

## **BASIC MECHANICAL ENGINEERING 2-0-0**

### **MODULE-I (11 classes)**

Thermodynamics: Systems, Properties, Process, State, Cycle, Internal energy, Enthalpy, Zeroth Law, First law and Second Law of Thermodynamics, Basic Concept Entropy, Properties of ideal gas, Properties of pure substances, Enthalpy, Specific volume, Internal energy and dryness fraction of steam, use of Steam tables. Related numerical.

### **MODULE-2 (8 classes)**

Application of Thermodynamics: Single stage air compressor, Steam Power Plant, I.C. Engines (Brief Description on working principles with Schematic diagrams only)

Elements of Fluid Mechanics and Heat Transfer

Properties used in Fluid Mechanics, Fluid Statics, Kinematics and Dynamics (Concepts only), Heat transfer and Classifications (Concepts only)

### **MODULE-3 (7 Classes)**

Introduction to Manufacturing: Classification of engineering materials, Material Properties, Manufacturing processes: Welding, Casting, Forming (Basics only)

### **MODULE-4 (4 Classes)**

Basic Power transmission devices: Belt, Gear drives, clutch, brakes. (Working principle only)

Introduction to Robotics: Robot anatomy, Joints and links and common robot configurations.

### **Essential Reading**

- i. Basic Mechanical Engineering by Pravin Kumar, Pearson
- ii. Basic Mechanical Engineering by A R Israni, P K Shah, BS Publications
- iii. Text book of Elements of Mechanical Engineering, S T Murthy, Universities press
- iv. Basic and applied Thermodynamics by P. K. Nag, Tata McGraw Hill

### **Supplementary reading**

- i. Basic Mechanical Engineering by.D. Mishra, P. KParida, S.S.Sahoo, India Tech Publishing company
- ii. Elements of Mechanical Engineering by J K Kittur and G D Gokak,Willey
- iii. Basic Mechanical Engineering by BasantAgrawal, C M Agrawal,Willey
- iv. Engineering Thermodynamics by P. Chattopadhaya, Oxford University Press

### **COURSE OUTCOMES**

CO1: Comprehending the Law of Thermodynamics

CO2: Being aware of how crucial thermodynamics is to IC engines, power plants, refrigerators, and Heat Pump

CO3: Being aware of fluid mechanics and heat transfer concepts

CO4: Recognizing the functions of Engineering materials

CO5: Have a fundamental understanding of welding, Casting, Forming and other manufacturing techniques.

CO6: Recognizing fundamental power transfer mechanisms and aware of the fundamental robotics system.