

CSE 6242 / CX 4242 Syllabus

Data and Visual Analytics (3 credits)

Georgia Institute of Technology

Spring 2027

Instructor Information

Instructor

Edmond Chow

Instructor email

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General Course Information

Description

The course introduces students to analysis and visualization of complex high dimensional data. Both theory and tools will be covered. Students will gain hands-on experience through assignments and a project. Theory will be tested in midterm and final exams.

For the assignments and project, this course requires significant programming experience in a language such as C/C++ and Python. For the theoretical parts of the course, students should have taken a course in linear algebra (matrices, vectors, eigenvectors).

Course Learning Outcomes

- Apply computational and visual techniques to analyze large-scale datasets.
- Understand core design principles and the strengths of common visualization techniques.
- Build software both from scratch and from existing tools for data visualization.

Topics

- Dimensionality reduction and manifold learning
- Selected methods of unsupervised learning, including those for data clustering and anomaly detection
- Data classification
- Design elements of visualization
- Visualizing graphical data
- Text analytics

Textbooks

For topics on design, we will have readings from the following two books, available for free download from the Georgia Tech library website:

- *Visualization Analysis and Design*, Munzner (CRC Press)
- *Visual Analytics for Data Scientists*, Andrienko et al. (Springer)

Grading Policy

- Assignments (40%)
- Project (20%)
- Midterm exam (20%)
- Final exam (20%)

Description of Graded Components

There will nominally be 4 assignments. The project will involve a proposal, presentation, and report. Students in the undergraduate section (CX 4242) do not need to submit a report. The midterm and final exams are closed book and notes. No electronic resources are allowed in the exams.

Final Grade Assignment

Cutoffs: A (90 and above), B (80-89.9), C (70-79.9), D (60-60.9), F (below 60)

Course Policies

Attendance and/or Participation

Students are expected to attend and actively participate in-person.

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. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism 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 Expectations 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. The Student-Faculty Expectations articulate some basic expectations 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.