonian mechanics and its applications in real life dynamics.
- To understand the idea of conservation of angular momentum, central forces, effective potential, Kepler's laws of planetary motion.
- To study the basics of motion of fluid which includes streamlined and turbulent flows, equation of continuity, critical velocity, flow of a liquid through a capillary tube, capillaries in series and parallel, Stokes' formula.

Semester 2:

DSC-2 (Basic Physics-2)

(A) Basic Electricity and Magnetism:
- To understand the basic concepts of electric and magnetic fields and gain an understanding of different theoretical and practical perspectives.
- To understand the concept of conductors, dielectrics, inductance and capacitance.

(B) Introduction to Thermodynamics

- To gain knowledge in Kinetic theory of gases.
- To understand the nature of thermodynamic properties of matter like internal energy, enthalpy, entropy, temperature, pressure and specific volume
- To understand the significance of first law and second of thermodynamics
- To understand the efficiency of Carnot's engine.
- To understand implications of the second law of thermodynamics and limitations placed by the second law on the performance of thermodynamic systems
- To evaluate entropy changes in a wide range of processes and determine the reversibility or irreversibility of a process from such calculations.