

Department of Industrial Engineering			
Machine Elements Design (65450)			
Total Credits	3		
major compulsory			
Prerequisites	P1 : Mechanics of Materials (61207) OR Strength of Materials (65320) OR Mechanics of Materials (1) (67311)		
Course Contents			
Review of combined loading and stress transformation, failure theories of machine elements under static and fatigue loading. Applications in Machine Element Design; including Screws, Welded joints, Springs, and Gears. Course Outline: - Review of combined loading and stress transformation (Ch.3) - Failure resulting from Static Loading (Ch.5) - Failure resulting from Variable loading (Ch.6) - Design of Screws, Fasteners, and Connections (Ch.8) - Design of Welded Joints (Ch.9) - Design of Mechanical springs (Ch.10) - Spur, helical, bevel and worm gearing (Ch.13)			
Intended Learning Outcomes (ILO's)		Student Outcomes (SO's)	Contribution
1	Identify and formulate the static and dynamic failure theories	E	30 %
2	Analyze and design some common machine elements and prevent their failure due to different types of loads/ stresses	C	60 %
3	Work in a team , perform a project and present the work in proper ways	D	10 %
Textbook and/ or References			
Mechanical Engineering Design; by Shigley 8th Ed., McGraw Hill, 2008.			
Assessment Criteria		Percent (%)	
First Exam		20 %	
Second Exam		20 %	
Quizzes		5 %	
Homeworks		5 %	
Projects		10 %	
Final Exam		40 %	
Course Plan			
Week	Topic		
1-2	Review of combined loading and stress transformation (Ch.3)		
3-4	Failure resulting from Static Loading (Ch.5)		
5-6	Failure resulting from Variable loading (Ch.6)		
7	First Exam		
7-9	Design of Screws, Fasteners, and Connections (Ch.8)		
10-11	Design of Welded Joints (Ch.9)		
12	Second Exam		
12-13	Design of Mechanical springs (Ch.10)		
14-15	Spur, helical, bevel and worm gearing (Ch.13)		
16	Final exam		