

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
Lecturer	Hassan Mohamed Shams Eldin Elsayed Eleashy	2

Area Of Study :

1. Develop engineering concepts to analyze a given mechanical elements under different design considerations.
2. Discuss problems in a simple and logical manner to apply fundamentals of mechanical design.

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 mechanical design related to production engineering
2 -	Identify the principles of shaft design and shaft component design.

b.Intellectual Skills: :

1 -	Think in a creative and innovative way in design problems solving
2 -	Classify numerical data and apply analytical methods for engineering design purposes
3 -	Analyze and interpret data, and design experiments to obtain primary data

c.Professional and Practical Skills: :

1 -	Analyze knowledge of science, information technology, design, and engineering practice to solve design problems
2 -	Explain a component or system, and carry construction drawing.

d.General and Transferable Skills: :

1 -	Use digital libraries and/or Learning systems.
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- 2 - Introduce ideas and solutions for many practical and engineering problems efficiently in predetermined time plan.

Course Topic And Contents :

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

Teaching And Learning Methodologies :

Interactive Lecturing
Problem solving
Discussion

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
1 st -Mid-term examination	15.00	6	
2 nd -Mid-term examination	15.00	11	
Final examination	40.00	16	
Project	10.00	12	
Quizzes	20.00		

Books :

Book	Author	Publisher
Shigley's Mechanical Engineering Design	Richard G.Budynas	McGraw Hill