Syllabus and Course Structure

Stat 151A: Linear Models

Ryan Giordano

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Objectives

By the end of the course, you should be able to

- Express standard regression analyses both mathematically and in R code
- Critically relate the intended use of a regression analysis to its methods and assumptions

- Identify common practical and conceptual pitfalls of regression analysis, and to improve the analysis when possible
- Communicate the process and results of a regression analysis simply and clearly for a broad audience, using well-organized prose, reproducible code, and effective data visualizations.

Assignments, Exams, and Grading

Grading.

The weighting for the grades will be:

- Homework completion: 25%
- Lab assignment completion: 20%
- Lab surveys: 5%
- Quizzes (each weighted equally): 25%
- Final exam: 15%
- Final project: 10%

Letter grades will be assigned according the weighted points earned. A score within [90-93%) will earn an A-, [93-97%) will earn an A, and [97-100%) will earn an A+. Scores in the 80's will receive B's, in the 70's will receive C's, in the 60's will receive D's, with the same thresholds for plusses and minuses. Scores below 60% will be considered failing.

Grades are non-negotiable, and will not be curved except where otherwise noted.

Attendance and labs

Lecture attendance will not be tracked or graded, although it will be highly encouraged. Laptops will not be permitted in lectures. Ipads and phones will be permitted during lecture for note-taking as long as their use doesn't inhibit participation.

Lab attendance is encouraged by not required. On or shortly before lab project days, we will release an assignment on the website that will be due the same Wednesday evening. The expectation is that students would work on this in lab, but they will be free to work on it at home instead if they like. We will also have a weekly "lab survey" to get feedback on what topics (if any) you would like extra help with.

(See "drops" below for emergency situations).

Homework.

In this class, homework will serve both as preparation for quizzes and as a way to teach supplemental material not covered in the lectures. The purpose of homework is for you to attempt to work through problems on their own.

Homework will be graded on completion only. Copying from other students or from generative AI provides poor preparation for the quizzes, finals, and labs, and will not provide any credit beyond attempting the homework problems on your own. We strongly encourage students to submit their own best efforts, even if imperfect, rather than copy a correct answer! Solutions will be provided before the quiz, and students are encouraged to check their own work for correctness.

Homework assignments will be due on Gradescope roughly every two weeks on Sundays no later at 9pm. (See below for more about Gradescope.) All homework will be due as a pdf via Gradescope unless otherwise noted. Students can use whatever tool they like to produce the pdf (latex, Rmd, Jupyter, scanned handwritten notes for mathematical problems, etc.).

Quizzes.

Each unit will have have an thirty-minute in-class quiz. These quizzes will take the place of a sitdown midterm exam (i.e., there will be no midterm). No external materials, including cheatsheets, will be allowed during quizzes.

Final group project.

Students will form groups of up to three people to submit a final project consisting of an analysis of a real dataset applying principles and techniques from the course.

Final exam.

An in-person pencil-and-paper final exam will be scheduled during the usual final exam week. No cheatsheet will be allowed.

Turning in assignments

You will be turning in your assignments on a platform called Gradescope. This is also the platform where your assignments will be graded, so you can return there to get feedback on your work. You are welcome to file a regrade request if you notice that we made an error in applying the rubric to your work, but be sure to do so **within a week** of the grades being posted. We will not accept regrade requests past that point.

In order to provide flexibility around emergencies that might arise for you throughout the semester (for example, missing a quiz due to COVID), we will apply for everyone:

- One emergency drop for quizzes
- One emergency drops for homework
- One emergency drop for a lab
- Three emergency drop for a lab survey

For example, this means that we will drop your lowest quiz score (which would be a 0 if you were absent) before computing your quiz average. Unless students are excused by official university policies, additional drops will not be given. We strongly recommend that students reserve their emergency drops for real emergencies.

Late Work

Late work will not be accepted. If work is not submitted on time, it will receive a zero. It is entirely the students' responsibility to turn work in on time. If there is any uncertainty concerning this policy, please discuss your concerns with the professor, not with the GSI or reader.

Prerequisites

This course will assume familiarity with the material in STAT 135 or STAT 102. STAT 135 implies other prerequisite courses (STAT 134 and its prerequisites). In particular, you must have had linear algebra, so you should be familiar with basic matrix operations, vector subspaces and projections, rank and invertibility of matrices, and quadratic forms.

This semester of Stat151A will include labs and projects in the R language. Proficiency with R at the level of the D-lab fundamentals course is a prerequisite. Students with a strong background in another programming language (e.g. Python) will be permitted to enroll with the understanding that they will learn R on their own prior to the start of the class.

RStudio

The software that we'll be using for our data analysis is the free and open-source language called R that we'll be interacting with via software called RStudio. If you have difficulty installing RStudio, please reach out to an instructor.

Course website

All of the assignments will be posted to the course website at https://stat151a.berkeley.edu/spring-2026/. This also holds the course notes, the syllabus, and links to Gradescope and RStudio.

Policies

Course Culture

Students taking STAT151A come from a wide range of backgrounds. We hope to foster an inclusive and supportive learning environment based on curiosity rather than competition. All members of the course community—the instructor, students, tutors, and readers—are expected to treat each other with courtesy and respect.

You will be interacting with course staff and fellow students in several different environments: in class, over the discussion forum, and in office hours. Some of these will be in person, some of them will be online, but the same expectations hold: be kind, be respectful, be professional.

If you are concerned about classroom environment issues created by other students or course staff, please come talk to the instructors about it.

Collaboration policy

You are encouraged to collaborate with your fellow students on problem sets and labs, but the work you turn in should reflect your own understanding and all of your collaborators must be cited. The individual component of quizzes, reading questions, and exams must reflect only your work.

Researchers don't use one another's research without permission; scholars and students always use proper citations in papers; professors may not circulate or publish student papers without the writer's permission; and students may not circulate or post non-public materials (quizzes, exams, rubrics-any private class materials) from their class without the written permission of the instructor.

The general rule: you must not submit assignments that reflect the work of others unless they are a cited collaborator.

The following examples of collaboration **are** allowed and in fact encouraged!

- Discussing how to solve a problem with a classmate.
- Showing your code to a classmate along with an error message or confusing output.
- Posting snippets of your code to the discussion forum when seeking help.
- Helping other students solve questions on the discussion with conceptual pointers or snippets of code that doesn't whole hog give away the answer.
- Googling the text of an error message.
- Copying small snippets of code from answers on Stack Overflow.

The following examples are **not** allowed:

- Leaving a representation of your assignment (the text, a screenshot) where students (current and future) can access it. Examples of this include websites like course hero, on a group text chain, over discord/slack, or in a file passed on to future students.
- Accessing and submitting solutions to assignments from other students distributed as above. This includes copying written answers from other students and slightly modifying the language to differentiate it.
- Searching or using generative AI to produce complete problem solutions.
- Working on the final exam or individual quizzes in collaboration with other people or resources. These assignments must reflect individual work.
- Submitting work on an exam that reflects consultation with outside resources or other people. Exams must reflect individual work.

If you have questions about the boundaries of the policy, please ask. We're always happy to clarify.

Violations of the collaboration policy

The integrity of our course depends on our ability to ensure that students do not violate the collaboration policy. We take this responsibility seriously and forward cases of academic misconduct to the Center for Student Conduct.

Students determined to have violated the academic misconduct policy by the Center for Student Conduct will receive a grade penalty in the course and a sanction from the university which is generally: (i) First violation: Non-Reportable Warning and educational intervention, (ii) Second violation: Suspension/Disciplinary Probation and educational interventions, (iii) Third violation: Dismissal.

Again, if you have questions about the boundaries of the collaboration policy, please ask!

Laptop policy

Laptops will not be permitted in lecture, but will be required for labs.

If you do not have access to a laptop, you can borrow one from the University library. See the UC Berkeley hardware lending program for more details. The Student Technology Equity Program is another good resource. Feel free to contact the instructor if you have concerns about your access to needed technology.

COVID policy

Maintaining your health and that of the Berkeley community is of primary importance to course staff, so if you are feeling ill or have been exposed to illness, please do not come to class. All of the materials used in class will be posted to the course website. You're encouraged to

reach out to fellow students to discuss the class materials or stop by group tutoring or office hours to chat with a tutor or the instructor.

Accomodations

Stat 151A is a course that is designed to allow all students to succeed. If you have letters of accommodations from the Disabled Students' Program, please share them with your instructor as soon as possible, and we will work out the necessary arrangements.

If you find yourself in a difficult situation that prevents you from doing your coursework but does not constitute a disability, we will provide accomodations according to official recommendations from the center for support and intervention (CSI). You may also see Berkeley's basic needs website for more assistance.

Please note that, as a matter of policy, we do not offer accommodations (late homework assignments, missed quizzes, and so on) without support from the DSP or CSI offices. This is to avoid putting the course staff in the difficult position of judging whose situation is appropriately urgent. However, we encourage you to reach out to the professor if you have any questions about this policy or if you find yourself in a difficult situation and don't know how best to proceed.

> **Note**
>
> These course polices are based on a template and text generously shared by Andrew Bray. Thanks, Andrew!