

ME 6201 – Principles of Continuum Mechanics

Fall 2025 Tue: 5:00 – 6:15 PM / Thu: 5:00 – 6:15 PM

Credit:	3-0-3 (3 credits, 3 hours per week)
Prerequisites:	Introduction to partial differential equations and vector mathematics desirable (MATH 4581 or equivalent); or with the consent of the instructor.
Instructor:	Dr. Stephane Berbenni Office: TBD Phone num: TBD Email: <u>stephane.berbenni@georgiatech-metz.fr</u>
Office Hours:	Tue: 4:00 – 5:00 PM / Thu: 4:00 – 5:00 PM
Textbook:	 Lawrence E. Malvern, Introduction to the Mechanics of a Continuous Medium, 1st Edition Prentice-Hall, 1997.
Objectives:	This class will provide knowledge of the fundamental, unifying concepts of the mechanics of continua as a core course for graduate study in Mechanical Engineering.
Topics:	 Fundamentals of Vectors, Tensors (chapter 1) Definition of Strain, Eulerian and Lagrangian Coordinate Systems (chapter 2) Definition of Stress, Cauchy and Nominal Stresses, Balance of Linear and Angular Momentum, Principal Stresses, Deviatoric and Hydrostatic Stress (chapter 3) First and Second Laws of Thermodynamics for a Continuum (chapter 4) Application: Fundamentals of Elastic Behavior of Solids, Navier's equation, Airy stress function (chapter 5)
Assignments:	Homework assignments will be graded. There will be homework for each chapter. No late assignments will be accepted (except acceptable reason). All class handouts will be available in the Fall 2025 Canvas course. Assignments and solutions will be posted on Canvas.

Attendance at lectures is required.

Evaluation:	30% Homework 30% Mid-term Exam 40% Final Exam
Grading Scale	Your final grade will be assigned as a letter grade according to the following scale: A 90-100% B 80-89% C 70-79% D 60-69% F 0-59%
Important dates:	1 st day: August 21, 2025 (introductive lecture) Mid-term examination: TBD (announced at least 2 weeks before) Drop day: TBD Recess week: October 27 – 31, 2025 Final instructional day: Tue., December 2, 2025 Final examination: 2 hours and 50 minutes. <i>TBD</i> . The final exam week is scheduled on December 4 – December 11, 2025.
Academic Integrity:	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 <u>http://www.catalog.gatech.edu/policies/honor-code/</u> or <u>http://www.catalog.gatech.edu/rules/18/</u> . Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.
Student-Faculty Expe	ectations Agreement: At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See <u>http://www.catalog.gatech.edu/rules/22/</u> for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.