

## **ME 102: ENGINEERING THERMODYNAMICS (2-0-0 : 2)**

**Basic Concepts of Thermodynamics** – System & Surrounding, Process, Cycle, Heat and Work, Reversible and Irreversible Processes.

**First Law of Thermodynamics** – First Law for a closed system, Internal Energy, First Law for an Open System, Enthalpy, Specific Heat at Constant Volume and Constant Pressure

**Second Law of Thermodynamics** – Statements of Second Law of Thermodynamics, Heat Engines, Refrigerators, Heat Pumps and their efficiencies, Carnot Cycle, Carnot Principles, Carnot Heat Engine and Carnot Refrigerator

**Entropy** – Clausius Inequality, Increase of Entropy Principle, Property Diagrams

**Vapour Power Cycles** – Impracticalities of Carnot Cycle, Rankine Cycle, Ideal Reheat Rankine Cycle, Ideal Regenerative Rankine Cycle

**Basic Modes of Heat Transfer** – Conduction in Solids, Thermal Conductivity, Insulating Materials, Free and Forced Convection, Laws of Radiation

### **Text Books:**

1. Engineering Thermodynamics, P K Nag, TMH.
2. Thermodynamics, Yunus Cengel and Michael Boles, TMH

### **References:**

1. Introduction to Engineering Thermodynamics, Sonntag, John Wiley & Sons
2. A Textbook of Engineering Thermodynamics, R. K. Rajput, Laxmi Publications