ENGR 216
MECHANICS OF DEFORMABLE BODIES
SPRING 2008

INSTRUCTOR: Dr. Richard F. McCormick

OFFICE: GH 3G

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OFFICE HOURS: 10 – 11 MWF; 9 – 12 T; 2 – 4 T; other hours as posted, or by appointment

TEXT: ***Mechanics of Materials***; 6th edition; James M. Gere; Thomson-Brooks/Cole; 2004.

REFERENCES: Any text on Mechanics of Materials, Strength of Materials, or Mechanics of Deformable Bodies

OBJECTIVE: To continue the education of the engineering student in the science of mechanics and to continue developing student abilities in analyzing engineering problems and applying to their solution a few, well-understood basic principles.

OUTCOMES: With the successful completion of the course, the student should be able to

(a) Understand the concepts of stress and strain
(b) Solve problems involving stresses and strains
(c) Solve problems involving determinate and indeterminate axially loaded members
(d) Use Mohr's Circle to solve stress/strain problems
(e) Work problems involving thin-walled pressure vessels
(f) Solve problems involving elastic bending and shear stresses in beams
(g) Work problems involving beam deflections by both integration and the moment-area methods
(h) Solve problems involving torsion
(i) Solve problems involving combined loading
(j) Solve problems involving columns
(k) Have some understanding of bolted and welded connections

GRADING BASIS:

3 Hourly Exams at 20%	60%
Homework	20%
Final Exam	20%
Total	100%

TEST SCHEDULE:

Hourly Exam #1	Wednesday, February 13, 2008
Hourly Exam #2	Wednesday, March 19, 2008
Hourly Exam #3	Wednesday, April 23, 2008
Final Exam	Friday, May 9, 2008 (12:45 – 2:45 P. M.)

COURSE OUTLINE:

LECTURE	SUBJECT
	Introduction
1	Stresses
2	Strains
3	Stress-strain relationships
4	Axially loaded members
5	Thermal stresses and strains
6	Axially loaded indeterminate members
7	States of stress
8	Plane stress-Mohr's circle
9	Strains at a point (Strain analysis-Mohr's circle)
10	Stress-strain relationships
	Review/problem solving
	Hourly Exam #1
11	Thin-walled pressure vessels
12	Deformations and strains in thin-walled pressure vessels
13	Shear and bending moment diagrams
14	Moment of inertia review
15	Elastic bending
16	Nonsymmetrical sections and shear stresses in beams
17	Principal stresses in beams
18	Inelastic bending
	Review/problem solving
	Hourly Exam #2
19	Beams of two materials
20	Beam deflections (Integration)
21	Beam deflections (Moment-area)
22	Beam deflections/Moment-area method/Simply supported beams
23	Torsion
24	Power-torque relationships/Torsion example problems
25	Statically indeterminate torsion members
26	Combined loading
27	Axial, bending and torsional loads
28	Combined loading examples
29	Review/example problems
	Hourly Exam #3
30	Columns
31	Column examples
32	Bolted connections
33	Welded connections
	Review/problem solving
	Final Exam

NOTE: *These lectures are basically prepared for a class which meets three days per week. In a class which meets two days per week, we will try to cover three of these lectures per week, except on weeks when we have exams scheduled.*

COURSE POLICIES:

GRADING BASIS

Grades will be based upon hourly exams, homework, and a comprehensive final examination. More specific information, including any exceptions, will be found on the handout sheet that pertains to each respective course.

Letter grades will be determined by a 10% differential scale (i.e. 90-100 = A, 80-89 = B, etc.) I reserve the right to make adjustments to the scale according to overall class performance; however, the scale cannot be raised, only lowered.

HOMEWORK

Homework will be assigned on a regular basis. To be on time, it must be turned in at the beginning of the class period when it is due. There will be a 10% late penalty for each day it is late--starting with a 10% penalty on the first day if it is not turned in at the beginning of class. After 10 days, it will not be accepted at all. (***EXCEPTION: No late homework will be accepted after the final day of classes for the semester!)***

MAKEUP EXAMS

Make-up exams will be given only to those students who can present a satisfactory excuse to explain the reason for their absence. Make-up exams will be scheduled at my convenience and will only be scheduled once.

CHEATING

Any student caught cheating will immediately fail the course. Cheating is defined to include copying from fellow students, helping another person on a test or quiz, being in the possession of material that would enable one to cheat, and having on your person or nearby any books, notes, papers, etc. that have not been approved by the instructor beforehand. Paper will be provided for hourly exams, so no student will be allowed to bring anything to a test except for pencils, timepiece, erasers, straightedge, and calculating instrument. **The storage of class information in programmable calculators is considered cheating.** Also, no one will be allowed to wear a cap or hat during exams.

ATTENDANCE POLICY

Unless made part of a specific course's requirements, attendance in my classes is not mandatory, although each student is strongly urged to attend each class meeting. All students are responsible for material covered in lecture and all assignments made during lecture.

GENERAL COURTESY

All cell phones and pagers are to be turned off during class.