

CE 231/MS C211 Mechanics of Solids

Instructor:

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Office hours: To be announced

Location and time:

534 Davis, MWF 2-3pm.

Homework:

Homework will be assigned along the course. No late homework will be accepted. Assignments must be developed and submitted individually.

Solution sets, class handouts and different announcements will be posted in my web home page (<http://faculty.ce.berkeley.edu/armero/>).

References:

There is no required textbook for the course; handouts will be distributed instead, for all parts. Additional references (usually more advanced) will be given for different topics.

Grading system:

Grades will be based on the homework assignments, midterm and final exam.

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1. Mathematical preliminaries.
 - Vector and tensor algebra.
 - Tensor calculus.
2. Equilibrium.
 - The stress tensor: Cauchy's theorem.
 - Stress transformations.
 - The equations of motion: equilibrium.
3. Kinematics.
 - The strain tensor.
 - Strain transformations.
 - Compatibility.
4. Constitutive theory: elasticity.
 - Expended power and strain energy.
 - Linear elasticity.
5. Boundary-value problems.
 - Strong and weak forms.
 - Energy principles.
6. Linear elasticity.
 - Solution methods.
7. Torsion of shafts.
 - Saint-Venant torsion.
 - Thin-walled shafts.
8. Theory of plasticity.
9. Theory of viscoelasticity.