Hashemite University
College of Engineering
Department of Mechatronics
Dynamics and Vibrations 110405211
(3 Credit Hours)

Instructor

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Office hours:	As Attached

Grading info

Exam 1	50
Final Exam	50

Class Info

Days	Mon, Wed Sun, Tue, Thu
Time	09:30 – 11:00 09:00 – 10:00
Location	Online learning

Course

Course Number:	110405211
Prerequisite:	110101203 & 110401214
Textbook:	J. L. Meriam and L. G. Kraige, "Engineering Mechanics: Dynamics", 7th edition, SI Version, Wiley, 2013.
Course Description (as in the catalog):	Introduction to dynamics and vibration, particle kinematics and kinetics, rigid bodies kinematics and kinetics, work-energy formulation for particles and for rigid bodies, free and forced vibration of undamped and damped SDOF and 2DOF systems, applications.
Specific Outcomes of Instruction (Course Outcomes):	The student shall be able to: 1- Apply concepts of kinematics to motion of particles and rigid bodies (Outcomes "a"). 2- Apply concepts of kinetics to motion of particles and rigid bodies (Outcomes "a"). 3- Demonstrate the ability to formulate and solve motion of particles and rigid bodies using N2L (Outcomes "e"). 4- Apply principle of work and energy in motion of particles and rigid bodies (Outcomes "k"). 5- Classify and analyze a variety of vibration problems (free, forced, undamped, and damped) for SDOF and 2DOF (Outcomes "a" and "e").
Important material	

References:

1. R. C. Hibbeler, "Engineering Mechanics: Dynamics", 12th edition, Prentice Hall, 2009.
2. Majd Abdel Wahab, "Dynamics and Vibrations", 1st Ed, Wiley, 2008.
3. S. S. Rao, "Mechanical Vibrations", 5th edition, Prentice Hall, 2010.
4. D. J. Inman, "Engineering Vibration", 3rd edition, Prentice Hall, 2007.

Major Topics Covered and Schedule in Weeks:

Topic	# Weeks	# Contact hours
Kinematics of Particles (Chapter 2)	1, 2, 3	9
Kinetics of Particles (Chapter 3)	4, 5, 6	8
Kinematics of Rigid Bodies (Chapter 5)	7, 8, 9, 10	12
Exam 1	10	1
Kinetics of Rigid Bodies (Chapter 6)	11, 12, 13	9
SDOF Vibration (Chapter 8), Final Exam	14, 15	6
Total	**15**	**44**

Course Policy

- Respect.
- Door policy (Relax in your seat waiting lectures before instructor comes, Shut door gently if you are requested to leave)
- Be on time

- Noise must be kept to a zero
- Attendance is mandatory. You will be prohibited from attending the final exam if you missed more than (6) lectures.
- No Make up for missing Midterm exams even excuse is acceptable.
- Cheating and copying is NOT tolerated
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	Exam Date
Exam 1	**Dec 6, 2020**
Final Exam	**TBD**

#	***Outcome Description***	***Contribution***
(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	

H=High, **M**= Medium, **L**=Low