

# DATA 259: Ethics, Fairness, Responsibility, and Privacy in Data Science

Instructors: Drs. Amy Nussbaum & Amanda Kube Jotte

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Office: Ryerson 257A

Class Meetings: TTh 2:00 pm - 3:20 pm

Location: Kent Chem Lab 120

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## Course Description

Welcome to DATA 259! As per the University of Chicago course catalog:

“This course takes a technical approach to exploring societal issues of ethics, fairness, responsibility, and privacy related to the collection, use, and generalization of data. The course introduces fundamental techniques related to data acquisition, data cleaning, sampling, statistical modeling, experimental design, feature engineering, and modeling with machine learning. It then explores the problems that arise in different ways of performing those tasks, the fairness and bias of machine learning models, data visualizations, and user interfaces. In addition, the course covers anonymization and deanonymization, conceptions of privacy from a number of perspectives (statistical, legal, and philosophical), and compliance with contractual or legal requirements around data. The course concludes by discussing current controversies around the use and misuse of data. Through both programming assignments and discussions, students who complete the course will learn how to design systems that are inclusive and respectful of all data subjects.”(The University of Chicago 2024-2025)

## Course Structure

This course will incorporate multiple teaching modalities as well as multiple instructors. Students will complete readings and reading reflections, programming assignments, and a quarter-long

project. Class meetings will be composed of interactive lectures and in-class activities/discussion. Three class periods will be devoted entirely to discussing the readings. Class meetings will be facilitated by Profs Jotte and Nussbaum as well as guest speakers. We expect student attendance and attention during all class meetings no matter the planned material. We also expect behavior to be equally respectful toward all speakers.

## Topics to be Covered

Topics we will discuss throughout the quarter will include but are not limited to:

- Reproducibility
- Pitfalls in Inferential Statistics
- Data Context and Quality
- Causality and Experiments
- Machine Learning Applications
- Fairness and Interpretability in Machine Learning
- Visualization and Communication
- Data Privacy
- Data Lifecycle

A more detailed calendar will be posted to Canvas and updated as needed. This calendar is subject to change.

## Course Materials and Announcements

**Textbooks:** You do not need to purchase a printed textbook as we will be assigning online readings.

**Software:** You will need the ability to write Python code to complete programming assignments and projects for this course, so you must have access to a computer with Python3 installed and a way to create and edit Python Notebooks and scripts (whether through Jupyter Lab, VSCode, or some other IDE). You will also need to install Quarto for creating PDF files from your notebooks for assignment submission. Lastly, we will be using Github Classroom and requiring that you learn to use git and Github for this course. In order to use git on your computer, you will need to install it. See the links below for help installing the necessary tools for this course:

- Git: <https://docs.github.com/en/get-started/getting-started-with-git/set-up-git>
- Quarto: <https://quarto.org/docs/get-started/>
- Jupyter: <https://jupyter.org/install>
- VSCode: <https://code.visualstudio.com/docs/setup/setup-overview>

**Github Classroom:** We will be using Github Classroom to practice using Git and Github. You will be provided repositories on Github Classroom for your programming assignments and your project, You will be required to clone the repository, commit and push your work, and create a pull

request to submit your work. This is **in addition to** submitting your work on Gradescope. **If you do not have a Github account, you will need to create one.** Links to accept assignments will be provided via Canvas. The first time you accept an assignment you will need to sign in to Github and will be officially enrolled in the Classroom.

**Discussion:** We will use Ed and Canvas for all questions and discussions related to the class. Please post questions on Ed rather than sending an email. This serves multiple purposes. First, others may have the same question. Posting to Ed allows us to clarify the issue for everyone at the same time. Second, we are much more likely to respond in a timely manner if you post on Ed as both instructors and TAs will see the post. Lastly, your fellow students may be able to answer your question. One of the best ways to study is to think about how you would teach the material to someone else. We learn a lot by teaching others (Guerrero and Wiley 2021, etc).

Before posting on Ed, **please read the Ed post we've pinned titled 'Welcome! - Ed Discussion Guidelines'**. Using Ed and using it properly allows us to be much more responsive to all students than if we had to answer questions individually.

All announcements related to the class will be made in class, on Canvas, or on Ed. **We will assume that any announcement made on Canvas or on Ed is known to everyone in class within one business day of it being posted.** It is important to check Ed and Canvas regularly! You are responsible for all announcements made in lecture or online.

**Office Hours:** Office hours should be used to discuss lecture topics, readings, programming assignments, and other topics related to the course. However, you should not use office hours to ask specific questions about your project. Instead, you can sign up for an individual meeting with Prof. Jotte using the link provided on Canvas. This ensures that you can get our undivided attention during this time, that you don't have to wait for long periods of time during office hours, and that all questions asked during office hours can benefit all students at those office hours. Office hour times and locations will be posted to Canvas.

**Emails:** If you have something that you want to talk to us about individually, you are encouraged to send an email. However, we ask that you please include these things in every email that you send:

1. Your full name as it appears on Canvas
2. The number and/or name of the course you are in
3. The section number of the course you are in if applicable
4. The name or number of the assignment you are referring to if applicable

If you do not include these, **We will likely not respond.** We get an large number of emails every day. It saves an incredible amount of time if we do not have to search for your name across all of our courses to figure out who you are and what you need. If you do need to email us and do not receive a response within 48 hours, please check in again. It's totally possible that your email got buried in our inbox!

## Class Participation and Attendance

Please do your best to keep distractions during class to a minimum! This includes avoiding noisy foods/beverages, muting electronic devices, and keeping classroom entrances and exits as quiet as possible.

Attendance for this class is very important as much of the lecture material and discussion you cannot get from other sources. In addition, it is much easier for both you and us to answer your questions in person, in real time. We strongly encourage you to attend lectures and discussion days as often as you can, but please note that attendance alone does not constitute class participation (see grading policy below). If you are facing extenuating circumstances, such as illness or a family emergency, please let us know as soon as possible so we can plan together for the rest of the quarter.

## Grading Policy

Your course grade will be calculated as follows:

- Reading Responses (7 in total. 2% each. Total 14%) - We will assign readings most weeks. For your reading responses, we will ask a question about the readings and ask you to provide a brief answer. There are two dedicated discussion sections during the quarter where we will discuss the most interesting reading responses. We plan to share your answers with other students and instructors in the class. Let us know if you have concerns about this. No answer will be released in future courses or with people external to the class
- Programming Assignments (5 in total, 33%) - Programming assignments are an important component of your grade. You work on this individually, but you can discuss high-level ideas with other classmates. Your grade is based on the deliverables submitted to gradescope.
- Quarter-Long Project (50%) - The most important component of your grade. You will engage in a quarter-long group project (maximum of 3 people). You will deliver a short report and present your work to the class at the end of the quarter. The project will be graded with respect to: i) weekly progress reports ii) peer assessment iii) faculty committee assessment iv) written report v) presentation vi) quality of content.
- Class Participation (3%) - A small part of your grade comes from participation. If your grade ends up on a border between two grades (e.g. B+ and A-) this can sway your grade. Participation can be earned in several ways: i) being active on Ed, i.e., answering and commenting on questions (asking questions on Ed does not count) ii) actively engaging in discussion and asking questions in class.

A Pass/Fail grade may be given upon written request to the instructors before the reading period begins. The grade of P will be awarded only for work of C- quality or better. The grade of Incomplete will only be given in cases of emergency and will require a conversation with the instructors and Academic Adviser. The grade of W needs to be requested from and discussed with

your Academic Adviser by 5pm on Monday December 2nd.

## Assignment Submission Policy

Your assignments are to be submitted as PDFs via Gradescope. **You will be required to turn your Python Notebooks into PDFs using Quarto.** Please do not submit in any other format, including photos! In Gradescope, make sure to select the areas of the page corresponding to the questions on the assignment outline. It is much easier for the graders to give you feedback this way, and you will therefore get your homework assignments back faster. If a grader cannot find your answer, they will be told to mark it incorrect.

For programming assignments, there is also a place in Gradescope for you to submit your code as well as a Github repository. You are required to commit and push your code to Github and make a pull request as well as submit your code on Gradescope. **Please note that this means for programming assignments you must do 3 things to submit the assignment: 1) submit the pdf, 2) submit your code, 3) create a pull request.**

For project reports, be sure you are committing and pushing your work, but there is no need to make a pull request from your project repo. Your reports should be submitted to Gradescope as PDFs as described above.

Please submit all assignments on time! If you get behind, it will be difficult to catch up, and chronic late work means that you won't get the most out of our class time together. **You will be allowed to ask for one extension during the quarter** – any more than that is likely to lower your chances of success in the course. It is best if you save this extension for a time when there are unforeseen issues or situations making it difficult for you to complete your assignment. We will not drop additional assignment grades or grant additional extensions. However, if you are facing extenuating circumstances, such as illness or a family emergency, please let us know as soon as possible so we can plan together for the rest of the quarter.

## Use of Generative AI

In this course, you will not be allowed to use ChatGPT, Google Bard, or any similar large language models unless given prior permission from the instructors. Doing so will be treated as a violation of academic integrity. If you feel that use of generative AI would be useful either for your project or other aspects of the course, you are encouraged to speak with us.

## Academic Integrity

Acting with academic integrity means, in brief, not submitting the statements, work, or ideas of others as one's own. Students are expected to comply with University regulations regarding honest

work, **especially since this is an ethics course!!** If you are in doubt about what constitutes academic dishonesty, speak with us before the assignment is due. Failure to maintain academic integrity on an assignment will result in a penalty befitting the violation, up to and including failing the course and further University sanctions. For more information, consult the student manual <https://studentmanual.uchicago.edu/academic-policies/academic-honesty-plagiarism/>.

## Accommodations

**Accessibility:** Students with disabilities who have been approved for the use of academic accommodations by Student Disability Services (SDS) and need a reasonable accommodation(s) to participate fully in this course should follow the procedures established by SDS for using accommodations. Timely notifications are required in order to ensure that your accommodations can be implemented. Please meet with us to discuss your access needs in this class after you have completed the SDS procedures for requesting accommodations. For more information, visit [disabilities.uchicago.edu](https://disabilities.uchicago.edu).

**Religious Observation:** As per the Office of the Provost, “The University of Chicago is home to students of all the worlds major religions and, though firmly a secular institution, values the rich diversity of spiritual expression and practice found on campus. It is therefore the policy of the University that students who miss class, assignments, or exams to observe a religious holiday must be accommodated as follows:

- absences may not be counted as a missed class in any course in which attendance is a measure of academic performance;
- reasonable extensions of time must be given, without academic penalty, for missed assignments; and
- exams must be reasonably rescheduled without academic penalty.”

Students must inform their instructors in writing of their need to observe a religious holiday reasonably well in advance of the absence, preferably at the beginning of the quarter. It is incumbent on the student who misses a class to catch up on any material discussed and assignments given during that class period.

We are happy to work with students to accommodate their needs—as mentioned, please meet with us during office hours or schedule another time outside of class if you have any questions or concerns.

**Accommodations based upon sexual assault:** The University is committed to offering reasonable academic accommodations to students who are victims of relationship or sexual violence, regardless of whether they seek criminal or disciplinary action. If a student comes to us to discuss or disclose an instance of sexual assault, sex discrimination, sexual harassment, dating violence, domestic violence or stalking, or if we otherwise observe or become aware of such an allegation, we will keep the information as private as we can, but our students should be aware that **as faculty members of University of Chicago, we are required to immediately report it to a Department Chair or Dean or directly to the University’s Title IX Coordinator.** Additionally, you can report incidents or complaints to the Sexual Assault Dean-on-Call (SADoC)

by calling 773-834-HELP, or by contacting UCPD at (773)702-8181 or your local law enforcement agency. See <https://studentmanual.uchicago.edu/university-policies/the-university-of-chicago-policy-on-title-ix-sexual-harassment/>.

**Bias Reporting:** The University has a process through which students, faculty, staff and community members who have experienced or witnessed incidents of bias, prejudice or discrimination against a student can report their experiences to the University’s Bias Education and Support (BEST) team. See: <https://diversityandinclusion.uchicago.edu/resources/reporting-incidents/> \

**Mental Health:** Student Wellness’ Mental Health professional staff members work with students to resolve personal and interpersonal difficulties, many of which can affect the academic experience. These include conflicts with or worry about friends or family, concerns about eating or drinking patterns, and feelings of anxiety and depression. See: <https://wellness.uchicago.edu/mental-health/>

**Preferred Name and Gender Inclusive Pronouns:** In order to affirm each person’s gender identity and lived experiences, it is important that we check in with others about pronouns. This simple effort can make a profound difference in a person’s experience of safety, respect, and support. See: <https://inclusion.uchicago.edu/lgbtq-student-life/lgbtq-resources/> If you prefer to be addressed using a name or pronouns other than what is visible on Canvas, please let us know so that we can may accommodate.

## References:

Guerrero, Tricia A, and Jennifer Wiley. 2021. “Expecting to Teach Affects Learning During Study of Expository Texts.” *Journal of Educational Psychology* 113 (7): 1281.  
The University of Chicago. 2024-2025. “2024-2025 Catalog, Data Science.”