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

Lect.	Date	Topic	Reading*	Homework*
1	8/26	Introduction	1.1-6	
2	8/28	Review of vector algebra	2.1-2, 2.4, 3.1C-F, 3.2A-B	2.2, 2.9
3	8/31	Forces and moments (1)	2.1-5	2.33, 2.75
4	9/2	Forces and moments (2)	3.1-2	3.4, 3.18
5	9/4	Equivalent force/moment systems	3.3-4	3.67, 3.71
6	9/9	Equilibrium (1)	4.1-3	4.6, 4.13
7	9/11	Equilibrium (2). Friction	4.1-3, 4.4	4.64, 4.86
8	9/14	2D trusses (method of joints)	6.1	6.10, 6.18
9	9/16	2D trusses (method of sections)	6.2	6.25, 6.43
10	9/18	Frames and machines	6.3-4	6.50, 6.68
11	9/21	Centroids. Distributed loading	5.1-4	5.50, 5.54
12	9/23	Internal forces and moments	3.1A, 12.1	12.4, 12.7
13	9/25	Shear and bending moment diagrams	12.2	12.40, 12.46
14	9/28	Stresses (1)	8.1-4	8.2, 8.5
15	9/30	Stresses (2)	8.1-4	8.33, 8.45
16	10/2	Deformation and strain	9.1A	9.3, 9.8
17	10/5	Intro to strain-stress relations	9.1B-D	9.11, 9.15
18	10/7	Deflection of bars	9.1F	9.24, 9.77
19	10/9	Static indeterminancy	9.2	9.30, 9.35
20	10/12	Torsion of circular shafts (1)	10.1	10.6, 10.15 (due 10/30)
21	10/14	Torsion of circular shafts (2)	10.2-3	10.32, 10.43 (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)	11.1-2, 7.1-2	11.1, 11.9 (due 11/6)
26	10/26	Bending of beams (2)	11.1-2, 7.1-2	11.17, 11.18 (due 11/6)
27	10/28	Bending with axial loads	11.4, 11.6	11.50, 11.87 (due 11/6)
28	10/30	Shear stresses in beams (1)	13.1-3	13.5, 13.11 (due 11/13)
29	11/2	Shear stresses in beams (2)	13.1-3	13.25, 13.57 (due 11/13)
30	11/4	Deflection of beams	15.1-2	15.12, 15.19 (due 11/13)
31	11/6	Singularity functions	Class notes	Assigned in class (due 11/13)

* From "Statics and Mechanics of Materials", by F.P. Beer, E.R. Johnston et al, 2nd edition.

Lect.	Date	Topic	Reading*	Homework*
32	11/9	Buckling of columns (1)	16.1	16.1, 16.3
33	11/13	Buckling of columns (2)	16.1	16.54, 16.55
34	11/16	Stress transformation	14.1A	14.4, 14.18 (due 12/4)
35	11/18	Principal stresses and max in-plane shear	14.1B	14.5, 14.12 (due 12/4)
36	11/20	2D Mohr circles	14.2	14.27, 14.43 (due 12/4)
37	11/23	3D Mohr circles. Strain transformation	Class notes	Assigned in class (due 12/4)
38	11/30	Generalized Hooke's law	9.4-7	9.57, 9.81 (due 12/7)
39	12/2	Yield and fracture criteria	Class notes	Assigned in class (due 12/7)
40	12/4	Other applications, extensions	Class notes	
41	12/7	Review		

Time and location: MWF 1–2pm, online (Zoom links available in the course `bcourses` page).

Instructor: Francisco Armero (`armero@berkeley.edu`)

Office hours: online through Zoom, time to be announced in `bcourses`.

GSIs: Jorge Archbold (`jarchbold@berkeley.edu`) and Zhijin Feng (`zhijin_feng@berkeley.edu`).

Discussion sections: online (Zoom links available in the course `bcourses` page).

Office hours: online through Zoom, time to be announced in `bcourses`.

Required textbook:

F.P. Beer, E.R. Johnston et al, *"Statics and Mechanics of Materials"*, 2nd edition, McGraw Hill.

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 `bcourses` page in a single PDF file. No late homework will be accepted. The solutions will be available at the course website by the following week. Please note the special arrangements for Lectures #20 to #22 before the midterm (with 6 problems due Friday 10/30), Lectures #25 to #27 (with 6 problems due Friday 11/6), Lectures #28 to #31 (with 8 problems due Friday 11/13), Lectures #34 to #37 (with 8 problems due Friday 12/4), and for the last week of the course (Lectures #38 and #39). Additional voluntary projects using MATLAB will be assigned during the course.

Grading system:

Homework 25%, midterm 25%, final 50%. (online midterm and final intended)