

**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	9
Lecturer	Hassan Mohamed Shams Eldin Elsayed Eleashy	9
Assistant Lecturer	Zakaria Mostafa Abdo Salim Marouf	4
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**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.
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		