

## **PCME4303 DESIGN OF MACHINE ELEMENTS (3-1-0)**

### **Module-I** (12 hours)

Stages in design, Standardization, Interchangeability, Preferred numbers, Fits and Tolerances, Engineering materials, Ferrous, Non-ferrous, Non-metals, Indian standard specifications for Ferrous materials, Fundamentals of Machine Design, Allowable stress, Factor of safety, Use of Code/Data books.

Design of Joints: Riveted joints, Boiler joints, Welded and bolted joints based on different types of loading. Illustrative problems with solutions.

### **Module-II** (14 hours)

Design of Cotter joints with socket and spigot, with a Gib. Design of knuckle joint.

Illustrative problems with solutions.

Design of shafts, solid and hollow based on strength and on rigidity. Illustrative problems with solutions.

Design of keys and pins, Sunk key, Feather key, Taper pin. Illustrative problems with solutions.

Design of shaft couplings : Rigid Flange coupling, Flexible Flange coupling.

### **Module-III** (14 hours)

Design of circular section, Helical springs, Tension and compression types, Design of leaf springs: Cantilever and semi-elliptical types. Illustrative problems with solutions.

Levers, classification, Design of Foot levers, Hand lever, Cranked lever, Lever of lever loaded - safety - valve. Design of belt and pulley Power screw design with square thread, such as screw jack. Illustrative problems with solutions.

[Only specified data book as mentioned in the syllabus is permitted during examination]

### **TEXT BOOKS:**

1. Mechanical Engineering Design, J.E.Shigley, C.R.Mischke, R.G.Budynas and K.J.Nisbett, TMH
2. Machine Design, P.Kanaiah, Scitech Publications

### **REFERENCE BOOKS:**

1. Design of Machine Elements, V.B. Bhandari, Tata McGraw Hill Publishing Company Ltd., New Delhi, 2<sup>nd</sup> Edition 2007.
2. Machine Design, P.C.Sharma and D.K.Agrawal, S.K.Kataria & Sons
3. Machine Design, Pandya and Shah, Charotar Book Stall
4. Machine Design, Robert L. Norton, Pearson Education Asia, 2001.
5. Machine Design, A CAD Approach: Andrew D Dimarogonas, John Wiley Sons, Inc, 2001.
6. Fundamentals of Machine Component Design, Robert C. Juvinall and Kurt M Marshek, Wiley India Pvt. Ltd., New Delhi, 3<sup>rd</sup> Edition, 2007
7. A Text Book of Machine Design, R.S.Khurmi and J.K.Gupta, S.Chand Publication
8. Machine Design, H.Timothy and P.E.Wentzell, Cengage Learning
9. Computer Aided Analysis and Design, S.P.Regalla, I.K.International Publishing

### **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