

MECHANICAL ENGINEERING DEPT COURSE OUTLINE



ME 5300/6300
Advanced Strength of Materials
Fall Semester 2004



Text: Intermediate Mechanics of Materials, J.R. Barber, McGraw-Hill, 2001, ISBN 0-07-232519-4

Instructor: S.R. Swanson, Room 2136 MEB, Phone 581-6407, swanson@mech.utah.edu

Homework: homework assigned for previous week due on Wednesday at class time

Office Hours: M, W, F 9:35-10:30, others by appointment

Schedule: MWF, 8:35-9:25, EMCB 110

Grading: 2 Midterms @ 28%, Homework 15%, Final 29%

<u>Date</u>	<u>Subject</u>	<u>Reading</u>	<u>Problems</u>
Aug 25	Intro, review		
27	review	1.1-1.6	Handout #1
30	Beam deflection	Notes	Handout #2
Sep 1	Singularity functions	Notes	
3	Stress	2.1	2.1, 2.8 2.16
6	HOLIDAY		
8	Material behavior, failure	2.2	2.20, 2.26
10	Fracture, Fatigue	2.3, 2.4	2.33,2.44,2.51
13	Energy methods	3.1-3.3	3.1,3.2,3.6
15	Castigliano	3.10	3.44,3.47
17	problems	-	3.51, 3.54
20	Quasi-static impact	Notes	Handout #3
22	Unsymmetrical bending	4.1-4.5	4.1,4.5
24	Unsymmetrical bending		4.6,4.8,4.16
27	Unsymmetrical bending		4.22, 4.24,4.25
29	Elastic-plastic bending	5.1-5.4	5.3,5.11
Oct 1	Mid-term No. 1		
Oct 4	Elastic-plastic bending	5.8	5.30,5.31,5.33
6	Thin-Walled beams	6.1-6.3	6.1,6.3
8	HOLIDAY		
11	Thin-Walled beams	6.4, 6.5	6.8,6.12,6.26
13	Thin-Walled beams	6.7	6.46, 6.49
15	Intro to design problem	Notes	Handout #4
18	Membrane stresses in shells	8.1-8.2	8.1,8.2

	20	Membrane stresses in shells	8.3, 8.4	8.3,8.5,8.11
	22	Membrane stresses in shells		8.18
	25	Bending stresses in shells	9.1-9.4	9.1,9.2
	27	Thick-walled cylinders	10.1-10.2	10.2, 10.4
	29	Thick-walled cylinders	10.3	10.7
Nov	1	Thick-walled cylinders	10.4	10.11,10.13
	3	Thick-walled cylinders	-	10.14
	5	Curved beams	11.1	11.1, 11.4
	8	Curved beams	-	11.5
	10	Midterm Exam No. 2		
	12	Finite element analysis	Notes	Handout #5
	15	Finite element analysis	-	-
	17	Finite element analysis -	-	
	19	Elastic Stability	12.1	12.2
	22	Elastic Stability	12.2-12.3	12.6, 12.7
	24	Twist-bend buckling	notes	Handout #6 12.17, 19,25,26
	26	HOLIDAY		
	29	Buckling and instability	12.6-12.9	
Dec	1	Design presentations	-	-
	3	Design presentations	-	
	6	Design presentations		
	8	Review		
	10	Reading day (no class)		

Final Exam: Wednesday Dec 15, 2004, 8:00-10:00 am, room EMCB 110

- The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the instructor and to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD) to make arrangements for accommodations.

All written information in this course can be made available in alternative format with prior notification.

- Late homework will not be accepted without prior approval or a valid excuse. Consultation with other students to clarify confusing points is encouraged. However, all submitted homework must be your own work.