

**PME5D002 DESIGN OF MACHINE COMPONENTS  
(HONOURS ELECTIVE)**

**MODULE I (8 HOURS)**

1. **Design of Pressure vessels:** Thin pressure vessels: cylindrical and spherical vessels, Design of end Closures, Thick cylindrical shells.
2. **Design of Lever:** Classification, Design of levers, Cranked lever, Lever of safety - valve.

**MODULE II (8 HOURS)**

3. **Design of belt drive and power screw:** Design of belt drive and pulley, Power screw design with square thread such as screw jack.
4. **Design of clutch and brake:** Friction clutch, Cone clutch and Centrifugal clutch, Block brake, Band brake, Internal expanding shoe brake.

**MODULE III (8 HOURS)**

5. **Gears:** Design of Spur, Helical, bevel and worm gears.
6. **Flywheel:** Design of Flywheel.

**MODULE IV (8 HOURS)**

7. **Design of I.C. Engine components:** Design of Cylinder, Piston, Connecting Rod, Crank Shaft.
8. **Introduction to Finite Element Method:** FEM fundamental concepts, Procedure of FEM, Finite Element Modeling of one dimensional problems. Finite Element Analysis of 2-D problems: Shape function, Strain Displacement Relation, Element Characteristics Matrix.

**TEXT BOOKS:**

1. Design of Machine Elements, V.B. Bhandari, Tata McGraw Hill
2. Design of Machine Elements by C. S. Sharma and K. Purohit, PHI

**REFERENCE BOOKS:**

1. Mechanical Engineering Design, J.E.Shigley, C.R.Mischke, R.G.Budynas and K.J.Nisbett, TMH
2. Machine Design, P.Kanaiah, Sciotech Publications
3. Fundamentals of Machine Component Design by R.C.Juvinall and K.M.Marshek, John Wiley & Sons
4. Machine Drawing by N.Sidheswar, McGraw-Hill
5. Machine Design, P.C.Sharma and D.K.Agrawal, S.K.Kataria & Sons
6. Machine Design, Pandya and Shah, Charotar Book Stall
7. Machine Design, Robert L. Norton, Pearson Education Asia.

**DESIGN DATA HAND BOOKS:**

1. P.S.G. Design Data Hand Book, PSG College of Tech Coimbatore
2. Design Data Hand Book, K. Lingaiah, McGraw Hill, 2nd Ed. 2003.
3. Design Hand Book by S.M.Jalaluddin ; Anuradha Agencies Publications
4. Design Data Hand Book by K.Mahadevan and B.Reddy,CBS Publishers