

GIS System Design & Management

Course Information

Instructor: Ramachandra Sivakumar (siva@design.gatech.edu)

Course Prefix and Number: CP 6595 - C

Term: Summer 2026

Course Description

The course will introduce students to high level GIS system design concepts; examine various platform architectures; explore and evaluate cloud and on premise solutions; learn about best practices for data management and build a demonstration enterprise GIS system. Students will explore several packaged solutions on online hosted platforms and environments to learn to run GIS on the web.

The primary objective of the course is to introduce systems thinking and introduce emerging technology trends from a higher level. Students will learn concepts in system design, best management practices, and GIS server implementations.

Course Learning Outcomes

By completing the course students will:

- Learn database concepts and Structured Query Language
- Learn to design multiuser geodatabase
- Conceptualize, design, and evaluate GIS system components architecture.
- Understand fundamental principles of GIS management.
- Identify best practices and capacity planning for a GIS enterprise.
- Implement an on-premises Enterprise GIS System.
- Build multi-user workflows with versioning and replication.
- Build, publish, consume interactive GIS based web applications.
- Solve spatial problems using online web GIS tools and solutions.
- Explore and evaluate open source server GIS solutions.

Required Course Materials

No textbooks or materials are required. Instructor may provide references as needed.

Grading Policy

Student grades will be based upon continuous evaluation over the full summer. Points will be accrued on satisfactory completion of tasks outlined as per deadlines.

A = 90-100%; B = 80-89%; C = 70-79%; D = 60-69%; F = <60%

Grading Rubric:

- Weekly warm up presentation on trends in geospatial technology and science 10%
- In class lab exercise completion 20%
- Homework Assignments 40%
- Final Exam (Written & Hands-on Exercises) 30%

Extensions and Late Submissions

Due dates for assigned work must be followed. Late submissions will incur a 10% penalty for each class period it is late. Submissions will not be accepted after two weeks of submission deadline.

Attendance Policy

Students are expected to attend classes and participate in discussions. Two absences are allowed. Absences beyond must be approved by the instructor.

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.

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.

Expectations of Students

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 [Expectations of Advisors and Advisees](#) articulates some basic expectations that you can have of your advisor and that they can have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek.