COE 3001 Mechanics of Deformable Bodies

Summer 2026

Course description

Stress and Strain and their transformation, axial deformation, torsion, shear and bending moment diagrams, stresses in beams, beam deflection, combined stresses and column buckling.

Prerequisite: COE 2001 – Statics, MATH 2552 – Differential Equations (co-requisite)

Topics Covered

- What are engineering structures?
- Why do structures fail?
- What is stress?
- How to calculate stresses in simple structures?
    - Axial bars, torsional shafts, bending beams, and pressure vessels
- How can we transform stress and why is it important?
    - Principal stresses, maximum shear stress, and failure theories
- What is strain?
- What is material stiffness?
- How can we calculate deformation of simple structures? (bars, shafts, beams)
- How does change in temperature affect strains, stresses and deformation?
- What is buckling and why is it important?
- How do you calculate the buckling load for simple structures? (beams)

Instructor: Prof. Dineshkumar Harursampath, IISc
Prof. Mayuresh Patil (IOR)
Office Hours: TBD

Graduate Teaching Assistant: TBD

Text

No textbook required. Slides, codes, and class notes will be uploaded on Canvas.

Grading

Homework (20%), Projects and Creative Assignments (30%), Attendance (10%), Tests (20%), Final (20%)
A = 90+
B = 80+
C = 70+
D = 60+

Student-Faculty Expectations Agreement

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