0

Department of Mechatronics Engineering	
Machine Elements Design (67462)	
Total Credits	**3**
major compulsory	
Prerequisites	P1 : Theory of Machines (67310) P2 : Mechanics of Materials (1) (67311) OR Mechanics of Materials (61207)

Course Contents

Load and stress analysis, failure theories of machine elements under static and fatigue loading. Applications in Machine Element Design; including Screws, Welded joints, Springs, and Gears. Course Outline: - Load and stress analysis (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 concepts of static and dynamic failure theories	E	30 %
2	Analyse and design some common machine elements and prevent their failure due to different types of loads and stresses	C	60 %
3	Work in team, perform a project and present the work in proper ways	D	10 %

Textbook and/ or Refrences

Mechanical Engineering Design; by Shiglley 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	Load and stress analysis (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