

INDUSTRIAL TRIBOLOGY–EL 2
Semester III (Production Engineering) SUB CODE: MEPR303-D
Teaching Scheme (Credits and Hours)

Teaching Scheme				Total Credit	Evaluation Scheme					Total Marks
L	T	P	Total		THEORY		IE	CIA	PR. / VIVO	
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	
3	0	0	3	3	3	70	30	20	0	120

LEARNING OBJECTIVES:

The objective of this course is

- To learn various concepts related to tribology
- To have practical purview of wear, lubrication & applications

LESSON PLANNING

SR.NO	CHAPTER NO	DATE/WEEK	%WEIGTAGE
1	1,2	1 st 2 nd 3 rd	20
2	3,4	4 th 5 th 6 th	20
3	5,6	7 th 8 th 9 th	20
4	7	10 th 11 th 12 th	20
5	8	13 th 14 th 15 th	20

Total hours (Theory): 45, Total hours (Practical):00, Total hours: 45

DETAILED SYLLABUS

Chap . No.	Topic
1	Introduction: Definition and Scope of tribology, Contact of solids, Surface topology, Surface interaction
2	Friction : Definitions, Types, Friction laws, Modern theory of dry solid friction, Temperature of sliding surface
3	Mechanism of rolling friction, Friction instability, Friction elastomers.
4	Wear: Definition, Classification, Theories of adhesives, Abrasives, Surface fatigue and corrosive wear
5	Miscellaneous wear theory such as Erosive, cavitation and Fretting wear, Wear of miscellaneous machine components such as gears, Plane bearings and rolling elements.
6	Lubrication: Lubrication of bearing, Lubricant, Mineral Oil, Grease, Solid lubricant, Lubrication regime, Viscous flow
7	Reynolds equation and its limitations, Hydrodynamic lubrication, Hydrostatic lubrication, Elasto-hydrodynamic lubrication, Boundary lubrication, Squeeze films.
8	Applications: Application of tribology in manufacturing processes, Metal machining, Metal cutting, Tool wear, Action of lubricants, Friction welding, Extrusion process

INSTRUCTIONAL METHOD AND PEDAGOGY (Continuous Internal Assessment (CIA) Scheme)

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc. & equal weightage should be given to all units while conducting teaching & examination.
- Attendance is compulsory in lectures and Tutorial.
- Viva Voce will be conducted at the end of the semester of 30 Marks.
- One internal exam of 30 marks is conducted as a part of Mid semester evaluation.

STUDENTS LEARNING OUTCOMES:

At the end of the course

The students will gain an experience in applying the concepts of tribology in industrial scenario.

Books:

1. Bharat Bhushan, "Introduction to Tribology"
2. N.J. Persson, "Sliding Friction"
3. Frank Philip Bowden, "The Friction and Lubrication of Solids", Oxford Classic Texts
4. Engineering Tribology P Sahoo Prentice Hall of India
5. Principles and Applications of Tribology D.F. Moore Pergamon Press
6. Fundamentals of Tribology Basu, Sengupta & Ahuja Prentice Hall of India