CS 4460 Syllabus

Introduction to Information Visualization, Section 1, and 3 Credits
Fall 2026

Instructor Information

Instructor	Email	Office
Clio Andris (she)	clio@gatech.edu	204-M East Architecture Building
	For quick response try Microsoft Teams.	

General Course Information

Description

Information visualization goes beyond presenting information as static charts, graphs and maps by leveraging the power of computer interaction to help people analyze, understand and make decisions from data. Dozens of companies – including Google, Microsoft, IBM, Oracle and SAP – offer Information Visualization tools. Thousands of companies and governments use the tools for daily operations and for longer-term strategic planning. This course introduces students to principles and techniques of information visualization, the presentation of primarily abstract data to help people understand, analyze and make sense of data.

Pre- &/or Co-Requisites

Junior or Senior status; CS1332 with C or better. Programming assignments require Javascript and D3. Some of these may use GitHub. If you do not already know Javascript, you will need to learn it on your own. There are in-class D3 lectures that give you an overview, but you will be expected to learn the depth of this language outside of class time as part of the assignments throughout the course. Students cannot receive credit for both CS 4460 and CS 7450.

Course Learning Outcomes

1) Learn the principles of designing effective information visualizations.
2) Understand the wide variety of information visualizations and know what visualizations are appropriate for various types of data and for different goals.
3) Understand how to design and implement information visualizations.
4) Know how information visualizations use dynamic interaction methods to help users understand data.
5) Learn to apply an understanding of human perceptual and cognitive capabilities to the design of information visualizations.
6) Develop skills to critique different visualization techniques in the context of user goals and objectives.
7) Learn how to implement compelling information visualizations.

Required Course Materials

Materials: ***A computer and ability to download materials and access the terminal of the computer.
***Colored pencils or markers and paper that has no lines. (You need to buy this, like K12 requirement).

Interactive Data Visualization for the Web, Scott Murray, O'Reilly Media, ISBN 9781449339739. All about D3, the programming tool we will be using for homework and programming assignments. Free access through GT Library. Step 1) Search for the book: https://library.gatech.edu/search/all?s=Scott+Murray+D3 (Press enter, or it will just spin!) Step 2) Click on the book and follow the directions on the safaribooksonline website (enter your email, don't use the dropdown to find GT; it may not be there). Next time you visit, you should have it, and you can bookmark the link https://learning.oreilly.com/library/view/interactive-data-visualization/9781491921296/?ar

Canvas readings: Please note that readings for the weeks will be posted on Canvas. Many of these are links to websites. Please read the assigned reading for the week we discuss it. For instance, if the folder is marked 3, that means the reading is "due" for week 3, i.e., it has to do with what we are learning in week 3. Information from the readings can help with labs and/or is likely to be on exams

Grading Policy

Students are expected to attend all lectures, read readings, take tests, and complete all assignments. There will be no official final exam. There is a project. You can work in pairs for the project. Late submissions will be graded down by 10% for each day of delay past the due time starting at 12:00 AM. All assignments should be handed in on Canvas.

Content	Number of Assignments	Total Points
Homeworks (5 pts each)	4	20
Programming Labs (5 pts each)	5	25
Last Lab "Final Project"	1	10
Exams (includes in class work)	2	45 (22.5 + 22.5)

Description of Graded Components

Assignments (homeworks and labs) are graded based on correct answers to questions asked in the labs, and effectiveness of maps, and evidence of creativity.

Last Lab Project goal is to create a usable visualization in JavaScript using the D3 library, with at least one linked component.

Exams will be administered in person, and they are closed-book. They often include components that were completed by students in-class (such as drawings), so attending class is necessary.

Example Schedule

Many items are subject to change and will move around a bit. Please check Canvas for all due dates.

WEEK	LECTURE TOPIC	RECITATION TOPIC (Thursday)	DUE (Typically Wed. or Thurs.)
1	1 Introduction and Intro to Info Viz 2 Data Sources, Cleaning, Structuring	*None*	Survey
2	3 Data Classification, Visualization Design Principles 4 Visual Perception	*HTML, CSS, SVG and Lab 1 Help (HTML, CSS, SVG)*	**HW 1 (analog)**

Week	Topic	Help	Lab/HW
3	*No Class: Labor Day* 5 Univariate Visual Representations	*General Help*	**Lab 1**
4	6 Multivariate Visual Representations 1 7 Multivariate Visual Representations 2	*FREE PARKING*	None
5	8 Geovisualization *No Class:* **(See Canvas for instructions how to post to Discussion Section)**	*Intro to JavaScript and Lab 2 Help (Static Vis)*	**HW 2 (no vis)**
6	9 Geovis/Graphs & Networks 10 Graphs and Networks, Hierarchies & Trees	*Exam Questions*	**Lab 2**
7	11 Graphs and Networks; Exam 1 Review **Exam 1**	*None*	None
8	12 User Interaction / Tasks 1, Interaction Principles 13 User Interaction 2, InfoVis Systems, Toolkits, Ops.	*Lab 3 Help (Intro to D3)*	**HW 3 (tableau)**
9	*No Class: Fall Break (School break)* *No Class: Fall Break (Our special break)*	*None*	**Lab 3**
10	14 Atomic Units 15 Time Series Data	*Lab 4 Help (Filtering)*	None
11	16 *No Class:* **(Political Visit)** 17 Storytelling / Current Events	*FREE PARKING*	**Lab 4**
12	18 Text & Documents 19 Evaluation & Color + Class Project (Lab 6)	*Lab 5 Help (Linking + Brushing)*	**HW 4 (data wrapper)**
13	20 Perception 21 Visual Analytics	*Project (Lab 6 Help)*	**Lab 5**
14	22 Exam 2 Review **Exam 2**	*None*	None
15	Project help virtual (highly recommended!) *No Class: Thanksgiving Break*	*Project (Lab 6 Help)*	None
16	22 Course Wrap Up, Cutting Edge Viz (Come!) *No Class NO FINAL EXAM! (reading day)*	*Project (Lab 6 Help)*	**Project (Lab 6) Due Sun Dec 8.**

At Georgia Tech, final course grades are awarded on a scale of A-F with no +/- grades permitted.

USG Required Course Policies

Attendance and/or Participation

This is an in-person class. Lectures will be in person and will include hands-on lab times to give students more experience with geographic information systems and science. All lectures, readings, assignments are to be accessed through Canvas. Canvas is for general messaging, discussions, and file retrieval. Students will need to attend the final project days.

Please engage in class. This means showing your fellow students that you are paying attention and that class time and instruction is important to you. Be present in the lectures and do the readings (Information about information visualization comes in sentence form!). While slides give key points and high-level topics discussed, much of the content of the course comes through the discussion, and other in-class activities. If you want to do well, attending class is important. Laptops should be used only for notetaking and in-class activities.

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.

AI Policy
materials turned in should be completed by the student without the use of ChatGPT or another AI tool. Students who turn in any writing (homeworks require written answers) or graphics that were generated with AI will receive a 0 for the assignment. All materials (e.g., code) should be your own, and you should be expected to be able to explain the code you that you turn in. Each student should turn in their own labs and homeworks.

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 (404-894-2563) 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 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.

Undergraduate Student Academic Success Resources: A list of resources for

undergraduate students' academic success and information about advising can be found at Success at Tech.

Academic Support: Academic Success and Advising (a unit in the Office of Undergraduate Education & Student Success) provides free support for your courses. Students can attend scheduled supplemental review (PLUS) sessions, stop by Drop-In Tutoring, or schedule a one-on-one appointment through Knack.

To explore what options work best for you, please visit us online at success.gatech.edu/tutoring, email us at tutoring@gatech.edu, or come see us at Clough Undergraduate Learning Commons, Suite 283.

At Georgia Tech, we are concerned about your overall physical, social, and mental well-being. A comprehensive list of wellness related resources has been compiled and maintained by the Office of the Vice President for Student Engagement and Well-being.

How to be Successful

Please engage in class. This means showing your fellow students that you are paying attention and that class time and instruction is important to you. Be present in the lectures and do the readings. While slides give key points and high-level topics discussed, much of the content of the course comes through the discussion, and other in-class activities. If you want to do well, attending class is important.