

**Faculty of Engineering & Technology**

**Mechanisms Computer Aided Design**

**Information :**

**Course Code :** MAN 570

**Level :** Undergraduate

**Course Hours :** 2.00- Hours

**Department :** Specialization of Mechatronics Engineering

**Instructor Information :**

Title	Name	Office hours
Associate Professor	Hussein Mohamed Abdelmoneam Hussein	3

**Area Of Study :**

- Basics of planner mechanisms,
- Graphical method for kinematic analysis,
- Analytical method for kinematic analysis,
- Simulation software.

**Description :**

The course aims to acquire the essential knowledge and understanding of planner mechanism and its kinematic analysis using computer simulation software and validate the results with conventional analytical and graphical methods

**Course outcomes :**

**a.Knowledge and Understanding: :**

1 -	Demonstrate the basic elements of planner mechanisms
2 -	Classify the different joints and kinematic pairs.
3 -	Identify the degrees of freedom and the category of common mechanisms
4 -	Collect data to simplify and manually analyses planner mechanisms
5 -	Use basic Science and simulation packages to analyses planner mechanisms

**b.Intellectual Skills: :**

1 -	Use analytical methods to find kinematic parameters of mechanisms
2 -	Select suitable graphical approach to find kinematic parameters of mechanisms
3 -	Use simulation packages to solve planner mechanisms
4 -	Solve planner mechanisms in all possible configurations

**c.Professional and Practical Skills: :**

1 -	Apply graphical and analytical solutions for any planner mechanisms
2 -	Select suitable method to solve mechanisms and find kinematic parameters
3 -	Create assembly on simulation packages to run mechanisms
4 -	Apply analyses using commercial software

**d.General and Transferable Skills: :**

1 -	Communicate effectively.
2 -	Effectively manage tasks, time, and resources.
3 -	Acquire entrepreneurial skills.

**Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction	1	1	0
Basics of CAD assembly and simulation	2	1	1
Main types of kinematic pairs	2	2	0
Kinematics parameter definitions	3	1	2
Kinematics analysis using graphical methods	4	2	2
Kinematics analysis using analytical methods	2	1	1
Basics of CAD assembly	2	1	1
Defining kinematic pairs on SW	4	2	2
Engineering simulation packages	2	1	1
Validate SW with conventional methods	3	1	2
Mathematical simulation packages	4	1	3
Validate Mathematical simulation with conventional methods	4	1	3

**Teaching And Learning Methodologies :**

Interactive Lecturing
Problem solving
Project
Research

**Course Assessment :**

Methods of assessment	Relative weight %	Week No	Assess What
1st Midterm	15.00	6	
2nd Midterm	15.00	11	
Assignments	10.00		
Final Exam	40.00	16	
Quizzes & attendance	20.00		

**Course Notes :**

1. Text Book:  
GeoGebra manual and SolidWorks handbook
2. Lecture notes on the course Moodle page, FUE website.

