

Department: MECH (Mechanical Engineering)
Course Number: 241
Title: Mechanics of Materials

Designation: required course

Course Description: The mechanics of solid deformable bodies, members subjected to tension, compression, flexure, and torsion. Beam topics, stability of columns, combined stresses and strains. 3 Credit Hours

Prerequisites: MECH 211

Textbook: *Statics and Mechanics of Materials*, Bedford, Fowler & Liechti, Prentice Hall (Pearson), 2003 ISBN: 9780130285935 - Required

Course Learning Outcomes: see ABET documentation : a, c, e

Homework: Problems will be assigned by the instructor.

Grading: Exams = 60% , Homework = 10%, Quizzes = 15%, Design = 15%

Topics:

Chapter 9: Introduction to Stress and Strain
Chapter 10: Axially Loaded Bars
Chapter 11: Torsion and Pure Shear Stress.
Chapter 12: States of Stress and Components of Stress.
Chapter 13: States of Strain and the Stress-Strain Relations.
Chapter 15: Stresses in Beams
Chapter 16: Deflections of Beams
Chapter 17: Buckling of Columns

Class/Laboratory Schedule: 3 lectures per week (each 50 minutes)

Contribution of course to meeting curriculum requirements:

- contributes to analytic techniques for simple mechanic problems
- advances the students capability for formulation and design of simple structures

Relationship of course to program outcomes:

- advances the knowledge of mathematics (calculus, linear algebra), science (equilibrium physics), and engineering (mechanical systems) concepts

- introduces the design of a process (analytical) to meet desired (mechanical) needs within constraints (boundary)
- advances efforts to formulate (physical equations) and solve (linear algebra, calculus, matrix techniques) engineering (statics) problems

Prepared by:

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