



The Hashemite University
Faculty of Engineering
Department of Mechanical Engineering
Course Syllabus

Course Title:	Theory of Machines 3 (3,0, 0)	Course Number:	110402440
Designation:	Compulsory	Prerequisite(s):	110406260, 110402231
Instructor:	Dr. Hitham Tlilan	Instructor's e-mail:	hitham@hu.edu.jo
Office Hour			

Course Description (catalog): Theory of Machine has been designed to cover the basic concepts of kinematic aspects of mechanical mechanisms machines and major parts used in running of the machines. The students will understand the basic concepts of machines and able to understand constructional and working features of important machine elements. The students should be able to understand various parts involved in kinematics of machines for different applications. The students shall also be able to understand requirements of basic machine parts which would help them to understand the design aspects of the machine parts.

Textbook(s) and/or Other Supplementary Materials: Design of Machinery: Norton, 5th Ed., McGraw-Hill

References: "Kinematics and Dynamics of Machinery" Charles E. Wilson and J. Peter Sadler, Prentice Hall, 4th. edition, 2003.

Major Topics Covered:

Topics	No. of Weeks	Contact hours*
Introduction to Kinematics & Dynamics	1	3
Analytical linkage synthesis (Mobility, 4-bar mechanism classifications, Slider - crank mechanism...etc.)	3	9
Position Analysis	2	6
Velocity Analysis	2	6
Acceleration Analysis	2	6
Gears and Gear train	2	6
Cams	2	6
Balancing	1	3
Total	15	45

*Contact hours include lectures, quizzes and exams

Specific Outcomes of Instruction (Course Learning Outcomes):

After completing the course, the student will be able to:

CLO1. Classify the mechanisms used in machines and calculate mobility (number of degrees-of-freedom) and enumerate rigid links and types of joints within mechanisms. **(a, e)**

CLO2. Identify the basic relations between distance, time, velocity, and acceleration. Apply vector mechanics as a tool for solving kinematic problems. **(a, e)**

CLO3. Analyze Gears and gear trains. **(a, e)**

CLO4. Analyze cam and follower. **(a, e)**

CLO5. Use computer software to study the motion of a mechanism. **(e, k)**

Student Outcomes (SO) Addressed by the Course:

#	Outcome Description	Contribution
General Engineering Student Outcomes		
(a)	an ability to apply knowledge of mathematics, science, and engineering	H
(b)	an ability to design and conduct experiments, as well as to analyze and interpret data	
(c)	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
(d)	an ability to function on multidisciplinary teams	
(e)	an ability to identify, formulate, and solve engineering problems	H
(f)	an understanding of professional and ethical responsibility	
(g)	an ability to communicate effectively	
(h)	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i)	a recognition of the need for, and an ability to engage in life-long learning	
(j)	a knowledge of contemporary issues	
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	L
H=High, M= Medium, L=Low		

Grading Plan:

Mid Exam *****	30 Points	To be appointed *****
HWs. & Qs	15 Points	Online
Project.	15 Points	Online
Final exam	40 Points	To be arranged by HU

General Notes:

Programming project will be given throughout the course. Each student should show the code and run it at the instructor office. All of the followings should be considered in your project:

☐ **Project POLICY & ETHICS:**

All kinds of communication with the other students are strictly forbidden.

Clarity, accuracy and justification of your program are key elements in the evaluation.

Students are not allowed to submit the project with running it and later than the day the presentation.

Use of friends PC is not allowed during the presentation.

All programs should be submitted as soft copy on CD at 2-week before the final exams.

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Prepared by:*Dr. Hisham Nisan***Date:** 11th Oct. 2020