

**CE 130 Mechanics of Materials I**  
**Section 1, Course Information**

<b>Lect.</b>	<b>Date</b>	<b>Topic</b>	<b>Reading*</b>	<b>Homework*</b>
1	8/27	Introduction	1-1-2	
2	8/29	Concept of stress	1-3, 1-6-8	1-9,19
3	9/3	Stresses (cont.); stress based design	1-4, 1-9-11	1-32,52
4	9/5	Intro. to strain, stress-strain relations	2-1-5, 2-7	2-3, 3-8
5	9/8	Axial bars; Saint-Venant principle	3-1-3	3-14,26
6	9/10	Statically indeterminate problems	4-1-4	4-7,22
7	9/12	General concepts of strain	5-1-5	4-30, 5-1
8	9/15	Generalized Hooke's law	2-6, 5-6-8	5-4,7
9	9/17	Thin-walled pressure vessels	5-9-10	5-22,24
10	9/19	Elastic torsion of circular shafts (1)	6-1-4	6-2,3
11	9/22	Elastic torsion of circular shafts (2)	6-5-9	6-24,26
12	9/24	Inelastic torsion of circular shafts	6-13	6-36,48
13	9/26	Torsion of general bars	6-14-16	6-58,59
14	9/29	Equilibrium of beams	7-1-8	7-13,18
15	10/1	Shear and bending-moment diagrams	7-9-13	7-43,60
16	10/3	Review for Midterm #1		
17	10/6	Midterm exam (through # 13)		
18	10/8	Pure bending (1)	8-1-3	8-2,6
19	10/10	Pure bending (2)	8-4-7, 8-9	8-12,53
20	10/13	Inelastic bending	8-8	8-37,45
21	10/15	Bending with axial loads	9-1-4	9-13,26
22	10/17	Shear stresses in beams (1)	10-1-3	10-2,7
23	10/20	Shear stresses in beams (2)	10-4-7, 10-9	10-8,26
24	10/22	Transformation of stress	11-1-3	11-5,7
25	10/24	Principal stresses	11-4-5, 11-8	11-19,21
26	10/27	Mohr's circle	11-6-7, 11-9	11-25,29
27	10/29	Transformation of strain, rosettes	11-10-14	11-52,59
28	10/31	Yield and fracture criteria	12-1-7	12-7,8
29	11/3	The beam equation and integration	14-1-7	14-11,15,23
30	11/5	Review for Midterm #2 (previous week homework due this Wednesday)		
31	11/7	Midterm exam (from lecture #14 to #28)		

\* From "Engineering Mechanics of Solids", by E.P. Popov, second edition.

	Date	Topic	Reading*	Homework*
32	11/10	Singularity functions	7-14, 14-8	14-45,47
33	11/12	Superposition	14-9, 14-11	14-49,56
34	11/14	Statically indeterminate beams	15-4	15-38,39
35	11/17	Strain energy	3-5-6, 5-3	3-30, 17-1
36	11/19	Basic energy methods	17-1-3	17-2,3
37	11/21	Energy theorems	18-1-4	17-11,18
38	11/24	Virtual work methods	17-4-6	17-24,27
39	11/26	Applications	17-7	17-32,39
40	12/1	Introduction to stability theory	16-1-3	16-1,3
41	12/3	Buckling of columns (1)	16-4-5	16-9,12
42	12/5	Buckling of columns (2)	16-6-8	16-13,14
43	12/8	Applications		
44	12/10	Review (previous week homework due this Wednesday)		

**Time and location:**

MWF 11:00am-12:00noon, 60 Evans.

**Instructor:**

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**GSI:** Time and location of office hours to be announced.

**Required textbook:** (On reserve in the library for 2 hour loan)

Egor P. Popov *“Engineering Mechanics of Solids”*, second edition, Prentice-Hall.

**Homework:**

The syllabus above includes the reading and homework assignments of the course. The problems assigned in one week (that is, on Monday, Wednesday and Friday classes) are due the following Friday, at the beginning of the class. No late homework will be accepted. The solutions will be available at the course website by the following Monday evening. Please note the special arrangements for the week of the second midterm exam (homework due on Wednesday 11/5) and the last lecture of the course (homework due on Wednesday 12/10).

**Grading system:**

Homework 20%, midterms 30%, final 50%. (Closed-book midterms and final)