



**JORDAN UNIVERSITY OF SCIENCE & TECHNOLOGY**  
**MECHANICAL ENGINEERING DEPARTMENT**  
**ME 433 Machine Design II**  
**Semester**

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**Catalog Data- 2013 :** 3 Credit hours (3 h lectures). Design of mechanical components, Gears, Shafts, Springs, Bolts, Break

**Text Book(s):** Shigley's Mechanical Engineering Design, 10<sup>th</sup> Edition, Richard Budynas & J. Nisbett, McGraw-Hill book company.

**References:**

1. Machine Elements in Mechanical Design, Robert L. Mott, Prentice Hall, Latest Edition.
2. Design of Machine Elements by M.F. Spotts, Prentice Hall, Latest Edition

**Instructor:** \_\_\_\_\_

**Class Schedule:** \_\_\_\_\_

**Office & Hours:** \_\_\_\_\_

**Pre/Co-Requisites:** ME 321 Machine Design I  
ME 202 Mechanical Drawing

**Course Outcomes:**

1. To apply temporary and/or permanent joining methods to various designs and structures and To acquire knowledge of machine elements such as bearings, springs, gears, clutches and brakes. [a, c, e]
2. To acquire knowledge of flexible machine elements such as belts, roller chains, wire ropes, and shafts. [a, c, e]
3. To suggest and design a system to solve practical and challenging problems for certain desired needs in a team. [a, c, e, g, i]
4. To be able to understand and analyze the concepts behind each machine component and To be able to solve general machine design problems and provide accurate estimates. [a, e, k]

**Topics Covered:**

1. Ch.8 Temporary Joining Methods: Threaded Fasteners, Rivets, Power Screws, Keys, Pins, Couplings...etc
2. Ch.9 Permanent Joining Methods: Welding
3. Ch.10 Mechanical Springs
4. Ch.11 Antifriction Rolling Element Bearings
5. Ch.12 Journal Bearings, Hydrodynamic Thrust Bearings
6. Ch. 13(review), Ch. 14, & Ch.15 Gears: Spur Gears, Helical Gears, Bevel Gears, Worm Gears
7. Ch. 16 Brakes
8. Ch. 16 Clutches

9. Ch. 17 Belts
10. Ch. 17 Roller Chains
11. Ch. 17 Wire Ropes
12. Ch. 18 Shafts, Axles and Spindles

**Computer Usage:** Students are encouraged to use any available and convenient computer software to solve problems and work on projects.

**Design**

**Activities/Project(s):** The class will be divided into teams of 4 Students each to work on suggested *Innovative design projects*. Reports are required.

**Lab. Experiment(s):** Well executed projects will be considered for inclusion in the Technological Incubator for possible adoption as a STARTUP company.

**Scientific Visit(s):** A visit to a factory may be arranged.

<b>Evaluation:</b>	Homework, Quizzes & Projects	10%
	1st Exam 4/11/2015	25%
	2nd Exam 9/12/2015	25%
	Final Exam	40%

**Relationship of the Course to ME Outcomes:**

ABET a – k	√	Level (L, M, H)	Mechanical Engineering 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	√	L	g. Communicate effectively.
H			h. Broad education to understand the impact of engineering solutions in global and societal context.
I		L	i. Recognition of the need for, and possess the ability to engage in lifelong learning.
J			j. Possess knowledge of contemporary issues.
K	√	L	k. Use the techniques, skills, and modern engineering tools necessary for engineering practice.

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

ABET Category:

Engineering Science	0	Credits
Engineering Design	3	Credits

Prepared By: \_\_\_\_\_ Date: \_\_\_\_\_