

# Syllabus

## INFO 2950 - Introduction to Data Science

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### Instructor

- Dr. Benjamin Soltoff
- Office: Gates Hall 216
- Email: [soltoffbc@cornell.edu](mailto:soltoffbc@cornell.edu)
- Office hours: After discussion section meetings

### Course logistics

- Meets MTWTF 10:00am - 11:20am and 1:00pm - 2:20pm for 28 sessions
- Discussion sections meet MTWTF 2:35pm - 3:30pm for 14 sessions
- 4 credits, offered for a letter grade
- Prerequisites: (MATH 1710 or equivalent AND CS 1110 or CS 1112) OR permission of instructor

### Course description

This is an applied introductory course for learners who wish to harness growing digital and computational resources. The focus of the course is on using data to identify patterns, evaluate the strength and significance of relationships, and generate predictions using **data**. These techniques are implemented using a **reproducible workflow** through the use of programming languages and version control software. Major emphasis is placed on a pragmatic understanding of core principles of programming and packaged implementations of methods. Students will learn how to use data to make effective arguments, in a way that promotes the ethical usage of data.

### Course learning objectives

By the end of the semester, you will...

- Conduct exploratory data analysis through data wrangling and munging as well as visualizations and summary statistics.
- Identify patterns in data to make predictions or to identify associations between variables.
- Evaluate the strength of patterns using statistical and substantive significance.
- Implement data science workflows using common, reproducible methods and software tools.
- Use data ethically and responsibly.

### Office hours

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Professor Soltoff's office hours are immediately following discussion section meetings.

## Textbooks

All books are **freely available online**.

<a href="#"><u>R for Data Science, 2e</u></a>	Grolemund, Wickham	O'Reilly, 2nd edition, 2022	Hard copy only available of 1st edition
<a href="#"><u>Introduction to Modern Statistics</u></a>	Çetinkaya-Rundel, Hardin	OpenIntro Inc., 1st Edition, 2021	Hard copy available <a href="#"><u>on Amazon</u></a>

## Course community

We want you to feel like you belong in this class and are respected. Cornell University (as an institution) and we (as human beings and instructors of this course) are committed to full inclusion in education for all persons. If for any reason you feel that we have failed these goals, please either let us know or [report it](#), and we will address the issue.

Services and reasonable accommodations are available to persons with temporary and permanent disabilities, to students with DACA or undocumented status, to students facing mental health or other personal challenges, and to students with other kinds of learning challenges. Please feel free to let me know if there are circumstances affecting your ability to participate in class. Some resources that might be of use include:

- Office of Student Disability Services: <https://sds.cornell.edu>
- Cornell Health CAPS (Counseling & Psychological Services): <https://health.cornell.edu/services/counseling-psychiatry>
- Undocumented/DACA Student support: <https://dos.cornell.edu/undocumented-daca-support/undergraduate-admissions-financial-aid>

## Academic accommodations

We want all students to have the opportunity to be successful in this course. Accommodations can help provide some flexibility and equitable classroom access.

Per [university policy](#), this course provides the following accommodations:

- [Disability Accommodations](#)
- [Religious-Observance Accommodations](#)
- [Title IX Accommodations](#)
- [Varsity Athlete Accommodations](#)
- [Medical Accommodations](#)
- [Military Service](#)
- [Other Accommodations](#)

## Accessibility

If there is any portion of the course that is not accessible to you due to challenges with technology or the course format, please let me know so we can make appropriate accommodations.

[Student Disability Services](#) is available to ensure that students are able to engage with their courses and related assignments. Students should be in touch with Student Disability Services to [request or update accommodations](#) under these circumstances.

If you have an approved SDS accommodation, please send a copy of this letter to the instructors at [soltoffbc@cornell.edu](mailto:soltoffbc@cornell.edu) so we can ensure your accommodations are implemented in this course.

## Communication

All lecture notes, assignment instructions, an up-to-date schedule, and other course materials may be found on the course website: [info2950.infosci.cornell.edu](http://info2950.infosci.cornell.edu).

Announcements will be posted through Canvas Announcements periodically. Please check Canvas (or ensure Canvas announcements are forwarded to your email) to ensure you have the latest announcements for the course.

## Where to get help

- If you have a question during lecture or discussion, feel free to ask it! There are likely other students with the same question, so by asking you will create a learning opportunity for everyone.
- The course staff is here to help you be successful in the course. You are encouraged to attend office hours to ask questions about the course content and assignments. Many questions are most effectively answered as you discuss them with others, so office hours are a valuable resource. Please use them!
- Outside of class and office hours, any general questions about course content or assignments should be posted on the [course discussion forum](#). There is a chance another student has already asked a similar question, so please check the other posts on GitHub Discussions before adding a new question. If you know the answer to a question posted on the discussion board, I encourage you to respond!

## Email

If there is a question that's not appropriate for the public forum, please email us at [soltoffbc@cornell.edu](mailto:soltoffbc@cornell.edu). Barring extenuating circumstances, we will respond to INFO 2950 emails within 48 hours Monday - Friday. Response time may be slower for emails sent Friday evening - Sunday.

## Activities & Assessment

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The activities and assessments in this course are designed to help you successfully achieve the course learning objectives. They are designed to follow the **Prepare, Practice, Perform** format.

- **Prepare:** Includes reading assignments and lectures to introduce new concepts and ensure a basic comprehension of the material. The goal is to help you prepare for the in-class activities during lecture.

- **Practice:** Includes in-class application exercises where you will begin to apply the concepts and methods introduced in the prepare assignment. The activities will be graded for completion, as they are designed for you to gain experience with the statistical and computing techniques before working on graded assignments.
- **Perform:** Includes labs, homework, exams, and the project. These assignments build upon the prepare and practice assignments and are the opportunity for you to demonstrate your understanding of the course material and how it is applied to analyze real-world data.

## Lectures (Prepare)

Part of the class time will be lectures that introduce new concepts or review topics from the preparation materials. Lectures will **not** repeat everything in the readings, they will instead highlight important and known to be complex concepts and will be supplemented with live coding activities. You are expected to attend every lecture.

## Application exercises (Practice)

A majority of the in-class lectures will be dedicated to working on Application Exercises (AEs). These exercises will give you an opportunity to apply the statistical concepts and code introduced in the prepare assignment. These AEs are due the same day as the corresponding lecture period. For example, AEs from Tuesday lectures are due Tuesday by 11:59 pm, and AEs from Thursday lectures are due Thursday by 11:59 pm.

Because these AEs are for practice, they will be graded based on completion, i.e., a good-faith effort has been made in attempting all parts. Successful on-time completion of **at least 85%** of AEs will result in full credit for AEs in the final course grade.

## Labs (Perform)

In labs, you will apply the concepts discussed in lecture to various data analysis scenarios, with a focus on the computation. Lab assignments can be completed with up to two partners, and all team members are expected to contribute equally to the completion of each assignment. Lab assignments will be completed using Quarto, correspond to an appropriate GitHub repository, and submitted for grading in Gradescope.

Labs are due 11:59 pm on the indicated due date.

*The lowest lab grade will be dropped at the end of the semester.*

## Homework (Perform)

In homework, you will apply what you've learned during lecture and lab to complete data analysis tasks. You may discuss homework assignments with other students; however, homework should be completed and submitted individually. Similar to lab assignments, homework must be typed up using Quarto and GitHub and submitted as a PDF in Gradescope.

Homework assignments are due 11:59 pm on the indicated due date.

*The lowest homework grade will be dropped at the end of the semester.*

## Exams (Perform)

There will be three take-home, open-note exams. Through these exams you have the opportunity to demonstrate what you've learned in the course thus far. Each exam will include analysis and computational tasks related to the content in the prepare, practice, and perform assignments.

More details about the content and structure of the exams will be discussed during the semester.

## Grading

The final course grade will be calculated as follows:

Category	Percentage
Homework	30%
Labs	20%
Exams	35%
Application Exercises	15%

The final letter grade will be determined based on the following thresholds:

Letter Grade	Final Course Grade
A+	$\geq 98$
A	93 - 97.99
A-	90 - 92.99
B+	87 - 89.99
B	83 - 86.99
B-	80 - 82.99
C+	77 - 79.99
C	73 - 76.99
C-	70 - 72.99
D+	67 - 69.99

Letter Grade	Final Course Grade
D	63 - 66.99
D-	60 - 62.99
F	< 60

## Course policies

### Academic honesty

#### TL;DR: Don't cheat!

Please abide by the following as you work on assignments in this course:

- You may discuss individual homework and lab assignments with other students; however, you may not directly share (or copy) code or write up with other students. For team assignments, you may collaborate freely within your team. You may discuss the assignment with other teams; however, you may not directly share (or copy) code or write up with another team. Unauthorized sharing (or copying) of the code or write up will be considered a violation for all students involved.
- You may not discuss or otherwise work with others on the exams. Unauthorized collaboration or using unauthorized materials will be considered a violation for all students involved. More details will be given closer to the exam date.
- **Reusing code:** Unless explicitly stated otherwise, you may make use of online resources (e.g. StackOverflow) for coding examples on assignments. You may not directly copy and paste from these sources, but instead you need to adapt the code to fit your specific task. You must explicitly cite where you obtained the code using a code comment `#` immediately near the appearance of the reused code in the file. Any recycled code that is discovered and is not explicitly cited will be treated as plagiarism.
- **Automated help:** you may use AI code helpers such as GitHub CoPilot and ChatGPT as reference tools only. We recognize that these tools are becoming quite powerful, but relying on them prevents you from meeting the core learning objectives of this course. All code you submit in this class must be written by a human being – you.

Any violations in academic honesty standards as outlined in the [Cornell University Code of Academic Integrity](#) and those specific to this course will result in a 0 for the assignment (or possibly more) and will be reported to the College of Engineering Academic Integrity Hearing Board.

### Extra credit

Students can earn up to a maximum of 1 percentage point towards their final grade through the [extra credit assignment](#). This is the only opportunity for extra credit in the course.

### Late work & extensions



The due dates for assignments are there to help you keep up with the course material and to ensure the course staff can provide feedback within a timely manner. We understand that things come up periodically that could make it difficult to submit an assignment by the deadline. Note that the lowest homework and lab assignment will be dropped to accommodate such circumstances.

## Late work

- A **slip day** allows you to submit an assignment 24 hours after the deadline and still receive credit without a late penalty. You are provided with a total of **6 slip days** for the entire semester. Slip days may be used on **homework and lab assignments**. You can use up to 1 slip day for a given homework or lab assignment.

To use your slip days, just submit your assignment late. No need to email telling us you are submitting using your slip days. Check Canvas to see how many of your slip days you have used before submitting an assignment late.

If you use a slip day, **do not submit anything to Gradescope before the submission deadline**. We may begin grading before the slip day deadline and we will grade whatever submission we see in Gradescope.

If you run out of slip days or fail to submit your assignment prior to the slip day deadline without prior permission then your assignment will not be accepted.

- There is no late work accepted for application exercises, since these are designed to help you prepare for labs and homework.
- There is no late work accepted for project components.
- The late work policy for exams will be provided with the exam instructions.

## Waiver for extenuating circumstances

If you need a bit of extra time, **please use your slip days**. Slip days are specifically intended for legitimate reasons for needing an extension like disability, religious observance, Title IX, student athletics, medical problems, and military service.

If using your slip days for accommodations is not working for you or if you have an SDS accommodation which includes deadline flexibility, you may request a deadline extension in-advance of the deadline. We will work with you to develop reasonable accommodations that align with your individual situation.

To request a deadline extension:

1. Commit and push the work you have completed up to this point on the assignment.
2. Email [soltoffbc@cornell.edu](mailto:soltoffbc@cornell.edu). In your email clearly state
  - a. The assignment
  - b. What you have already completed on the assignment.
  - c. What you have left to complete.
  - d. Your proposed deadline extension (e.g. *Monday, February 8th at 11:59pm.*)

## Regrade requests

Regrade requests must be submitted on Gradescope within 48 hours of when an assignment is returned. Regrade requests will be considered if there was an error in the grade calculation or if you feel a correct answer was mistakenly marked as incorrect. Requests to dispute the number of points deducted for an incorrect response will not be considered. Note that by submitting a regrade request, the entire question will be graded which could potentially result in losing points.

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