

Course No.:MSD20*

WEAR ANALYSIS & CONTROL

C L P(3 2 2)

UNIT I

Introduction to wear control, types of wear, Adhesive wear, two-body and three-body abrasive wear, erosive wear, cavitation wear, etc.

Tribo systems and tribo-elements, Measurement of Surface roughness R_a , R_z , Experimental studies on friction on various tribosystems using pin-on-ring (POR) and pin-on-disc (POD) machines, etc. Sample preparation, wear measurement of various tribo-elements, using POR and POD machines. Calculation of wear volume and wear coefficient, comparison with existing data.

UNIT II

Diagnosis of wear mechanisms using optical microscopy and scanning electron microscopy, etc., Wear resistant materials, wear resistant coatings, eco-friendly coatings designing for wear, systematic wear analysis, wear coefficients, filtration for wear control.

UNIT III

Component wear, bushings, lubricated piston rings and cylinder bore wear, dry piston rings, rolling bearings, seal wear, gear wear, gear couplings, wear of brake materials, wear of cutting tools, chain wear. Boundary lubrication, Hydrodynamic lubrication, EHD lubrication.

Case studies.

Text Books:

1. Czichos, H., "Tribology:A system approach to the science & technology of friction, lubrication and wear", Series 1, *Elsevier Publications, 1982.*
2. Glaeser, W. A., "Tribology series – Vol. 20," *Elsevier Publications, 1992.*
3. Neale, M.J., "The Tribology Hand Book," *Butterworth Heinemann, London, 1995.*

Reference Book:

1. Peterson, M. B., Winer, W.O., "Wear Control Handbook," *ASME, NY. 1980.*