Northeastern University
Khoury College of Computer Sciences

DS4200: Information Presentation & Data Visualization
Course Policies and Syllabus, 2025 Spring

Instructor	Xiaoyi Yang	**Email:** xiaoy.yang@northeastern.edu **Office:** Meserve 341
Lecture	Monday & Wednesday & Thursday Behrakis Health Sciences Cntr 310	10:30 am - 11:35 pm
	Monday & Wednesday & Thursday Shillman Hall 135	1:35 pm - 2:40 pm
	Monday & Wednesday & Thursday Cargill Hall 097	4:35 pm - 5:40 pm
Office Hours	Tuesday	11am - 1pm & 2pm - 5pm
	Friday	11am - 1pm
Text	*Visualization Analysis and Design* by Tamara Munzner A PDF will be provided on Canvas	
Web Site **Piazza link**	Canvas, Gradescope, Piazza https://piazza.com/northeastern/spring2025/ds4200	

TA information

Head TA (Management and on-site office hour)
- Sai Akhil Rayapudi: rayapudi.s@northeastern.edu

Online TA (Piazza and online office hour)
- Le Ju: ju.l@northeastern.edu
- Chunsheng Fang: fang.chun@northeastern.edu
- Harshil Nandwani: nandwani.h@northeastern.edu

Quiz TA (Quiz grading and onsite office hour)
- Abhishek Kothari: kothari.abhi@northeastern.edu
- Renee Reddy: reddy.ren@northeastern.edu
- Melina Yang: yang.meli@northeastern.edu
- Nidhi Bendre: bendre.n@northeastern.edu

Homework TA (Homework grading and mix additional office hour)
- Kenichi Gomi: gomi.k@northeastern.edu
- Sudarshan Paranjape: paranjape.su@northeastern.edu
- Victoria Schaller: schaller.v@northeastern.edu
- Christine Guarnieri: guarnieri.c@northeastern.edu

COURSE DESCRIPTION AND OBJECTIVES

Introduces foundational principles, methods, and techniques of visualization to enable creation of effective information representations suitable for exploration and discovery. Covers the design and evaluation process of visualization creation, visual representations of data, relevant principles of human vision and perception, and basic interactivity principles. Studies data types and a wide range of visual data encodings and representations. Draws examples from physics, biology, health science, social science, geography, business, and economics. Emphasizes good programming practices for both static and interactive visualizations. Creates visualizations in Python and open web-based authoring libraries. Requires programming in Python, JavaScript, HTML, and CSS. No previous experience in web designing is acceptable. Requires extensive writing including documentation, explanations, and discussions of the findings from the data analyses and visualizations.
After completion of the course students should be able to:

- Choose appropriate visualization methods for a given data type
- Assess the quality and effectiveness of a visualization
- Design an effective visualization using design and human perception principles
- Implement a static or interactive visualization
- Implement web-based visualizations in JavaScript/HTML/CSS or Python
- Present and be knowledgeable about contemporary visualization topics
- Effectively communicate technical material in written form
- Effectively communicate technical material in oral presentation form
- Constructively critique and assess a visualization in written form

CLASS PREPARATION

General. You should come to each class meeting prepared to write and talk intelligently about the material. The assignments will require thought and analysis, which cannot be had in 15 minutes or less. Give yourself adequate time to read carefully, to think and reflect, to sleep on it, then maybe glance it over before class.

Computing and Software. Computing is an essential part of modern data science practice: meaningful data science is impossible without computing. We will make use of multiple computing tools, including web design tools for code demonstration and some homework. There is also a long group project in this course. You should plan to bring a charged laptop to class every day.

Textbook. The textbook provides background material that is meant to supplement lectures. Lecture notes indicate what sections of the text you should read if you choose to do so.

Attendance. You are expected to come to class prepared to learn and actively participate. However, if you must be absent check Canvas for assignments, announcements, and any other information you may have missed. There are some group work day and the attendance is required. Those days will be notified on the schedule and Canvas announcement.

COURSE ASSESSMENT

Your grade in DS4200 will contain the following components.

1. Homework (30%): There will be 5 large homework assignments over the course of the semester. Each assignment will require the student to apply the concepts discussed in the readings and in-class lectures to both programming assignments for the actual building and implementation of static and interactive visualizations as well as short writing assignments (e.g., design critiques). The homework assignments are individual assessment and should not be completed in groups. The homework will be due on Fridays.

2. Weekly quiz (30%): There is a quiz every week to check students' basic understanding of the concepts in the lecture. The quizzes are multiple choices questions and may need to attach the draft in lecture activities. The lowest score will be dropped. The quiz will be due on Sundays.

3. Group Project (40%): Students need to work as a group to complete a project. In the project, students need to collect, analysis and visualize the data, then produce a group presentations as well as a interactive webpage. There is a check point in the middle of the semester for the projects. The details will be released later. An example output for the project will be provided but not necessarily to follow.

All assignments will be submitted to Gradescope. All assignments must be readable, and when appropriate, all work must be shown to receive credit. Late homework and quiz within 48 hours will receive 20% penalty, unless other arrangements have been made before the due date. The lowest quiz score will be dropped. Adjustments may be made in extraordinary circumstances.

COURSE GRADE

Your overall course score will be a weighted average of each element as noted above. Grades may be curved at the instructors' discretion. A letter grade will be assigned based on:

A: 90 - 100 **A-:** 88 - 90 **B+:** 85 - 88 **B:** 80 - 85 **B-:** 78 - 80 **C+:** 75 - 78 **C:** 70 - 75
D: 60 - 70 **F:** Below 60

PROJECT COURTESY

To ensure the quality of collaboration in the group project, we encourage everyone to adhere to the guidelines for project courtesy. **In the middle and at the end of the semester, there will be an optional peer review survey.** If there is evidence indicating that you did not contribute to the group project, your final grade may be reduced by one level (e.g., from an A to an A-).

- Every part of the project is equally important, including coding, website creation, and writing.

- Please regularly commit and push your work to GitHub. Your activity on GitHub may serve as key evidence of your contribution.

- Everyone has a unique working style. However, please communicate with your groupmates about your general schedule and preferred method of collaboration (e.g., if you tend to procrastinate, let them know in the beginning).
- Be respectful of others' time and energy. If you agree to a deadline, make every effort to meet it.
- Regularly check and respond to messages from your groupmates. These messages may also serve as evidence of your contribution. If a groupmate consistently ignores your messages, contact the instructor as soon as possible.
- If you are dissatisfied with a group member's work, do not complete their tasks for them right away. Instead, discuss the issue with them and agree on a deadline for revisions, if necessary. If the problem persists, contact the instructor promptly.
- If you need to miss a checkpoint meeting or presentation, inform your group members and the instructor as early as possible unless it is a medical emergency. You may be required to complete additional work to compensate for your absence.

OTHER POLICIES

Emails. Sending email to me and your TAs should be treated as professional communication. You should not assume your emails will be answered immediately, and should allow 24 hours for a response. **To increase the chances of a quick response, start the subject line with "DS4200 section number/time student name" so that it is clear that the email pertains to this class.**

Piazza. Piazza will be used for discussion of class assignments. While you may make yourself anonymous to your classmates, your identity will be known to us. Piazza will be monitored by online TAs. If you have questions for me, please email me. Similar to the email, you should not assume your Piazza posts will be answered immediately and we may not be able to answer the questions 6 hours before the due time.

Office hours. The purpose of office hours is to provide you with an opportunity for additional conversation, guidance or help. We provide both onsite and online office hours. Please feel free to come to our office hours at the time designated in the schedule and pay attention to whether it is online or onsite. If you are not able to attend the office hour, *please email me to set up an appointment*. Any changes on the office hour will be posted on Piazza.

Grades and regrades. Course grades will appear on the Canvas. Each student is responsible for verifying his or her recorded scores on an ongoing basis. If there is any homework question that you want to request for a regrade, please submit the regrade request through Gradescope. For the Quiz regrade requests, please email the instructor directly. **Any regrade request should be submitted within 1 week of the homework being graded.**

ACADEMIC INTEGRITY

This course is governed by the Policy on Academic Integrity Policy. The policy can be found at the link below. https://osccr.sites.northeastern.edu/academic-integrity-policy/

You are encouraged to work together on homework labs and in-class activities, but all work you submit must be your own (unless the assignment specifically states otherwise). Online AI tools like ChatGPT can be used to collect and organize information but cannot be used to finish the assignment. A first act of academic dishonesty will result in a score of zero on the item in question. A subsequent offense will result in an F for the course. Students should consult the University academic integrity policy if they have any questions.

DISABILITY ACCESS SERVICES

Disability Access Services serves Northeastern students who have documented disabilities as defined by the Americans with Disabilities Act as Amended (ADAAA) of 2008. Under this definition, a person with a disability is one with a physical, mental, emotional, or chronic health impairment that substantially limits one or more major life activity. If you are looking for any accommodation to the regular course requirement, please contact DAS in the first two weeks. Here is the general steps to start with: https://disabilityaccessservices.sites.northeastern.edu/incomingandsunregisteredstudents/ We are looking forward to helping everyone achieve success in this course.

TAKE CARE OF YOURSELF

Disease. If you are sick, please do not come to class. You can have two wellness days if you need. Please follow the instructions of Student Health, Education, and Compliance, take good care of yourself, and document your absence with me. While masks are not required, out of care and concern for our community, we encourage masking in the classroom. Please follow all university related requirements. If you need a temporary accommodation due to diseases or related travel restrictions, please also notify me.

Healthy Lifestyle. Do your best to maintain a healthy lifestyle by eating well, exercising, avoiding excessive drug and alcohol use, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress. Your mental health is more important than your grade in this course. All of us benefit from support during times of struggle. You are not alone. An important part of the college experience is learning how to ask for help.

University Health and Counseling Services. If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, I strongly encourage you to seek support. University Health and Counseling Services offers students assistance in navigating their way at Northeastern through support, resources and advising. Call 617-373-2772 and visit their website at https://www.northeastern.edu/uhcs/counseling-services/. Consider reaching out to us, a friend, faculty or family member you trust for help getting connected to the support that can help. If the situation is life threatening, call the police:
On campus: Northeastern University Police Department: (617)373-2121; Off campus: 911

IMPORTANT UNIVERSITY DATES

- Monday, Jan 6th - First day of Spring classes
- Monday, Jan 20th - Martin Luther King, Jr. Day, no classes
- Tuesday, Jan 21st - Last day to elect pass/fail for Spring classes
- Monday, Jan 27th - Last day to drop a Spring class without a W grade

- Monday, Feb 17th - Presidents Day, no classes
- Mar 3rd - Mar 9th - Spring break, no classes
- Tuesday, Apr 15th - Last day of fall classes
- Wednesday, Apr 16th - Last day to drop a Spring class with a W grade

DS4200: Information Presentation & Data Visualization
Tentative Course Schedule (*subject to change*)

Week	Date	Topic	Homework/Exam	Add'l OH
1	Jan 6th, 7th, 9th	Introduction and course overview Design rules of thumb		
2	Jan 13th, 15th, 16th	Review: basic plotting in Python Marks and channels	Homework 1 release	Yes
3	Jan 22nd, 23rd	GitHub Introduction Data type	Homework 1 due Homework 2 release	Yes
4	Jan 27th, 29th, 30th	Abstraction Altair Part 1 Visual Encodings	Project release	
5	Feb 3rd, 5th, 6th	Color and Illusions Pop-Out Effects and Interaction	Homework 2 due	Yes
6	Feb 10th, 12th, 13th	View, Facet and Linked Data Intro to HTML/CSS/JS	Project proposal due Homework 3 release	
7	Feb 18th - Feb 21st	Project check point week		Yes
8	Feb 24th, 26th, 27th	Focus and Context Filtering & Aggregation Altair Part 2		Yes
9	Mar 10th, 12th, 13th	Geospatial Data (Guest lecture)	Homework 3 due Homework 4 release	Yes
10	Mar 17th, 19th, 20th	Tableau Trees and Networks		
11	Mar 24th, 26th, 27th	Storytelling Scientific Visualization Validation & Evaluation	Homework 4 due Homework 5 release	
12	Mar 31st, Apr 2nd, 3rd	Group final presentation	Homework 5 due	
13	Apr 7th, 9th, 10th	Group final presentation		Yes
14	Apr 13th		Final group report due	