



JORDAN UNIVERSITY OF SCIENCE & TECHNOLOGY
MECHANICAL ENGINEERING DEPARTMENT
ME 212 DYNAMICS
_____ Semester

Catalog Data- 2013 : Dynamics of particles, two- and three-dimensional dynamics of rigid bodies. Force and acceleration, work and energy, impulse and momentum

Text Book(s): R. C. Hibbeler, **Engineering Mechanics: Dynamics**, 13th Edition, Pearson Prentice Hall, 2013

References:

1. Vector Mechanics for Engineers: Dynamics, Seventh Edition, by F. P. Beer, E. R. Johnson, and William E. Clausen, published by McGraw-Hill.
2. Engineering Mechanics Dynamics Second Edition by William F. Riley and L.D. Sturges, John Wiley Publ.
3. Engineering Mechanics.(Dynamics), By:J.L.Meriam.,forth edition. John Wiley & Sons.Inc

Instructor: Dr. _____

Class Schedule: _____

Office Hours: _____

Pre/Co-Requisites: ME 211 Statics

Objectives:

1. Construct proper free-body diagrams
2. Master the concepts of planar particle and rigid-body kinematics and dynamic analysis.
3. Use appropriate kinematic relationships describing position, velocity, and acceleration for both linear and angular motion.
4. Get familiar with three different methods of approaching dynamics problems, namely: Newton's 2nd law, work and energy, and impulse and momentum.
5. Understand that the mathematical models used for analysis are also used for design.

Topics Covered:

1. *Kinematics of a Particle*.....9 classes
2. *Kinetics of a Particle: Force & Acceleration*.....4 classes
3. *Kinetics of a Particle: Work & Energy*.....4 classes
4. *Kinetics of a Particle: Impulse and Momentum*4 classes
5. *Planar Kinematics of a Rigid Body*.....5 classes
6. *Planar Kinetics of a Rigid Body: Force & Acceleration*.....4 classes
7. *Planar Kinetics of a Rigid Body: Work & Energy*.....3 classes

Computer Usage: Students are expected to use software tools for problem solving and solution graphing. Approx. two thirds of the homework assignments contain a problem to be solved and graphed using a computer

Design Activities/Project(s): Engage students in the formulation and resolution of open-ended, design-type exercises. Small group classes will concentrate on strategies for solving design-based problems.

Lab. Experiment(s): None

Scientific Visit(s): None

Evaluation:	Quizzes and/or Attendance			5%
	1st Exam	Wednesday	4:15-5:30 PM 2/11/2016	25%
	2nd Exams	Wednesday	4:15-5:30 PM 7/12 /2016	30%
	Final Exam			40%

Relationship of the Course to ME Outcomes:

ABET a – k	√	Mechanical eng. Program Outcomes
a	√	a. Apply knowledge of mathematics, science, and engineering in practice.
b		b. Design and conduct experiments as well as analyze and interpret data.
c	√	c. Design a system, components, or process to meet desired needs.
d		d. Function on multidisciplinary teams.
e	√	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	√	k. Use the techniques, skills, and modern engineering tools necessary for engineering practice.
		l. Adhere to safety rules and regulations.

ABET Category:

Engineering Science	90%
Engineering Design	10%

Prepared By: Dr. _____ **Date:** _____