CIVE 662: Foundations of Solid Mechanics

Fall 2015, best time of the day (8 AM)
Professor Paul Heyliger
Department of Civil Engineering
491-6685
A223 Engineering
prh@engr.colostate.edu

Office Hours: MW any time after 12

Topics:

1. The fundamental quantities of solid mechanics: stress and strain, including various measures (the Piola-Kirchhoff stresses, Green-Lagrange and Almansi strains).
2. Constitutive laws for linear and nonlinear solids.
3. Linear elasticity: governing equations and exact solutions.
4. Energy and variational principles, with a focus on virtual work.
5. Computational methods and nonlinear mechanics.

Textbooks (both brilliant and required):


We will supplement the first text with handouts and online materials.

Grading:

Homework and notebook: 25%
Exams: 75%

There will be two semester exams and one final.

Additional References:

At times I receive requests for additional reference books that might help the student at various phase of the class. I strongly recommend that you consider obtaining these in the course of your academic career (depending on your seriousness and interest).
1. *Introduction to the Mechanics of a Continuous Medium*, L. E. Malvern, Prentice Hall. A superb text that I have recently obtained in paperback at low cost.


4. *A Treatise on the Mathematical Theory of Elasticity*, A. E. H. Love, Dover. Anything published by Dover will be classic and inexpensive. This is not a good learning text, but is an outstanding reference, that I still refer to on a yearly (sometimes monthly) basis.