

ESM 2204
MECHANICS OF DEFORMABLE BODIES

Fall 2008

TEXT: Mechanics of Materials 5th Edition, by Beer, Johnston, DeWolf, and Mazurek

PREREQUISITE: ESM 2104, Statics

NOTE: Students cannot take this course without the prerequisite. **Students who do not have the prerequisite will be dropped from the class roll.**

LEARNING OBJECTIVES:

- a. Calculate stress (normal and shear) in a structure or machine component loaded in various ways
- b. Use stress concentration factors to find stresses in, or allowable loads on, axially loaded members
- c. Calculate normal and shearing strains/deformations for bodies subjected to loads and/or temperature changes
- d. Design members using criteria based on strength and/ or deformation
- e. Solve statically indeterminate problems subjected to one or a combination of axial, torsion and bending loads
- f. Apply Hooke's Law in one, two, and three dimensions
- g. Determine stresses and/or deformations in a circular member subjected to torsional loading
- h. Solve problems using stress transformation equations and Mohr's circle
- i. Calculate stresses in thin-walled pressure vessels
- j. Draw shear and moment diagrams for beams subjected to some combination of concentrated loads, distributed loads, and concentrated moments.
- k. Calculate normal and shearing stresses in beams
- l. Determine the deflections of statically determinate and indeterminate beams using double integration and superposition
- m. Apply Euler's equation to solve buckling problems for various end conditions

COMMON-TIME FINAL EXAMINATION:

The Mechanics of Deformable Bodies exam is a common exam, given at a common time, for all students taking this course.

The common time for the exam is: **Wednesday, December 17, 2008, 11:05am – 1:05pm.** (Classroom assignments for this common-exam will be announced.)

EXAMPLE FINAL EXAM:

<http://www.esm.vt.edu>

click on course listings, then CRN number for ESM 2204, then ESM 2204 sampleexam.pdf

IMPORTANT DATES:

August 29	Last day to add
October 3	Last day to drop
December 5	Last day to apply for course withdrawal