

## MSE-373 Tribological Phenomena on Surfaces

**Credit Hours:** 3-0

**Pre-requisites:** None

### Course Objectives

- To know about the Physical properties of lubricants such as viscosity, composition of lubricants and term and laws concerning lubricants.

### Course Contents

- Physical properties of lubricants, viscosity, viscosity shear rate relationship
- Viscosity measurements, temperature characteristics of lubricants
- Composition of lubricants, hydrodynamic lubrication, continuity of flow in a column, bearing geometry and load capacity
- Computational hydrodynamics, hydrostatic lubrication, boundary an extreme pressure lubrication
- Fundamentals of contact between solid surfaces, surface wear and treatment,
- Abrasive, erosive and cavitational wear, adhesive wear, corrosive and oxidative wear, fatigue wear

### Course Outcome

- Students will be able to comprehend the basic of physical properties of lubricants such as viscosity, composition of lubricants, hydrodynamic lubrication, continuity of flow in a column, bearing geometry and load capacity, computational hydrodynamics, hydrostatic lubrication, boundary an extreme pressure lubrication, fundamentals of contact between solid surfaces, surface wear and treatment, abrasive, erosive and cavitational wear, adhesive wear, corrosive and oxidative wear, fatigue wear.

### Suggested Books

- Gwidon Stachowiak and A W Batchelor, *Engineering Tribology, 3<sup>rd</sup> Edition, Butterworth and Heinman 2011.*
- Bharat Bhushan, *Introduction to Tribology, 2<sup>nd</sup> Edition, John Wiley and sons, 2013.*