

**ME C85 / CE C30: Introduction to Solid Mechanics, Professor Tony M. Keaveny
Lecture Schedule and Syllabus: Spring 2015**

Date	Topic	Reading *
1/20	Introduction; Forces and vectors	Chapter 1–2
1/22	Moments and vectors	3.1–3.6
1/27	Statically equivalent forces and force-couples	3.7–3.8
1/29	Free body diagrams for rigid bodies	4.2, 4.5
2/3	Static equilibrium of rigid bodies	4.1, 4.3, 4.4, 4.6
2/5	Applications	4.7–4.8
2/10	Trusses	5.1–5.4
2/12	Frames and machines	5.5
2/17	Center of mass; distributed loading	6.1–6.3
2/19	Normal and shear stresses	7.1–7.6
2/24	Midterm Exam #1 (on lectures 1/20–2/12)	In Class
2/26	Applications	7.7, 14.1
3/3	Hooke's Law for elastic solids	7.8–7.9; Chapter 8
3/5	Shear and bending moment diagrams	11.1–11.2
3/10	Beams and bending stresses	11.3–11.5, 6.4–6.6
3/12	Torsion of circular shafts	10.1–10.3
3/17	Deformation and axial loading	9.1–9.5
3/19	Applications	9.6
3/24	SPRING BREAK	
3/26	SPRING BREAK	
3/31	Deformation and twisting	10.4–10.5
4/2	Deformation and bending	13.1–13.2, 13.4–13.5
4/7	Midterm Exam #2 (on lectures 2/17–3/12)	In Class
4/9	Transverse shear	Chapter 12
4/14	Superposition and combined loading	14.2
4/16	Stress transformation; Mohr's Circle	Chapter 15
4/21	Buckling and instabilities	Chapter 16
4/23	Stress concentrations, fatigue	9.7, 10.7, 11.6
4/28	Design criteria and optimization	
4/30	Summary	
5/15	Final Exam (7:00–10:00 pm; on all lectures)	Location TBA

* Refer to: Hibbeler, Custom UC Berkeley version of "Statics and Mechanics of Materials", based on the 3rd Edition of *Statics and Mechanics of Materials*, McGraw Hill

Time and location:

3:30 – 5:00 PM Tue, Thur; 150 GSPP

Discussion sections

5:00 – 6:00 PM Tue; 3109 Etcheverry Hall

5:00 – 6:00 PM Thu; 141 Giannini Hall

Instructor:

Prof. Tony M. Keaveny <tmk@me.berkeley.edu>

Office hours: 10:00 AM – Noon, Tue and Thur; 5124 Etcheverry Hall

GSI:

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Shrikant Kshirsagar <shri_sagar@berkeley.edu>

Office hours: 2:30 PM – 4:30 PM, Wed; 136 Hesse Hall

Required textbook:

Hibbeler, custom version of "*Statics and Mechanics of Materials*" 3rd edition, McGraw Hill: ISBN 1269885774. This is a custom book for this class. Students need also to enroll in "Mastering Engineering": ISBN 9781269885775. Both are available at the campus bookstore.

Homework:

Homeworks are essential preparation for the exams, and will be assigned weekly on *Mastering Engineering*, each Monday at 10 AM. For each assignment, the homework will be due by 10 AM on the Monday two weeks later. Your answers must be submitted on Mastering Engineering by this due date. In addition, you must upload to *bCourses*, by the same due date, a PDF file showing your work (scanners are available in 2107 Etcheverry Hall). Note: the homework problems in Mastering Engineering can have student-specific problem parameters, so the answers will not be the same for all students. 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 Mastering Engineering HWs, there will be three Matlab assignments and a final Matlab-based project.

Class participation:

We will be using the *Learning Catalytics* software to enable you to respond to questions posed during lecture in real time via your wifi-enabled device (smart phone, tablet, or laptop computer — so bring one such item to class!). Active participation is mandatory.

Exams:

There are two mid-term exams (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	10%	
Class participation	5%	
Mid-terms	40%	(Each exam 20%)
Final exam	35%	