ME820: Continuum Mechanics

Fall 2011

Textbook: Continuum Mechanics, by A.J.M. Spencer, Dover, 1992
Other references: Continuum Mechanics for Engineers, by Mase, Smelser, and Mase
Continuum Mechanics, by Chadwick
Nonlinear Solid Mechanics, by Holzapfel
Vectors, Tensors and the Basic Equations of Fluid Mechanics, by Aris

Description: Mathematical tools of continuum mechanics, stress principles, kinematics of deformation and motion, fundamental laws and equations. Applications in linear elasticity and classical fluids.

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Office Hours: Open door policy
Class: MWF 1:50 PM - 2:40 PM 3400 Engineering Building

Grades: Final Exam 30%
Two Exams 40%
Homework 30%

CLASS PREPARATION
The student is expected to keep up with reading assignments and to do all of the assigned homework problems. Late homework will not be accepted except for a valid emergency. All homework assignments are to be done neatly, in pencil, on 8½X11 papers with your name. Direct copying of homework of any kind is never acceptable. See Plagiarism Policy at:
http://www.egr.msu.edu/me/files_me/forms/Plagiarism%20Policy1.pdf

TESTS AND FINAL EXAMINATION
Make-up tests for students with an excused absence must be arranged prior to the test date. The tests and final exam will be closed book and closed notes.

ACADEMIC HONESTY
Article 2.3.3 of the Academic Freedom Report states that "The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards." In addition, the ME Department adheres to the policies on academic honesty as specified in Protection of Scholarship and Grades; the all-University Policy on Integrity of Scholarship and Grades; and Ordinance 17.00, Examinations. (See Spartan Life: Student Handbook and Resource Guide and/or the MSU Web site: www.msu.edu.) Students who plagiarize may receive a 0.0 on the assignment or fail the course or receive more severe sanctions.
Class Topics

1. Vector and tensor calculus
2. Kinematics
3. Stress
4. Conservation laws
5. Constitutive equations
6. Curvilinear coordinates

Important Dates

Sept. 2 (Wed)   First class
Sept. 7 (Mon)  No class
Oct. 14 (Wed)  Exam #1
Nov. 23 (Mon)  Exam #2
Nov. 27 (Fri)  No class
Dec. 11 (Fri)  Last class
Dec. 14 (Mon) Final, 12:45-2:45pm (the same classroom)