COE 3001 Mechanics of Deformable Bodies

Fall 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)

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Graduate Teaching Assistant: TBD

Website

Canvas will be used for all course related information.

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+

Attendance: Attendance is mandatory. You are allowed at most 3 unexcused absences, after which you will lose 1 point for each additional absence. Thus, 13 or more unexcused absences will lead to an attendance grade of 0 out of 10 and will definitely lead to a lower grade.

Please email me any excused absences. Excused absences are absences that you plan for (conference travel, work travel, health, family, academics, other aspects of your life which may take precedence occasionally) or absences due to emergencies (health, family, life …). You do not need to go through the Dean's office. Just an email is sufficient.

I want you to give appropriate priority to attending lectures regularly.

Well-being
If you ever find yourself in any situation in which an unexpected personal challenge is preventing you from performing your best in the course, please reach out so we can come up with a plan for you.

Student-Faculty Expectations Agreement
https://catalog.gatech.edu/rules/21/

Georgia Tech Honor Code
https://policylibrary.gatech.edu/student-life/academic-honor-code

Disability Services
https://disabilityservices.gatech.edu/