CE 201 **SOLID MECHANICS** Autumn 2006

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COURSE OUTLINE

Rigid and deformable solids; Method of sections for evaluating internal forces in bodies - review of free body diagrams; Axial force, shear and bending moment diagrams; Concept of stress, normal and shear stress; Concept of strain, normal and shear strains; Constitutive relations, Hooke's law; Axially loaded members, force and deflections; Bending and shearing stresses in beams of symmetrical cross-section, concept of shear flow; Torsion of circular shafts; Stress in cylindrical and spherical shells; Combined stress; Principle of superposition and its limitations; Transformation of plane stress and strain, principal stresses and strains, Mohr's circle, strain methods; Bending deflection of simple beams by direct integration methods; Buckling of compression members.

Textbook

Popov, E.P., *Engineering Mechanics of Solids (2nd Ed.)*, Prentice-Hall (India), 1999.

Reference books

Beer, F.P., Johnston, E.S. & DeWolf, J.T., *Mechanics of Materials (3rd Ed.)*, Tata McGraw-Hill, 2004.

Gere, J.M., *Mechanics of Materials (5th Ed.)*, Brooks/Cole, 2001.

Course webpage:

www.civil.iitb.ac.in/~sghosh/CE201/

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COURSE REQUIREMENTS

Attendance

A **minimum of 80% attendance** in class (instruction) hours is required from each student as per the institute regulations; same for the tutorials as well.

Tutorials

Tutorials will be held every week beginning from the 2nd week of instructions. 5 tutors from the Department of Civil Engineering will be the instructors for these problem solving sessions.

Office Hours

Teaching Assistants (graduate students from the Department of Civil Engineering) will hold office hours to assist the students. Students can seek their help for tutorial (or other) problems and any course related material.

Examinations

There will be **one mid-term** and **one final** exam. Apart from these there will be **two quizzes** – one before the mid-term and one in between the mid-term and the final exam. Dates are to be announced later.

Grading

Quizzes	30%
Midterm exam	30%
Final exam	40%
Total	100%