

Faculty of Engineering & Technology

Mechanical Design (1)

Information :

Course Code : MAN 341

Level : Undergraduate

Course Hours : 3.00- Hours

Department : Department of Mechanical Engineering

Instructor Information :

Title	Name	Office hours
Associate Professor	Hassan Mohamed Shams Eldin Elsayed Eleashy	10
Associate Professor	Hassan Mohamed Shams Eldin Elsayed Eleashy	10
Teaching Assistant	Donia Waheed Mohamed Abdelmonem Saleem	
Teaching Assistant	Raouf Mahmoud Mourad Naguib	

Area Of Study :

- Prepare student to analyze a given mechanical elements under different design considerations.
- Develop students knowledge about stress calculations in different elements of machine design
- Prepare students to deal with mechanical design software

Description :

Introduction to Mechanical Engineering Design. Design Philosophy and Methodology: Phases of design process, design considerations, standards and codes. Engineering materials; classification, specification and selection. Factors affecting construction details, manufacturing and assembly processes, safety, aesthetics and economy. Design of Mechanical Elements: Shafts and shaft- components, Screws, fasteners, design of non-permanent joints, welding and design of permanent joints. Thin pipes and pressure vessels Application of CAD and Solid Works Group design project.

Course outcomes :

a.Knowledge and Understanding: :

- 1 - Define the fundamentals of stress calculation for variable loads and power screws.
- 2 - Identify the principles of shaft design and shaft component design and types of bearing

b.Intellectual Skills: :

- 1 - Analyze different factors taken into consideration in variable loads, fasteners, joints and power screws.
- 2 - Calculate all forces, moments, torques and dimensions for shaft components.
- 3 - Apply rules of bearing selection in shaft design problems.

c.Professional and Practical Skills: :

- 1 - Create software models for some mechanical systems.
- 2 - Use a construction drawing to illustrate components of mechanical systems.

d.General and Transferable Skills: :

- 1 - Demonstrate efficient IT capabilities.

2 - Efficiently manage tasks, time and resources.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction & Design Basics	8	4	4
Variable Loads	6	2	4
Bolts & Fasteners	6	2	4
Power Screw Design	8	4	4
Shaft component design	10	6	4
Fits & Tolerance	6	4	2
bearing	12	6	6
Project	4	2	2

Teaching And Learning Methodologies :

Interactive Lecturing
 Problem solving
 Discussion
 Project

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignment	5.00		
Final Exam	40.00		
Mid- Exam 1I	15.00		
Mid- Exam I	15.00		
Participation	5.00		
Project	10.00		
Quizzes	10.00		

Course Notes :

2. Lecture notes on the course Moodle page, FUE website.