

CS 133 Foundations of Data Science

Syllabus - Fall 2025

CS 133 Foundations of Data Science (3-0-3) Introduction to Python programming and common Python data science libraries. Simple data visualization. Introduction to basic statistics including distributions and random sampling, testing statistical hypotheses, estimation, prediction, comparison, causality, and decisions. Introduction to classification methods. COREQ: MATH 143.

Meeting time and place

Online

Instructor

Casey Kennington

Office Hours: M 12-1pm, W 10-11am, Th 10-11am

Office location: CCP 254

Email address: caseykennington@boisestate.edu

Before emailing, please use Discussions in Canvas

Student well-being

If you are struggling for any reason (COVID, relationship, family, or life's stresses) and believe these may impact your performance in the course, I encourage you to contact the Dean of Students at (208) 426-1527 or email deanofstudents@boisestate.edu for support. Additionally, if you are comfortable doing so, please reach out to me and I will provide any resources or accommodations that I can. If you notice a significant change in your mood, sleep, feelings of hopelessness or a lack of self worth, consider connecting immediately with Counseling Services (1529 Belmont Street, Norco Building) at (208) 426-1459 or email healthservices@boisestate.edu.

Welcome

Welcome to Foundations of Data Science! It doesn't matter if you've never coded, programmed, or understand what science is, this class is meant to help you start from where you are to learn the foundational knowledge required to understand data science.

Data Science, also known as data-driven science, is a field of scientific inquiry which brings together computer science, statistics, mathematics, and information science, and which can be applied to any other field. In this course, we will learn the basics of statistical thinking, analysis, and inference using the Python programming language as a tool in conjunction with hands-on analysis of real-world datasets, including economic data, document collections, geographical data, and social networks. It delves into social issues surrounding data analysis such as privacy and design.

Topics

- Python basics
- Simple data visualization (graphs and tables)
- Distributions and random sampling
- Testing statistical hypotheses
- Estimation
- Prediction
- Comparison, causality, and decisions

Course learning outcomes

After successful completion of this course, students will be able to:

- Learn the basics of programming for data science using Python
- Apply knowledge of Python programming to novel situations
- Apply inferential thinking to real-world phenomenon by
 - Thinking computationally to make use of the data
 - Analyzing the data to understand the phenomenon
 - Making inferences based on that analysis

Required materials/texts

Computational and Inferential Thinking The Foundations of Data Science, by Ani Adhikari and John DeNero (free online)

Assessments (How you will demonstrate your learning)

Do your own work. You can work with others on assignments and projects, but you need to demonstrate that you understand the material. Using external resources is expected, but code or written work that you submit must be done by you. ChatGPT or another generative AI LLM writing your code or project report is not your work.

Grade distribution

- Assignments are pass/fail (denoted on Canvas as 1=pass, 0=fail). If no grade is assigned, assume that you've failed. To pass an assignment, you have to successfully complete all of the questions correctly.
- You must pass all of your assignments before you are eligible to take the midterm and the final. For the final, that means all assignments; for the midterm that means the assignments up until the midterm is due.
- Grading breakdown: Midterm is 50%, Final is 50%.
- I do not assign +/- for final grades. $\geq 90 \rightarrow A$, $\geq 80 \rightarrow B$, $\geq 70 \rightarrow C$, $\geq 60 \rightarrow D$, else F.

Late work policy

- Late Work: You must pass all of the assignments to qualify for the midterm and the final exams. Assignments are due on the dates indicated on Canvas. You can retry assignments as many times as necessary to pass.

Other Policies

- Learning policy: You must do your own work. If you "get help" from others in the class or others who have already taken the class such that they are giving

you answers to assignment problems, then you are not doing your own work. You cannot learn this stuff and be a good software developer by copying what others have done. If you find yourself falling behind or not understanding any concept from this course, you are better off talking to me about it. We can work something out. I'm here to help you.

- Generative AI policy: This is an introductory programming class. I suggest that you do not use Generative AI at this point in your learning. That can and will come later. You will learn the concepts of this class much more deeply if you do your own work.
- Absence policy: This is an online class, so there aren't issues for absences.
- Announcements: From time to time, I will make announcements regarding the course materials, structure (such as assignment due dates, changes, or corrections), etc., in Canvas. You are responsible to watch out for and respond to these announcements.
- Conduct and Classroom Civility: I expect you to behave in a civil, respectful manner in all class interactions, both in official meetings such as lectures and out-of-class activities, and to contribute to a constructive learning environment. The Recurse Center Social Rules are a good source of guidance on how to maintain a constructive and educational environment.
- If you experience or witness harassment of any form, please let me know as soon as possible.
- Academic Integrity - As both a scientist and a student, you are expected to do your own work, attribute sources, and respect the legal and moral rights of others with respect to their work; as a student, you are also required to abide by the Student Code of Conduct. While I aim to allow you to make reasonable use of resources, cheating (including copying code, using unauthorized resources during tests, etc.) will not be tolerated. If you are found to be cheating, the penalty may range from failing the assignment to failing the course, and will also be reported to the university. More below.
- Disability Accommodations: If you need particular accommodations to be able to fully participate in this course, please talk with me as soon as possible. For format changes such as extended time for exams, I may ask that you provide documentation from the Office of Disability Services, so if you have such documentation please bring it.
- Safety Information: You can find information about safety in the College of Engineering and the City Plaza building (where Computer Science is located) here: <http://coen.boisestate.edu/cs/safetydocument>
- [Links to an external site.](#)

What you can expect of me

I will try to grade and get you feedback on assignments within one week of the due date (I will inform you of exceptional cases that might require more time for grading).

Planning for success

- See Expectations above.
- If you get behind on assignments and projects, please come to my office hours.

This course was designed with you in mind

I developed this course to provide a welcoming environment and effective, equitable learning experience for all students. If you encounter barriers in this course, please bring them to my attention so that I may work to address them.

Academic integrity

To create a welcoming, engaging, and effective learning environment, I expect all of us to exhibit behavior that reflects Boise State's [Statement of Shared Values](#). The Shared Values emphasize academic excellence, caring, citizenship, fairness, respect, responsibility, and trustworthiness. In keeping with these values, I expect students in this course to uphold the standards outlined in the Boise State University [Student Code of Conduct](#).

I expect you to behave in a civil, respectful manner in all class interactions, both in official meetings such as lectures and out-of-class activities, and to contribute to a constructive learning environment. If you experience or witness harassment of any form, please let me know as soon as possible.

As both a scientist and a student, you are expected to do your own work, attribute sources, and respect the legal and moral rights of others with respect to their work; as a student, you are also required to abide by the Student Code of Conduct. While I aim to allow you to make reasonable use of resources, cheating (including copying code, using unauthorized resources during tests, etc.) will not be tolerated. If you are found to be

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