UNIVERSITY OF CALIFORNIA AT BERKELEY — Department of Mechanical Engineering

***ME C85 / CE C30: Introduction to Solid Mechanics*, Professor Tony M. Keaveny**
Lecture Schedule and Syllabus: Spring 2017

Date	Topic	Reading *
1/17	Introduction; Forces and vectors	Chapter 1–2
1/19	Moments and vectors	3.1–3.6
1/24	Statically equivalent forces and force-couples	3.7–3.8
1/26	Free body diagrams for rigid bodies	4.2, 4.5
1/31	Static equilibrium of rigid bodies	4.1, 4.3, 4.4, 4.6
2/2	Applications	4.7–4.8
2/7	Trusses	5.1–5.4
2/9	Frames and machines	5.5
2/14	Normal and shear stresses	7.1–7.6
2/16	Applications	7.7–7.8
2/21	Hooke's Law for elastic solids	Chapter 8, 14.11
2/23	Deformation and axial loading	9.1–9.6
2/28	Applications & Review	
3/2	Center of mass; distributed loads; areal inertia	6.1–6.5, 3.9
3/7	Torsion of circular shafts	10.1–10.3
3/9	**Midterm Exam #1 (on lectures 1/17–2/28)**	**In Class**
3/14	Shear and bending moment diagrams	11.1–11.2
3/16	Beams and bending stresses	11.3–11.5
3/21	Deformation and twisting	10.4–10.5
3/23	Deformation and bending	16.1–16.2, 16.4–16.5
3/28	**SPRING BREAK**	
3/30	**SPRING BREAK**	
4/4	Transverse shear	Chapter 12
4/6	Applications	
4/11	Superposition and combined loading	13.1–13.2
4/13	Stress transformation; Mohr's Circle	14.1-14.7
4/18	Buckling and instabilities	17.1-17.3
4/20	Stress concentrations, fatigue	
4/25	Design criteria and optimization	
4/27	Summary	
5/12	**Final Exam (7:00–10:00 pm; on all lectures)**	**Location TBA**

***** Refer to: Hibbeler, "*Statics and Mechanics of Materials*", 5th Edition, McGraw Hill

Time and location:

3:30 – 5:00 PM Tue, Thur; 3 LeConte

Discussion sections

5:00 – 6:00 PM Tue; 247 Cory Hall
5:00 – 6:00 PM Thu; 247 Cory Hall

Instructor:

Prof. Tony M. Keaveny <tonykeaveny@berkeley.edu>
Office hours: 11:00 AM – 1:00 PM, Tue; 11:00 AM – NOON, Thur; 5124 Etcheverry Hall

GSI:

Magdalini Ntetsika <ntetsika@berkeley.edu>
Office hours: NOON-1:00 PM Wed-Thu-Fri; 136 Hesse Hall

Required textbook:

RC Hibbeler, "*Statics and Mechanics of Materials*" 5th edition, Pearson: ISBN 9780134382593. Available at the campus bookstore. FYI we are *not* doing the *Mastering Engineering* module so do not order that or pay for it!

The latest edition of the textbook is the 5th edition, which is recommended for the course. However, you can also try to get the 4th or earlier editions, although their problems may be different or differently numbered than in the 5th edition. This is unlikely to be a big issue, but you will need to sort this out yourself since the homework problems will be assigned from the 5th edition.

Homework:

Homeworks are essential preparation for the exams, and will be assigned weekly, each Monday at 10 AM. For each assignment, the homework will be due by 10 AM on the Monday two weeks later, submitted electronically via *bCourses* in a PDF file (scanners are available in 2107 Etcheverry Hall). Detailed solutions will be posted on *bCourses* regularly for you to review. **No late homeworks will be accepted**, but one homework can be missed without penalty.

In addition to the HWs, there will be three Matlab assignments and a final Matlab-based project. **No late assignments will be accepted.** If you think you may not be able to submit a Matlab assignment on time, please discuss ahead of time with Professor Keaveny.

Exams:

There is one mid-term exam (in class) and one final exam (location TBA). All exams are closed book and without notes but all required formulae will be provided.

Grading system:

Homeworks	10%
Matlab Assignments	20%
Mid-term Exam	20%
Final Exam	50%