CIVE 360: MECHANICS OF SOLIDS
FALL 2014

Instructor: R. I. Johnson, P.E., SECB

Office: A207G Engineering Building – Phone (970) 491-7613 (Don’t leave voicemail)

Office Hours: MWF 9:30 -11:00 am, 1:00-2:30 pm and by appointment; many times I may be in the office from 2:30-4:00; if the door is open, I’m available.

Email: bob.johnson@colostate.edu


Learning objectives/goals:

Understand stress: Axial, Direct Shear, Bending, Horizontal Shear and Torsional Shear
Transformation of stress on inclined planes
Understand strain: Axial, Bending, Shear and Thermal
Gain the ability to solve indeterminate axial load problems
Understand constitutive laws to relate stress to strain and vice versa
Be able to calculate cross-sectional properties and be able to use them to relate forces to stress
Be able to calculate strains based on section dimensions and given displacements/deflections
Improve your ability to create shear and moment diagrams from beam load diagrams
Gain the ability to calculate beam deflections using both 4th and 2nd order differential equations
Understand buckling capacity of long columns
Gain the ability to analyze thin walled pressure vessels
Understand how to combine stresses and determine principal axial stresses and shear stresses
Gain the ability to use Mohr’s circle to combine shear and normal stresses

There will be approximately three homework problems assigned every class, which will be due two classes later, i.e., given Monday would be due Friday, etc. I prefer that questions be asked at the beginning of the class about the homework or any other previously discussed subject so that everyone can have the same answer. You are also expected to go on line and see the MecMovies associated with the subject under discussion; these are actually pretty good and they may be found at:

Web.mst.edu/~mecmovie/

Grading will be as follows:
Homework: 20%
Midterms (3): 48%
Final: 32%

Letter grading:
90-100% A, 80-89% B, 70-79% C, 60-69% D
Tentative Syllabus

Topics to be covered in approximate order:

Stress (Chapter 1)

Strain (Chapter 2)

Mechanical Properties/Constitutive Laws (Chapter 3)

Midterm 1 – Tentatively Friday, September 26, 2014

Axially Loaded Members/Deformation/Statically Indeterminate Problems (Chapter 5)

Torsion (Chapter 6)

Beams: Review of Shear & Moment (Chapter 7)

Midterm 2 – Tentatively Friday, October 24, 2014

Beams: Bending and Shear (Chapters 8 & 9)

Beams: Deflections (Chapter 10)

Stress Transformations (Chapter 12)

Midterm 3 – Tentatively Friday, November 21, 2014

Thin-Walled Pressure Vessels (Chapter 14)

Combined Loads (Chapter 15)

Columns (Chapter 16)

Fall recess: 11/22/13 through 11/30/13

Final Exam: 12/19/13 from 7:30-9:30 am (yawn)