

w.e.f. 2012-2013 academic year

PRASAD V.POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY  
(AUTONOMOUS)  
KANURU, VIJAYAWADA-7

B.Tech [ELECTRONICS AND COMPUTER ENGINEERING (ECM)]

**I Year B. Tech.– II Semester**

### **BASIC MECHANICAL ENGINEERING**

#### **UNIT-I**

**Casting:** Introduction, General method in making a Casting, pattern: types, materials and allowances. Moulding materials and equipment, Preparation, properties of moulding sands.

#### **UNIT-II**

**Welding:** Principles of gas welding and arc welding, Soldering and Brazing;

**Lathe:** Description of basic machine tool- Lathe – operations – turning, threading, taper turning and drilling;

#### **UNIT-III**

**Power Transmission:** Introduction to belt and gears drives, types of gears, Difference between open belts and cross belts, power transmission by belt drives; (theoretical treatment only).

#### **UNIT – IV**

**Power Plants:** Introduction, working principle of hydro electric power plant and steam power plant, Alternate sources of energy – solar, wind and tidal power;

#### **UNIT-V**

**Refrigeration & Air Conditioning:** Definition – COP, Unit of Refrigeration, Applications of refrigeration system, vapour compression refrigeration system, simple layout of summer air conditioning system;

#### **UNIT-VI**

**IC Engines:** Introduction, Main components of IC engines, working of 4-stroke petrol engine and diesel engine, working of 2- stroke petrol engine and diesel engine, difference between petrol and diesel engine, difference between 4- stroke and 2- stroke engines.

#### **UNIT-VII**

**Simple Stress and Strains:** Elasticity and Plasticity – Types of stresses & strains – Hooke's law – stress – strain diagram for mild steel – Working stress – Factor of safety – Lateral strain, Poisson's ratio & volumetric strain- Elastic moduli & the relationship between them.

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### UNIT-VIII

**Properties of Materials:** Physical properties - Mechanical properties – Electrical properties, Magnetic Properties and Chemical properties.

### TEXT BOOKS:

1. Fundamentals of Mechanical Engineering / G.S.Sawheny- PHI.
2. An Integrated Course in Mechanical Engineering / R.K.Rajput /Biral Publications.
3. I.C. Engines / V. GANESAN- TMH.
4. Strength of Materials by R.K. Rajput, S.Chand & Company.
5. Thermal Engineering / R.K. Rajput / Lakshmi Publications.

### REFERENCES:

1. Thermodynamics and Heat Engines / R. Yadav / Central Book Depot.
2. Strength of Materials by R.K.Bansal, Laxmi Publishers.
3. Engineering Mechanics Statics and dynamics by A.K.Tayal, Umesh Publication, Delhi.
4. Fundamentals of I.C.Engines - P.W. Gill, J.H. Smith & Ziurys- IBH & Oxford pub.