

EM 302-020
MECHANICS OF DEFORMABLE SOLIDS
SUMMER, 2006

Time and Place: MTWRF 11:30am-12:30pm, RGAN203

Instructor : T. W. Wu Office: RGAN 169, 257-6336 X 80644

Office Hours: MTWRF 10:20am-11:20am or by appointment.

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Textbook: Mechanics of Materials, by Beer, Johnston, and DeWolf, 4th Edition, McGraw Hill, 2006.

Course Description: To study stress and deformation in linear elastic solids under the action of external forces.

Concepts to be Introduced Stress, Strain, Young's modulus, Poisson's ratio, Axial deformation, Torsion, Shear force, Bending moment, Beam deflections, Bending stresses, Combined stress states, Principal stresses, Maximum shear stress, Strain gauge measurements, Buckling.

Prerequisites: 1. Have passed EM221.
 2. Have passed or be currently enrolled in MA214.
 3. Be enrolled in the College of Engineering or have consent of the Chairman

You may not be enrolled for a third time in an EM course. This means if you have enrolled in EM302 twice previously and received two E's, you may not be enrolled in this course.

Grading:	Exam I (21%)	June 20
	Exam II (21%)	July 5
	Exam III (21%)	July 20
	Final Exam (21%)	August 3
	Quizzes (12%)	4 1-problem quizzes
	Homework (4%)	based on completeness

A = 90, B = 80, C = 70, D = 60, E=below 60

A grade of zero will be given for all unexcused absences from quizzes and exams. Late homework will not be accepted.

Cheating: Cheating and/or plagiarism on graded materials will not be tolerated. Offenses will be prosecuted according to Student Rights and Responsibilities. Discussion and assistance are permitted on homework assignments. However, homework submitted must be the student's own work.

Make-up Exams If you can not take the exam due to emergencies, you must notify the instructor by phone or in person immediately (emails will not be accepted). You will need to provide a written statement (from the doctor, for example) to prove it. Note that common cold without a fever or complications can not be used as an excuse, even if you go to see a doctor. A general term called “viral infection” can not be used either. Technically, anyone can go to a doctor’s office on any particular day and get a receipt or stamp. That will not work in this class. Your doctor will need to provide very specific reasons (such as high fever) justifying why you have to miss the exam on that particular day. Car break-down can not be used as an excuse either. The make-up exam should be taken as soon as possible. For each day you miss, you will need to provide a written proof. Depending on how credible your excuse is, the make-up exam could be harder than the regular exam.

Class attendance will be taken regularly. **When you have had 25% or more unexcused absences or have turned in less than 50% of the homework assignments, no make-up exams will be given**, even if you have a good excuse on that day. Good class attendance and homework records will enhance your credibility for the excuses you provide, in case that you have an emergency on the exam day.

List of Items That Students Are Expected to Learn

1. Understand the concept of stress and strain.
2. Understand Young’s modulus and Poisson’s ratio.
3. Solve statically determinate and indeterminate bar problems with axial loads.
4. Determine deformation and stress distribution for circular shafts under torsion.
5. Draw shear and bending moment diagrams for beams.
6. Calculate stresses and deflections of beams having symmetric cross sections.
7. Analyze statically indeterminate beams.
8. Apply the transformation equations and Mohr’s circle for determining stress and strain associated with an arbitrarily oriented face.
9. Determine principal stresses and maximum shear stress.
10. Determine principal strains and maximum shear strain.
11. Calculate bulking loads for columns.

EM302-020 Summer 2006 TENTATIVE COURSE SCHEDULE

Class	Date	Day	Reading	Homework
1	June 8	R	1.1-1.7	
2	9	F	1.8-1.13	
3	12	M	2.1-2.5	
4	13	T	2.6-2.9	
5	14	W	2.9-2.10	
6	15	R	2.11-2.12	
7	16	F	2.13-2.15	
8	19	M	2.17-2.19	Last day to drop
9	20	T	Exam I	
10	21	W	3.1-3.3	
11	22	R	3.4-3.5	
12	23	F	3.5-3.6	
13	26	M	3.7-3.8	
14	27	T	4.1-4.3	
15	28	W	4.4	
16	29	R	4.4-4.5	
17	30	F	4.6	
18	July 3	M	4.12, 4.14	
	(July 4	T	no classes)	
19	5	W	Exam II	
20	6	R	5.1-5.2	
21	7	F	5.3-5.4	
22	10	M	6.1-6.3	
23	11	T	6.4-6.6	
24	12	W	6.7	Last day to withdraw
25	13	R	7.1-7.3	
26	14	F	7.4	
27	17	M	7.9	
28	18	T	7.10-7.11	
29	19	W	7.13	
30	20	R	Exam III	
31	21	F	9.1-9.2	
32	24	M	9.3	
33	25	T	9.4-9.5	
34	26	W	9.6	
35	27	R	9.7-9.8	
36	28	F	10.1-10.2	
37	31	M	10.3	
38	Aug 1	T	10.4	
39	2	W	review	
40	3	R	Final Exam	