

**ME C85/CE C30 – Section 1**  
**Introduction to Solid Mechanics**

**Faculty:**

George Johnson  
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Office Hours: Mon. 12:00-1:30, Wed. 2:30-3:30, Thurs. 10:00-12:00

**Lectures:**

8:10 – 9:00 Monday, Wednesday and Friday, 120 Latimer Hall

**Discussion Sections:**

All discussions will be in 3113 Etcheverry  
Monday 9 – 10, (discussion 1) Farzana Ansari  
Tuesday 2 – 3 (discussion 2) Rachel Hager  
Tuesday 4 – 5 (discussion 4) Brian Mercer  
Wednesday 4 – 5, (discussion 5) Rachel Hager  
Thursday 4 – 5, (discussion 3) Brian Mercer

**Graduate Student Instructors:**

Name	Farzana Ansari	Rachel Hager	Brian Mercer
Email	fansari@berkeley.edu	rehager@berkeley.edu	bmercerc@berkeley.edu
Office Hours (136 Hesse Hall)	Monday 10:00-12:00	Wednesday 11:00-2:00 Thursday 11:00-12:00	Tuesday 1:00-3:00 Thursday 1:00-3:00

**Web Site:**

<https://bspace.berkeley.edu>

**Course Content:** A review of equilibrium for particles and rigid bodies. Application to truss structures. The concepts of deformation, strain and stress. Equilibrium equations for a continuum. Elements of the theory of linear elasticity. The states of plane stress and plane strain. Solution of elementary elasticity problems (beam bending, torsion of circular bars). Euler buckling in elastic beams..

**Course Objectives:** By the end of this course, students should be able to:

- Correctly draw free-body diagrams (yes, this really is important enough to include here!)
- Apply the equations of equilibrium to two- and three-dimensional solids
- Understand the concepts of stress and strain
- Solve simple boundary value problems in linear elastostatics (tension, torsion, beam bending)

**Prerequisites:** Physics 7A; Math 53 & 54 (Math 54 may be taken concurrently)

**Text:** *Introduction to Solid Mechanics (a McGraw Hill “Create” custom book)*, McGraw Hill (2011). The book for this course has a rebate coupon for the i>clicker that is also required.

**Clickers:** You are expected to bring your i>clicker remote to every lecture. There are three main reasons that I am using clickers – to provide a quick way for me to gauge how well the class understands the concepts covered, to provide a way for a large class to stay engaged in the lectures, and to provide a way to start meaningful discussions during lecture. You will not be “graded” on whether your responses are correct. At the same time, if your response to a clicker question is wrong, I expect that you will work to understand why you responded as you did, and why your response was incorrect.

**Homework:** Solving problems is probably the most effective way to learn the material and techniques covered in this course. As such, homework will be assigned weekly and will account for up to 10% of the course grade. Your answers are to be uploaded to bSpace by 5:00 pm on the day due as a PDF file. Late homework will be accepted for one hour after the deadline, but the penalty will be 50%. Solutions will be available for you to review starting at 6:00 pm on the day that the homework is due. Be sure to give yourself enough time to convert your paper to PDF format and do the upload! Scanners are available for you to use in the ME computer labs in 2105 and 2107 Etcheverry Hall. You will have a computer account established on the computers there. Log in using your CalNet ID.

I encourage you to establish study groups for this course. Your group may meet to discuss the homework problems, but every member of the group should have tried to solve the problem(s) individually before meeting to discuss the solutions. You should not expect that your group will provide the solutions to problems for you. Doing so will likely result in good homework grades, and poor exam grades.

For almost all problems assigned in this course, at least one free-body diagram (FBD) and appropriate equations are both required to receive full credit. FBD's are critical elements that indicate your understanding of the problems assigned. You may (somehow) get the right answer to a problem, but the FBD provides key information regarding your understanding. Similarly, correct identification and use of relevant equations are necessary to both obtain a solution and demonstrate your understanding. Please refer to the Homework Guidelines on bSpace for other information regarding your submissions.

**Quizzes:** There will be a short in-class quiz (approximately 10 minutes) during class every Friday starting September 7. The material for each quiz will be from the previous week's lectures, "clicker questions" and homework. The quizzes will account for up to 10% of the course grade.

**Exams:** There will be two in-class midterm exams (Wednesday, October 3 and Friday, November 9), each worth 22.5% of the course grade, and a 3-hour final exam (7 – 10 pm, Monday, December 10) worth 35% of the course grade.

**Grading Policies:**

Course Element	Contribution
Homework	10%
In-Class Quizzes	10%
Midterm Exams	2 @ 22.5% each
Final Exam	35%

- It is our intent to grade and return homeworks, quizzes and exams within one week.
- The lowest homework grade will be dropped in calculating the contribution to your overall course grade.
- The lowest quiz grade will be dropped in calculating the contribution to your overall course grade.
- You must pass the quizzes and exams in order to pass the class. Homework will not be sufficient to receive a passing grade if the exam performance is below a passing standard.