COE 3001 Mechanics of Deformable Bodies

Summer 2026

Instructor: Arash Yavari

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Course Description: This course introduces the mechanics of deformable bodies. Topics include stress, strain, constitutive equations, axial loading, torsion, bending, shear, stress transformations, deflection of beams, and stability of structural members. The course emphasizes physical understanding together with analytical problem solving.

Course Learning Outcomes: By the end of the course, students should be able to:

- compute stresses and strains in deformable bodies under various loading conditions,
- analyze axial, torsional, and bending deformations of structural members,
- apply constitutive relations for linear elastic materials,
- use stress and strain transformations in two- and three-dimensional settings,
- determine beam deflections and evaluate elementary stability problems.

Required Course Materials: *Mechanics of Materials*, 9th Edition, by Barry J. Goodno and James M. Gere.

Course Outline: All chapters of the textbook will be covered.

Prerequisites: COE 2001; familiarity with linear algebra and differential equations.

Grading Policy:

- Weekly homeworks: 10%
- Three midterm exams: 25% each (one midterm will be dropped)
- Final exam: 40%

Criteria for Final Grades:

- A: 90% or higher
- B: 80% to below 90%
- C: 70% to below 80%
- D: 60% to below 70%
- F: below 60%

Please scan your homework and upload it as a single PDF file on Canvas every Thursday before 5:00 PM.

Attendance Policy: Attendance at all lectures is required. Excused absences must be cleared with me in advance by email. If you need to reschedule any test, you must contact the Dean of Students and obtain official approval from their office.

Academic Integrity Statement: Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit `http://www.catalog.gatech.edu/policies/honor-code/` and `http://www.catalog.gatech.edu/rules/18/`. Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, which investigates such incidents and determines the appropriate penalty for violations.

Artificial Intelligence Policy: Unless explicitly stated otherwise for a particular assignment, any use of generative AI tools must be disclosed clearly and may not replace your own understanding, reasoning, or written work. Students remain fully responsible for the accuracy, originality, and completeness of all submitted work.

Accommodations for Students with Disabilities: If you are a student with learning needs that require accommodation, contact the Office of Disability Services at (404) 894-2563 or `http://disabilityservices.gatech.edu/` as soon as possible to obtain an accommodation letter. Please also email me as soon as possible so that we can discuss your needs.