Differential Geometry I

Course Information

- **Instructor:** Mohammad Ghomi
- **Course Prefix and Number:** MATH 6455
- **Term:** Fall 2026

Course Description

This class is an introduction to Riemannian geometry. In particular, we will study the notion of metric on smooth manifolds, geodesics, parallel translation, the curvature tensor, Jacobi fields, Hopf-Rinow and Hadamard theorems, and spaces of constant curvature.

Course Learning Outcome

By enrolling in this course, students become familiar with foundations of modern geometry of curved spaces, appreciate the historical development of the subject, and form the ability to solve problems in this area or pursue more advanced studies.

Required Course Materials

Riemannian Geometry, by Manfredo do Carmo.

Grading Policy

This course is graded on a letter grade basis. The grade will be based on attendance (25%), a midterm (25%), and a final exam (50%).

Attendance Policy

Students are expected to attend all lectures. Attendance may be taken at any time. Each unexcused absence will reduce the attendance score by 1 point.

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. Review the Student Code of Conduct and the Academic Honor Code, especially Appendix A: Graduate Addendum to the Academic Honor Code. Students are expected to perform research in an ethical and responsible manner. All Doctoral and Master's Thesis students are required to take the Responsible Conduct of Research training, and it is expected that students abide by the principles taught in that training while performing research.

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.

Allegations of scientific or scholarly misconduct are handled in accordance with the procedures outlined by the Policy for Responding to Allegations of Scientific or Other Scholarly Misconduct.

Core IMPACTS

Not applicable

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations

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. The Student-Faculty Expectations articulates some basic expectations that you can have of me and that I have of you. Additional information for research-related work is given in The Expectations of Advisors and Advisees. 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.