

**EM 8203 Applied Elasticity  
Fall 2010**

**Description:** Introduction to fundamental elasticity theory, problems and solutions. The stress function formulation and methods for plane stress, plane strain and torsional loading will be developed.

**Instructor:** Dr. Kiran N. Solanki  
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200 Research Blvd  
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**Textbooks:** Elasticity, J. R. Barber, Kluwer Publishers

**Grading:**

Homework: problems, research reports	20%
Midterm Exam (take home, <b>Oct 14<sup>th</sup></b> )	40%
Final exam (Comprehensive, take home, <b>Nov 30<sup>th</sup></b> )	40%

Grading will be on a hundred-point scale: 90-100 A, 80-89 B, 70-79 C, 60-69 D, below 60 F. Each distance student must have a proctor (approved by the home department of the Instructor of Record), who will administer the exams.

**General Class Policies:**

- No late homework will be accepted
- No make-up exams will be given
- **Homework must be written, organized, and presented in a professional manner**

**Course Outline:**

1. Overview of Mechanics
2. Foundation
  - a. Theory of Stress and Strain
  - b. Stress-Strain Relationship
  - c. Inelastic Materials and Theory of Yields
3. Classical Topics
  - a. Two-Dimensional Problems in Rectangular Coordinates
  - b. Two-Dimensional Problems in Polar Coordinates
  - c. Torsion
4. Special Topics
  - a. Complex Variable Approach
  - b. Elastic Strain Field Associate with Dislocation**
  - c. Elastic Stability**
  - d. Waves**
  - e. Viscoelasticity**