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 2013

	Date	Topic	Reading *
STATICS	1/23	Introduction	Chapter 1
	1/25	Forces and vectors	2.1–8, 2.12–14
	1/28	Free body diagrams for particles	2.11
	1/30	Static equilibrium of particles	2.9–11
	2/1	Moments and vectors	3.1–12
	2/4	Statically equivalent forces and force-couples	3.13–20
	2/6	Free body diagrams for rigid bodies	4.1–4.3, 4.9
	2/8	Static equilibrium of rigid bodies	4.4–8
	2/11	Friction	4.10–13
	2/13	Center of mass	5.1–6, 5.9–5.10
	2/15	Distributed loading	5.8
	2/18	**HOLIDAY**	
	2/20	Trusses — method of joints	6.1–5
	2/22	Trusses — method of sections	6.6–7
STRESSES	2/25	Frames and machines	6.8–11
	2/27	Stress	8.1–8.4
	3/1	**Midterm Exam #1 (on lectures 1/23–2/15)**	**In Class**
	3/4	Stress revisited, max shearing stress	8.8–8.9,14.1–2
	3/6	Stress tensors, principal stresses	14.3
	3/8	Stress transformation; Mohr's Circle	14.4
	3/11	Bolts, connectors, bearings; pressure vessels	8.5–8.7; 14.5
	3/13	Hooke's Law: stress-strain behavior	9.1–9.4
	3/15	Deformation and axial loading	9.7–9.9
	3/18	Shear and bending moment diagrams	12.1–12.3
	3/20	Beam theory and bending stresses	11.1–11.4
	3/22	Beam theory and bending stresses	11.1–11.4
	3/25	**SPRING BREAK**	
	3/27		
	3/29		
DESIGN & ANALYSIS	4/1	Torsion of circular shafts	10.1–10.4
	4/3	Areal moment of inertia	Chapter 7
	4/5	Deformation and twisting	10.5–10.6
	4/8	**Midterm Exam #2 (on lectures 2/20–3/15)**	**In Class**
	4/10	Shear stresses in beam bending	13.1–13.4
	4/12	Shear stresses in beam bending	13.5–13.6
	4/15	Superposition and combined loading	11.6–11.8
	4/17	Deformation and bending	Chapter 15
	4/19	Stress and strain revisited	9.10–9.15
	4/22	Design criteria and failure analysis	8.10
	4/24	Fatigue and creep	9.6
	4/26	Buckling theory and instabilities	Chapter 16
	4/29	Miscellaneous applications	
	5/1	Finite element analysis	
	5/3	Closure	
	5/14	**Final Exam (11:30–2:30 pm; on all lectures)**	**Location TBA**

***** Refer to: Beer, Johnston, DeWolf, Mazurek "*Statics and Mechanics of Materials*" McGraw Hill

Time and location:

2:00 – 3:00 PM Mon, Wed, Fri; 3108 Etcheverry Hall

Discussion Sections

3:00 – 4:00 PM Mon; 1165 Etcheverry Hall
1:00 – 2:00 PM Tue; 1165 Etcheverry Hall
4:00 – 5:00 PM Wed; 220 Wheeler Hall

Instructor:

Prof. Tony M. Keaveny <tmk@me.berkeley.edu>
Office hours: 3:30 – 5:00 PM Mon; 10:30 – NOON Wed; 6175 Etcheverry Hall

GSI:

Abdulrahman Jbaily "AJ" <a.jbaily@berkeley.edu>
Office hours: 12:00 – 2:00 PM Wed, 136 Hesse Hall

Required textbook:

(On reserve in the Engineering library for two-hour loan)
Beer, Johnston, DeWolf, Mazurek "*Statics and Mechanics of Materials*" McGraw Hill

Homework:

Homeworks will be assigned weekly on *bspace* each Monday by 10 AM. For each assignment, the homework will be due by 10 AM on the Monday two weeks later. All homeworks must be submitted electronically via *bspace*. Detailed solutions will be posted on *bspace* by NOON on the same day the homeworks are due. Because of this scheduling, no late homeworks will be accepted.

Class participation:

Class participation will require the use of *iClicker.* Students will need to purchase the *iClicker* transmitter, which is available from the ASUC store (the textbook should come with a discount coupon; you can buy or rent, both new and used; and can sell back). Once you obtain the iClicker, you will need to register it on the iClicker website: www.iclicker.com. Click on the "Register" link on the left side of the page. You will need to enter your name, student ID, and clicker ID (which can be found on the back of your iClicker). Please make sure that you use the correct student ID and iClicker ID numbers when you register your iClicker — if you enter these incorrectly you will not receive course credit for your iClicker responses. *If you buy a used iClicker, make sure the clicker ID is legible.*

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:

Homework	10%	
Class participation	5%	
Mid-terms (15%, 20%)	35%	(first exam 15%; second exam 20%)
Final exam	50%	