



CIVIL ENGINEERING

Mechanics of Solids

Type of Course	: New
Course Snapshot	: Core / UG
	: Applies to all
Course Duration	: 30 hours / 12 weeks

COURSE OUTLINE:

This course is to serve as an introduction to mechanics of deformable solid bodies. The primary course objective is to equip the students with the tools necessary to solve mechanics problems, which involves (a) static analysis of a component to find the internal actions (forces and moments), (b) determine stresses, strains and deformation due to internal actions, and (c) compare them with known acceptable values. This requires the familiarity with the vocabulary of the subject, skill of drawing free body diagrams and the understanding of the material behavior under loads. It is expected to improve your engineering design skills.

INSTRUCTOR:

Prof. Priyanka Ghosh
Department of Civil Engineering
IIT Kanpur



ABOUT INSTRUCTOR:

Prof. Priyanka Ghosh is an Associate Professor in the Department of Civil Engineering, IIT Kanpur. After completion of PhD from IISc, Bangalore in 2005, he served as faculty member at BITS, Pilani, IIT Kharagpur and IIT Kanpur. His primary research focus is in Computational Geomechanics and in particular, analysis of foundations, ground anchors, retaining structures, vibration isolation and geopolymers.

COURSE PLAN:

- Week 1 : Fundamental principles of mechanics
- Week 2 : Introduction to Mechanics of Deformable Bodies
- Week 3 : Concept of Stress
- Week 4 : Concept of Strain
- Week 5 : Stress-strain Temperature Relations
- Week 6 : Forces and Moments Transmitted by Slender Members
- Week 7 : Torsion
- Week 8 : Stresses due to Bending
- Week 9 : Concept of Strain Energy and Yield Criteria
- Week 10 : Deflections due to Bending
- Week 11 : Deflection using Strain Energy Method
- Week 12 : Stability of Equilibrium: Buckling