

**CE C30/ME C85 Introduction to Solid Mechanics**  
**Section 2, Course Information**

<b>Lect.</b>	<b>Date</b>	<b>Topic</b>	<b>Reading*</b>	<b>Homework*</b>
1	8/26	Introduction	1.1-1.6	
2	8/28	Review of vector algebra	2.1-2, 2.5-7, 2.9, 3.2	2.24, 2.35
3	8/31	Forces and moments (1)	2.3-4, 3.1	2.36, 2.53
4	9/2	Forces and moments (2)	2.8, 3.3-6	3.12, 3.31
5	9/4	Equivalent force/moment systems	3.7-9	3.82, 3.90
6	9/9	Equilibrium (1)	4.1-4	4.5, 4.25
7	9/11	Equilibrium (2). Friction	4.5-7	4.38, 4.49
8	9/14	2D trusses (method of joints)	5.1-2	5.2, 5.14
9	9/16	2D trusses (method of sections)	5.3-4	5.16, 5.18
10	9/18	Frames and machines	5.5	5.39, 5.41
11	9/21	Distributed loading	6.1-4	6.17, 6.39
12	9/23	Internal forces and moments	7.1	7.1, 7.15
13	9/25	Shear and bending moment diagrams	7.2-3	7.61, 7.65
14	9/28	Stresses (1)	8.1, 8.3, 8.5	8.26, 8.30
15	9/30	Stresses (2)	8.2, 8.4, 8.6	8.44, 8.50
16	10/2	Deformation and strain	8.7-8	8.57, 8.60
17	10/5	Intro to strain-stress relations	9.1-4, 9.7	9.15, 9.18
18	10/7	Deflection of bars	10.1-3	10.6, 10.19
19	10/9	Static indeterminacy	10.4-5	10.32, 10.34
20	10/12	Torsion of circular shafts (1)	11.1-2	11.1, 11.12 (due 10/30)
21	10/14	Torsion of circular shafts (2)	11.4-5	11.42, 11.47 (due 10/30)
22	10/16	Torsion of thin-walled shafts	Class notes	Assigned in class (due 10/30)
23	10/19	Review for Midterm Exam		
24	10/21	Midterm Exam (through Lect #19)		
25	10/23	Bending of beams (1)	12.2, 12.8	12.18, 12.24 (due 11/6)
26	10/26	Bending of beams (2)	12.2, 6.5-8	12.23, 12.26 (due 11/6)
27	10/28	Bending with axial loads	Examples 14.2 & 14.6	14.16, 14.17 (due 11/6)
28	10/30	Shear stresses in beams (1)	13.1-2	13.14, 13.18 (due 11/13)
29	11/2	Shear stresses in beams (2)	13.3-4	13.28, 13.30
30	11/4	Deflection of beams	16.4-6	16.37, 16.71
31	11/6	Singularity functions	Class notes	Assigned in class

\* From "Statics and Mechanics of Materials", by R.C. Hibbeler, second edition.

Lect.	Date	Topic	Reading*	Homework*
32	11/9	Buckling of columns (1)	17.1-17.2	17.1, 17.4
33	11/13	Buckling of columns (2)	17.3	17.28, 17.31
34	11/16	Stress transformation	15.1-2	15.4, 15.9
35	11/18	Principal stresses and max in-plane shear	15.3	15.13, 15.29
36	11/20	Mohr's circles	15.4-5	15.31, 15.111
37	11/23	Strain transformation, principal strains	15.6-9	15.53, 15.72
38	11/25	Generalized Hooke's law	9.6, 15.10	15.82, 15.93
39	11/30	Yield and fracture criteria	Class notes	Assigned in class
40	12/2	Other applications, extensions	Class notes	
41	12/4	Review		

**Time and location:** MWF 1–2pm, 60 Evans.

**Instructor:**

Francisco Armero

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**Course webpage:** <http://www.ce.berkeley.edu/~armero/CE30>

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

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

R.C. Hibbeler, “*Statics and Mechanics of Materials*”, second edition, Pearson.

**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 lectures before and after the midterm (Lectures #20 to #28). The homework for Lecture #39 will be due the last day of classes (12/4). An additional voluntary project using the software package MATLAB will be assigned during the course.

**Grading system:**

Homework 25%, midterm 25%, final 50%.      (Closed-book midterm and final)