

CS 457 Introduction to Data Science and Analytics

Fall, 2026

The course website is <http://www.cs.unh.edu/~ruml/cs457>.

Overview

This class is an introduction to the manipulation and analysis of data. Data is everywhere these days and it's important to be able to understand how others are using it and to be able to harness it yourself! We'll learn how to write simple programs with Python and we'll also discuss ethical and social issues that arise in applications of data science. No programming or statistics experience is assumed. This course fulfills the Discovery ETS category and it is required for the BS in Data Science and the BS in Analytics.

By the end of the course, you will

1. be able to load, analyze, and visualize data using Python and packages such as pandas and matplotlib,
2. be familiar with some of the most well-known ethical scandals that have arisen with the deployment of data analytic systems and be able to discuss the ethical issues that they raise, and
3. be able to complete analytics tasks under a deadline.

The course assumes that you have access to a computer with a modern web browser, ideally a personal laptop that you can bring to class. (If you are new to programming, I recommend that you use Google Colab for your work but you can also install Python locally on your computer if you want!) This is a 4 credit class so, under the Federal definition of a credit hour, you should expect roughly 12 hours of work per week (3 hours in class and 9 outside).

Contact Info

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Please come to our office hours! We're always interested in talking with students. If you'd like to talk to us but can't attend office hours, it's easy to set up a time — just email us or catch us after class. However, if you have a specific question about a question on an assignment, please **do not** talk with us or email us — please instead post on the course forum at piazza.com! This ensures that you get the fastest possible response and that everyone in the course stays on the same page.

The course website is listed at the top of this page — assignments and other course materials will be posted there. This course does not use myCourses/Canvas.

Required Texts

1. Wes McKinney, *Python for Data Analysis*, Third Edition, O'Reilly Media, 2022.
2. David Martens, *Data Science Ethics: Concepts, Techniques, and Cautionary Tales*, Oxford University Press, 2022.

Personally, I love having physical books — they work even during a power outage and while you are waiting for the bus! But I'll mention that both of these books are available on-line through the UNH library — see the course website for links.

Evaluation

Tentative weighting:

70%	quizzes (start of every class)
10%	homework (roughly one per class)
9%	midterm exam
11%	final exam

Quizzes and exams will be done without notes, using pen and paper only (no devices allowed). The final exam will be cumulative, but with emphasis on the second half of the course. I reserve the right to change the weighting of the course components at any time.

The quizzes and exams in this class are meant to be challenging. To mitigate this, I use a mapping from scores to letter grades that gives higher letter grades than you may be used to for a particular numeric score. (For example, earning 50% of available points maps to a D, not an F.) You will receive occasional email with your current tentative final grade. However, I reserve the right to change the mapping at any time. After work is handed back, you may ask for it to be re-graded within 7 days. Note that the new grade will take effect whether it is higher or lower.

General Policies

At each class, I will hand out suggested work that will help you prepare for the next quiz. Feel free to study using AI tools and/or collaborative group work and/or whatever works best for you. You are welcome to read additional books or articles and consult additional resources beyond those that I suggest, but you should recognize that not all information on the internet or provided by a chatbot is reliable! Pay attention to whether anyone else (like an editor or publisher) vetted the materials you read.

All work on any quiz or exam must be your own. If you cheat, you will receive a failing grade in the course. (For some students, failing the course may have additional repercussions, including loss of financial aid or dismissal from the University.) If you have any questions or concerns about what might count as cheating, please contact the course staff immediately.

Please participate in class and don't sleep, text, or work on something else. If you bring food, please bring enough for everyone.

If you need to isolate due to serious illness, please let me know as soon as possible so that we can discuss how you can do the quiz. If you need to miss class for a planned activity (such as an intercollegiate sporting event, jury duty, military service, or religious observance), please let me know as soon as possible (and at least two weeks ahead of time) so that we can discuss how you can do the quiz. If you are dealing with extenuating circumstances that will interfere with your work for more than a day or two, please contact me as soon as possible and have the Dean of Students send me a letter. If you have a disability that requires accommodations, please have Student Accessibility Services (SAS) contact me right away so that I can provide proper accommodation. After they have done so, please arrange a meeting with me so that I can be sure your needs are met. If you find emotional or mental health issues interfering with your performance, contact Psychological and Counseling Services (www.unh.edu/pacs). For help with time management and study skills, contact the Center for Academic Resources (www.unh.edu/cfar).

Please make every effort to attend the exams and poster presentation, as they will only be done once.