



THE HASHEMITE UNIVERSITY
FACULTY OF ENGINEERING
COURSE SYLLABUS
DEPARTMENT OF MECHANICAL ENGINEERING



COURSE TITLE-CH:	Dynamics of machinery -2 (2,0,0)	COURSE NUMBER: 110402448
DESIGNATION:	Compulsory	PREREQUISITE(S): 110402440
INSTRUCTOR:	Manal Mustafa	INSTRUCTOR'S E-MAIL: m_mustafa@hu.edu.jo
OFFICE HOURS:	See posted Hours	
LECTURE TIME AND LOCATION:	Section1 : Sun., Tus. 9:00-10:00, E2017 Section2 : Mon., Wed. 9:30-10:30, E2017	

Course Description (catalog):

Kinematic analysis of Mechanisms, Dynamic force analysis in linkages, Balancing of rotors: static and dynamic, Balancing of four bar mechanisms, Balancing of single and multi-cylinder engine, Flywheel design.

Textbook(s) and/or Other Supplementary Materials:

Engineering Mechanics: Dynamics, R.C. Hibbeler.

Design of Machinery, Norton, R., 4th edition, McGraw-Hill.

Kinematics and dynamics of machinery, Charles Wilson

Major Topics Covered:

Topic	# Weeks	# Contact hours*
Review of Rigid Body Planar Kinematics analysis (Velocity, acceleration).	1	2
Review of Rigid Body Planar Kinetics analysis (Force Analysis).	2	4
Review of Rigid Body Planar Kinetics analysis (Energy Methods).	2	4
** First Exam		1
Force analysis of linkages:		
Slider-crank mechanism	1	2
Four bar mechanism	1	2
Solving Force Matrix Using MATLAB	1	2
Balancing of rotors: static and dynamic balancing	2	4
** Second Exam		1
Balancing of four bar mechanisms	1	2
Balancing of single and multi-cylinder engine	1	2
Flywheel design**	1	2
Total	13	28

*Contact hours include lectures, quizzes and exams

Specific Outcomes of Instruction (Course Learning Outcomes):

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

1. Apply kinematic analysis of linkage: velocity and acceleration (**a, e**)
2. Analyze pin forces, and drive torque needed to run a mechanism at given kinematics (**a, e**)
3. Apply static and dynamic balancing on rotors (**a, e**)
4. Apply balancing condition of both in-line and V-shape multi-cylinders engine (**a,c**)
5. Design of a flywheel that satisfies the input torque demand (**a,c**)

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
(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	L
(e)	an ability to identify, formulate, and solve engineering problems	H

Grading Plan: Blended Learning Course Option**

	Date	Day	Time
Midterm (Held on Campus)	30 points	TBA	
Quizzes (Held Online)	10 points	Online Quizzes will be posted on Moodle	
Homework's	10 points		
Project (MATLAB)	10 points		
Final Exam (Held on Campus)	40 points	TBA	

Course policy:

1. No phone pictures or recordings (vocal or video) are allowed within lecture please respect my and your classmate's privacy.
2. Any discussions not related to course topics or content are prohibited.
3. Office hours are meant for course questions and review they are not placed for your personal revelations! please respect my time.

Absence policy:

1. There will be no disqualification from course based on absence.
2. Missed lectures will have a penalty of 1 mark per lecture deducted from your quizzes/homework's mark.
3. Any student with more than 5 missed lectures will lose his/her to use office hours or exam review.

Quizzes policy:

1. Quizzes will be given at random times and dates.
2. Quizzes will be given via Moodle platform.
3. You will be given 2-6 Quizzes so be careful and keep on checking your Moodle!
4. No makeup is given for missed quizzes.
5. No review is allowed for quizzes (Moodle system will automatically grade them)!

Good luck 😊