



JORDAN UNIVERSITY OF SCIENCE & TECHNOLOGY
MECHANICAL ENGINEERING DEPARTMENT
ME 214 STRENGTH OF MATERIALS
Semester

Catalog Data- 2013 : Mechanics of deformable bodies. Concepts of stress and strain. Classification of materials behavior. Stress-strain relations. Generalized Hook's law. Applications to engineering problems: members under axial loads, torsion of circular rods and tubes, bending and shear stresses in beams, combined stresses in beams, transformations of stresses, and buckling.

Text Book(s): Mechanics of Materials, 6th ed. (Global Edition), By F.P. Beer, E.R. Johnston, Jr., and J.T. DeWolf McGraw-Hill.

References: Mechanics of Materials, R.C. Hibbeler, Prentice Hall, 2000.

Instructor: _____

Class Schedule: _____

Office Hours: _____

Pre/Co-Requisite: CE 201 Statics

Outcomes: After successfully completing this course, the students should be able to:

1. Calculate stresses in a loaded structure or a machine component.
2. Use the stress concentration factors to find maximum stresses.
3. Solve statically indeterminate problems of members subjected to several types of loadings.
4. Solve problems using stress transformation equations and Mohr's circle.
5. Calculate stresses in thin-walled pressure vessels.
6. Draw the shear and moment diagrams for beams subjected to several types of loadings.
7. Determine the deflections of statically determinate and indeterminate beams using double integration and superposition.

Topics Covered:

- **Concept of stress and strain..... (3 classes)**
- **Mechanical properties of materials..... (2 classes)**
- **Axial loading (4 classes)**
- **Torsion (4 classes)**
- **Bending stresses (4 classes)**
- **Transverse shear..... (4 classes)**
- **Stress transformation and Mohr's circle... (2 classes)**
- **Principal stresses..... (2 classes)**
- **Combined loads (2 classes)**
- **Beam deflections (4 classes)**
- **Buckling..... (2 classes)**

Computer Usage: No

Design No

Activities/Project(s):

Lab. Experiment(s): None

Scientific Visit(s): None

Evaluation:

Quizzes & Activities:	10%
First Exam (March 15 th , 2015):	25%
Second Exam (April 19 th , 2015):	25%
Final Exam:	40%

Relationship of the Course to ME Outcomes:

ABET a – k	√	Level (L, M, H)	Mechanical Eng. Program Outcomes
a	√	M	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	√	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			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:**
- Never come late to the classroom, you will disturb your mates and your instructor if you do so.
 - Turn OFF your cell phones during the class.
 - DO Not TALK during the class please, unless you have a question for me.
 - No quizzes make-ups.
 - 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.
 - 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).
 - 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.