ME 8983: Special Problems in Mechanics of Materials

Course Information

- Instructor: Shuman Xia (shuman.xia@me.gatech.edu)
- Course Prefix and Number: ME 8983
- Term: Summer 2026

Course Description

Individual studies and/or experimental investigations of problems of current interest in mechanics of materials.

Special Problems Course Notes

- The Special Problems Course form must be submitted by the Woodruff School deadline. The form is only available until the last Wednesday of Phase II registration.
- Before registering, the student must identify a project topic and obtain the agreement of a faculty member to direct the work.
- The Special Problem Statement serves as a contract between the student and the Woodruff School, so the work scope and credit hours must be matched carefully.
- Special Problem credits may not be included as part of the 30 hours of required coursework for master's thesis students.

Course Learning Outcomes

- Problem Definition and Planning
  - Defines a clear project objective and an appropriate scope in mechanics of materials.
  - Develops a work plan and milestones that are appropriate to the approved credit hours.
- Disciplinary Knowledge
  - Reads, interprets, and synthesizes relevant technical literature in mechanics of materials.
  - Applies appropriate mechanics and materials concepts, assumptions, and models to the chosen problem.
- Technical Execution
  - Carries out analytical, computational, experimental, design, or simulation tasks appropriate to the project.
  - Documents methods, assumptions, data, and decisions in a clear and organized

manner.

- Critical Thinking and Interpretation
  - Interprets results thoughtfully, identifies limitations, and proposes reasonable next steps or improvements.
  - Troubleshoots problems and revises the approach when needed.
- Communication, Professionalism, and Ethics
  - Communicates progress and findings clearly in meetings and in the final written report.
  - Works independently while seeking guidance when needed and demonstrates ethical conduct in research, data handling, and use of sources.

Required Course Materials

No common textbook is required. Materials are determined in consultation with the instructor/advisor and may include the approved Special Problems Course form and project statement, journal articles and technical references, software or computational tools, and any laboratory supplies, instrumentation, or datasets needed for the approved project.

Grading Policy

This course is graded on a letter-grade basis. Because the course is individualized, project-specific milestones are defined at the beginning of the term in consultation with the instructor/advisor. Final grades are based on the quality and completion of the work relative to the approved scope and the registered credit hours.

- Project definition and work plan / approved Special Problems statement: 10%
- Progress toward agreed milestones and professionalism: 25%
- Technical quality of project work: 35%
- Final written report: 30%

Attendance Policy

This course does not include scheduled lecture meetings. Attendance is satisfied through regular participation in meetings with the instructor/advisor and sustained weekly engagement on the project, commensurate with the registered credit hours. Students are expected to communicate promptly about illnesses, emergencies, or other issues that may affect progress. When appropriate, students should work with the Office of the Dean of Students regarding documentation and communication with instructors.

Additional Criteria for Successful Completion of the Course

To successfully complete the course, students must meet the project-specific expectations established at the beginning of the term, comply with any required laboratory safety or

research training, and submit a written final report to the instructor/advisor by the agreed deadline. Failure to complete the final report or other approved major deliverables may result in a failing grade regardless of interim progress.

Academic and Research Honesty/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 and to follow the Georgia Tech Academic Honor Code and Student Code of Conduct. Unless otherwise approved by the instructor, all submitted writing, analysis, code, calculations, figures, data, and other deliverables must represent the student's own work. Fabrication, falsification, plagiarism, inappropriate reuse of prior work, and misrepresentation of research results are prohibited. Allegations of academic misconduct or scientific/scholarly misconduct will be handled according to Institute procedures.

Core IMPACTS

Not applicable

Accommodations for Students with Disabilities

Georgia Tech welcomes students with disabilities into its educational programs. Students who experience academic barriers because of a disability or chronic medical condition should contact the Office of Disability Services as early as possible to discuss reasonable accommodations. The office can be reached at disabilityservices.gatech.edu or 404.894.2563. Students should also notify the instructor after accommodations are approved so implementation can be arranged in a timely way.

Student-Faculty Expectations

At Georgia Tech, we strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty and students. This course follows the Georgia Tech Student-Faculty Expectations Agreement. Because ME 8983 is an individualized graduate project course, students should also be guided by the Georgia Tech Expectations of Advisors and Advisees, including clear communication, timely feedback, respect for commitments, and professional conduct in research and mentoring relationships.