



AL IMAM MOHAMMAD IBN SAUD ISLAMIC UNIVERSITY
COLLEGE OF ENGINEERING
Department of Mechanical Engineering

Course Information	
Course Code and Name:	ME415 Tribology
Credit Hours:	3 (3 Lecture + 1 Tutorial)
Prerequisites:	ME 324 Heat Transfer, ME 365 Machine Design I

Course Description
Nature of solid surfaces. Interaction of solid surfaces. Friction of metals and non-metals (mechanisms, theories, applications). Wear of metals and non-metals (types, mechanisms, theories, applications). Lubrication (methods, types, theories, applications). Lubricants (types, utilization). Selection of materials for tribology applications. Surface Engineering.

Textbook			
Title	Engineering Tribology		
Authors	G. Stachowiak, and A. W. Batchelor		
Publisher	Butterworth-Heinemann	Year and Edition	3 rd Ed., 2005

Course Contents
Introduction: Engineering surfaces; Tribological phenomena; Surface geometry and topography
Contact of engineering: surfaces; Hertz contact; Spherical; contact with friction; Rough surfaces contact; Inclined contact; Temperature rise due to frictional heating
Adhesion theory & adhesive effect
Introduction to friction: Friction; Friction theories; Friction & vibration interaction; Effect of adhesion
Wear and Wear theories
Lubrication theory : Hydrodynamic lubrication; EHL; Mixed lubrication
Surface Texture and its application in tribology
Texture technique; Friction reduction; Wetting capability control
Micro/nano Tribology: Scale effect; Tribology challenge in Micro system

Academic Coordinator	Signature
Dr. Mahmoud Ahmadein	



Official Stamp