

## **PMT7D011      TRIBOLOGY OF ENGINEERING MATERIALS 4-0-0**

### **(HONOURS)**

#### **Module I (12 Hours)**

Background and importance of Tribology; A system approach to Tribology; Characterization of tribosurfaces; mechanics of solid contacts; Hertzian and non-hertzian contact. Contact pressure and deformation in non-conformal contacts, friction in contacting rough surfaces, sliding and rolling friction, various laws and theory of friction and frictional heat generation; role of contact temperature.

#### **Module II (12 Hours)**

Different modes of wear; Wear and wear types; Mechanisms of wear - Adhesive, abrasive, corrosive, erosion, fatigue, fretting, etc., Wear of metals and non-metals. Wear models - asperity contact, constant and variable wear rate, geometrical influence in wear models, wear damage. Wear in various mechanical components, wear controlling techniques. Tribological testing techniques and analysis of the worn surfaces.

#### **Module III (12 Hours)**

Different wear resistant materials; recent research results illustrating the performance of surface coatings, bulk materials and composite materials in tribological contacts. Lubrication; Importance and properties of lubricants.

#### **Books for reference:**

1. *K.C. Ludema, Friction, Wear, Lubrication - A Text book in Tribology, CRC press.*
2. *Jamal Takadom, Materials and Surface Engineering in Tribology.*
3. *Hutchins, Tribology.*
4. *Bharat Bhusan, Principle and Application of Tribology.*
5. *Bharat Bhusan, Introduction to Tribology.*