



JORDAN UNIVERSITY OF SCIENCE & TECHNOLOGY
MECHANICAL ENGINEERING DEPARTMENT
ME 463 Mechanical Vibrations
_____ **Semester**

Catalog Data- 2013 :	Free and forced vibrations of damped and un damped single degree of freedom systems. Impulse and step response. Shock spectrum. Multi-degree of freedom systems: natural frequencies, mode shapes, modal analysis. Shock absorber.
Text Book(s):	Engineering Vibrations, by D. Inman, Prentice Hall, 2001
References:	N/A
Instructor:	_____
Class Schedule:	_____
Office Hours:	_____
Pre/Co-Requisite:	Linear algebra. Calculus Differential Equations
Outcomes:	<ol style="list-style-type: none">1. Derive equations of motion for free vibration of a single degree of freedom system. [a]2. Solve for the natural frequency, damping, and time response for a single degree of freedom system [a,c]3. Formulate equation of motion and its solution for a vibrating mass subject to harmonic excitation [a,c]4. Use of Fourier series to calculate response of vibrating single degree of freedom system in case of periodic excitation [a]5. Solve for forced response of a single degree of freedom vibrating system subject to non-periodic excitation [a,c]6. Be able to carry out items 1-4 above for multi degree of freedom system [a,c]7. Obtain design parameters and indicate methods of solution for a complicated vibrating systems [e,k]8. Select design parameters to ensure the vibration of a system is within the allowable limits [e,k]
Topics Covered:	Single degree of freedom. Two and multi degrees of freedom systems. Impulse response Transient vibrations Periodic excitation Modal analysis Vibration absorbers.
Computer Usage:	Students must be able to use MATLAB and relevant toolboxes.
Design Activities/Project(s):	N/A

Lab. Experiment(s): N/A

Scientific Visit(s): N/A

Evaluation: Quizzes & HW's: 10%
First Exam : 25%
Second Exam : 25%
Final Exam: 40%

Relationship of the Course to ME Outcomes:

ABET a – k	√	Level (L, M, H)	Mechanical Eng. Program Outcomes
a	√	H	a. Apply knowledge of mathematics, science, and engineering in practice.
b			b. Design and conduct experiments as well as analyze and interpret data.
c	√	H	c. Design a system, components, or process to meet desired needs.
d			d. Function on multidisciplinary teams.
e	√	H	e. Identify, formulate, and solve engineering problems.
f			f. Understanding of professional and ethical responsibility of an engineer.
g			g. Communicate effectively.
h			h. Broad education to understand the impact of engineering solutions in global and societal context.
i			i. Recognition of the need for, and possess the ability to engage in, lifelong learning.
j			j. Possess knowledge of contemporary issues.
k	√	H	k. Use the techniques, skills, and modern engineering tools necessary for engineering practice.
l			l. Adhere to safety rules and regulations.

L: Low, M:Medium, H: High

ABET Category:

Engineering Science 3 Credits
Engineering Design 0 Credits

Prepared By: _____

Date: _____

- Rules and notes:**
- 1) Never come late to the classroom, you will disturb your mates and your instructor if you do so.
 - 2) Turn OFF your cell phones during the class.
 - 3) DO Not TALK during the class please, unless you have a question for me.
 - 4) No quizzes make-ups.
 - 5) Make up exams are not held without an official signed and approved excuse from the **Department Chairman**. Please understand that this is a university law and I have no control over it.
 - 6) Office hours are the hours I dedicate for you to ask me. If you think they do not suit you, then we can still arrange for a time of our convenience by sending an e-mail to me (you should expect an approval from my side).
 - 7) The exams specified on the course syllabus are not subject to negotiations or change once approved by you **TODAY**. It is your responsibility to inform the other instructors about your assigned exams.