

SYLLABUS :-

**INTRODUCTORY CONCEPTS:** System and Control Volume, Thermodynamic Properties, Concept of Thermodynamic equilibrium, Properties of Fluids, Reynolds transport Theorem and its applications to system/control volume analysis.

**THERMODYNAMICS:** First Law of Thermodynamics for closed and open systems, Second Law of Thermodynamics, Entropy, Change in entropy in various thermodynamic processes and concept of entropy generation, Exergy (Availability) balance for closed an open system, 2nd law efficiency,

**Vapour Cycles:** Carnot cycle; Simple Rankine cycle, Reheat and Regenerative cycles; Ideal vapour compression refrigeration cycle. Air Standard Cycles: Carnot, Otto, Diesel and Brayton cycle.

**FLUID MECHANICS:** Kinematics of fluid motion- Lagrangian and Eulerian description, streamline, streakline and pathline, acceleration of a fluid element, continuity equation, stream function, rotation and angular deformation, irrotational flow, velocity potential, Stokes law of viscosity and Navier-Stokes equations - some exact solutions Dimensional analysis and similarity - Buckingham Pi theorem, Internal flows â pipe flow, friction factor, Moody diagram, minor and major losses, hydraulic diameter, External flows - boundary layer approximation, momentum integral method, flow over a flat plate, flow separation