Math 180A: Introduction to Probability

Fall 2021

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Course Description

Math 180A is an introductory upper-division probability course for students who have taken calculus. It serves as a prerequisite for further courses in stochastic processes, statistics, and financial mathematics, including Math 180B/C, Math 181A/B, and Math 189. A list of topics covered in the course, together with a tentative lecture schedule, is posted on the course webpage.

Prerequisites

The prerequisite is calculus at the level of **Math 20C** or **MATH 31BH**. In addition, prior or concurrent enrollment in **Math 109** is strongly recommended. Students should be comfortable with topics from calculus including single and multiple integrals, the fundamental theorem of calculus, and sequences and series. If you are unsure about your level of preparation, I encourage you to reach out!

Note that Math 109 is a prerequisite for Math 180B, so if you plan to take Math 180B next quarter, it is important to complete Math 109 by the end of this quarter.

Textbook

The course textbook is *Introduction to Probability* by Anderson, Seppäläinen, and Valkó. It costs $70.99 to buy or $42.59 to rent from the UCSD bookstore (though you may be able to do a bit better elsewhere). We will be following the notation and conventions of the book, and will reference it in the lecture schedule, homework assignments, etc. Although the book is not strictly required, I recommend buying a copy at the beginning of the quarter – it is extremely helpful to have a more detailed and unified reference than your notes from the lectures, and you are more likely to use it if you already have it on hand!

Other good references include *A First Course in Probability* by Sheldon Ross, and Janko Gravner's lecture notes for introductory probability (available online from UC Davis).

Homework

There will be weekly homework assignments, due on **Mondays** at 11:59pm Pacific Time, with the exception of Homework 0 (due **Wed, Sep. 29**). They will be posted on the course webpage, and submitted through Gradescope.

- Collaboration on homework is encouraged. However, you should think about the problems yourself before discussing them with others, and **you must write up your solutions by yourself and understand anything that you hand in.**

- On the first page of your homework, please write a list of everyone with whom you collaborated on that assignment, as well as any outside sources you consulted, apart from the textbook and your notes. **The use of solution manuals, homework from previous quarters, and "homework help" resources like Chegg is not permitted.** If you did not collaborate with anyone, please explicitly write, "No collaborators."

- The 11:59 deadline was chosen to prevent confusion and accommodate students with a variety of schedules, but I encourage you to turn it in earlier! As a (very) small incentive, I will send a "meme of the week" to anyone who submits their homework before the beginning of the lecture on the due date.

Quizzes and Exams

There will be four in-person quizzes held in class on the following dates.

Wed, Oct 6	(Week 2)
Wed, Oct 20	(Week 4)
Wed, Nov 3	(Week 6)
Wed, Nov 17	(Week 8)

The final exam will be in-person on **Saturday, Dec 4**, from **7-10pm**, location TBA.

For quizzes and the final exam:

- You may bring one 8.5 x 11 inch sheet of *handwritten* notes. You may use both sides.
- Calculators and other electronic devices will not be needed, and will not be allowed.
- Bring your student ID.

Grading

Grade breakdown: your final numerical grade will be computed as follows:

- **30%** Homework (best 8 out of 9)
- **40%** Quizzes (best 3 out of 4)
- **30%** Final exam

There are no makeup quizzes, but your lowest quiz score will automatically be dropped; this grading scheme is intended to accommodate emergencies that require missing a quiz. If, due to truly exceptional circumstances, you must miss two quizzes, please contact the course staff as soon as possible.

Letter grade: your course grade will be determined by your numerical grade at the end of the quarter, and will be based on the following scale:

A+	A	A-	B+	B	B-	C+	C	C-
97	93	90	87	83	80	77	73	70

The above scale is guaranteed: for example, if your cumulative average is 80, your final grade will be *at least* B-. However, I may adjust the above scale to be more generous.

Regrades: for each assignment/quiz, regrade requests can be made using the built-in regrade request feature in Gradescope **during a specified 60-hour window of time**; no requests will be accepted afterward. The regrade request feature will generally open several days after the assignment/quiz is returned. Please submit a separate request for each problem in which you believe an error in grading was made; in order for your grader to consider your request, you must explain clearly and politely why you think an error in grading was made. Also, although we will correct errors in grading, we will not modify our grading rubric or negotiate about partial credit.

Remote Learning and COVID Concerns

We understand that many students have concerns about returning to in-person learning, particularly in a large lecture class, and that some students are unable to return to campus because of visa processing delays. We also recognize that there are disadvantages to remote instruction and assessment, particularly for students without reliable access to private space and internet connection.

Because of this, the other two lecture sections of Math 180A this quarter (A00 and B00) will offer a variety of hybrid and remote options, while this class (C00) will be entirely in-person. **In particular, all quizzes and the final exam will be held in person. If you would like to learn remotely, you should switch into lecture A00 or B00.** If you have difficulty switching sections, or if you have concerns about this, please reach out.

If you miss class: there is a rough schedule posted on the course webpage of what will be covered in each lecture, together with the corresponding sections of the book. If you need to miss a lecture for any reason, I recommend reading from the book. You are also encouraged to discuss what was covered in the lecture and ask questions of one of your classmates. So be sure to make a friend and get the contact information of a fellow student during the first week of classes!

In addition, the instructor of at least one of the other two lectures (A00 and B00) plans to post lecture recordings, which will be available to all UCSD students at `https://podcast.ucsd.edu/`. With minor exceptions, we are following a shared lecture schedule, and the material covered will generally be the same.

If disaster strikes: in the event that the public health situation necessitates a return to remote learning (either temporarily or for the remainder of the quarter), I reserve the right to make changes to the course, including to the length and format of the quizzes and final exam. In any event, we will try to give as much advance notice as feasible.

Accomodations

Students requesting accommodations for this course due to a disability need to provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD). You should make arrangements in advance to discuss your accommodations with me **no later than the end of Week 2** (but bear in mind that the **first quiz is on Wednesday of Week 2**). We will make every effort to arrange for whatever accommodations are recommended by the OSD.

Academic Integrity

UC San Diego's Policy on Integrity of Scholarship outlines the academic honesty expected of all students, and details the consequences for academic dishonesty. The main issues are cheating and plagiarism, for which we have a zero-tolerance policy. (Penalties for these offenses always include

assignment of a failing grade in the course, and usually involve an administrative penalty, such as suspension or expulsion, as well.) However, academic integrity also includes things like giving credit where credit is due (listing your collaborators on homework assignments, noting books or papers containing information you used in solutions, etc.), and treating your peers respectfully in class.

Typo Bounty

If you find an error on the syllabus, website, homework assignments, etc., let me know! You will receive a small prize, redeemable in office hours ☺