

Math 311: Probability, Fall 2025

Lectures: MW 2:30-4:10pm in 3S-107.

Professor: Tobias Johnson (tobias.johnson@csi.cuny.edu)

Office: 1S-225

Text: *Introduction to Probability* by David F. Anderson, Timo Seppäläinen, and Benedek Valkó, 1st edition. The cost is roughly \$60. We'll be following the book closely, and it will be valuable to you to have a copy of it. A used book or electronic version or whatever is as good as a new one. It will also be on reserve at the library (this means that it's available at the library reserve desk to look at, but not to check out).

Course Website: <http://www.math.csi.cuny.edu/~tobiasljohnson/311/>

This website will contain all of my announcements. It also has a calendar for the class, which I update as the class goes. This is especially useful if you miss a class and want to know what was covered during it. Brightspace will be used for posting grades, but not for anything else.

Office Hours: Monday 10am-12pm, Wednesday 10-11am in 1S-225. Office hours are a time when you can come to my office to get help on the homework, ask general questions, or discuss anything you'd like with me. You don't need to get permission to come or warn me in advance—just stop by. You can also usually catch me in our classroom thirty minutes before class starts, since I teach a different course in the same room from 12:20 to 2:00.

Class overview: The goal for the class is that you leave it conversant in the fundamentals of mathematical probability, which aims to model real-life situations that involve uncertainty. We'll learn the basic language of probability: events, random variables, independence, expectation, etc., in the discrete and continuous settings. We'll cover important probability distributions including the binomial, exponential, Poisson, and Gaussian. We'll learn about the law of large numbers and the central limit theorem, which make random behavior predictable in bulk.

Class will mostly have a lecture format, but we'll often pause to work on a problem in groups. *This is the most important part of our classtime!* It's when you try to solve a problem that you really learn the material, not when you listen to me lecturing about it. Similarly, doing the homework is more important than anything that happens in lecture (though paying attention in lecture will make it much easier to do the homework!).

Electronic devices: Please don't use phones, computers, or any other electronic device during class. Don't keep them out on your desk, either. It's hard enough to focus even without distractions. If you take notes with a stylus on an electronic device, that's fine. If you have some unusual circumstance that gives you a reason to keep your eyes on your phone—e.g., you're waiting for a call from a

doctor or something like that—then it’s fine to have your phone out, but please let me know at the beginning of class.

Grading: Here is how I will weight each graded component of the class:

Category	Date	Percentage
Homework	see website	10%
Quizzes	see website	15%
Midterm 1	October 8	15%
Midterm 2	November 26	20%
Final	tba	40%

For the midterms, I’ll give a approximate grade scale to tell you which score ranges on the test correspond to which letter grades.

A warning: **there will not be any opportunities for make-up work after the fact or for extra credit.** This isn’t meant to teach you a lesson or punish you or anything like that. Rather, it’s that in my experience, if you lose the thread of the class, it’s almost impossible to regain it.

I do understand that sometimes it can take a while before the course material starts falling together. This is why I’ve made the final worth so much of the grade (40%). Another policy that I have is that if you show strong improvement from the beginning to the end of the class, at my discretion I’ll raise your grade by one step (e.g., from B+ to A-). I should note that this is only for students who show an extreme improvement, and that I’ve only done it for a small handful of students in all the time I’ve been teaching.

Homework: The homework for this class is done using the online system WebWork. It will be due once a week, generally right before class on Monday. The homework will be a larger part of the class than in a typical math class. It mostly consists of problems from the the textbook that I’ve coded into WebWork. They are meant to be difficult and require some thought; you’re not supposed to know how to do them instantly. But you are also encouraged to ask me for help on them (in office hours or by email), if you feel stuck after thinking about them a bit. You are also encouraged to discuss problems together, though for your own benefit you must make sure that you’re not just having other people do your work for you. Even if you got an answer right, if you don’t completely understand it, it’s a good idea to ask me for help.

I will generally not accept late homework. However, I understand that events may force you to miss an assignment. To deal with this, when I compute grades, I’ll drop your two lowest scoring assignments.

Quizzes: There will be some short quizzes. Their dates are listed on the website calendar but might change. Generally, the quizzes will take place on Wednesday and will consist of a problem or two closely resembling the homework that was just due on Monday.

Midterms and Final: You will have two midterms plus a final. On exams, you will be allowed to use a two-sided sheet of notes written in your own handwriting. Calculators and electronic devices won't be allowed (but the exams won't have difficult calculations). I'll give you lots of old sample exams so you know what sort of questions to expect on them.

Policy on illnesses and other excused absences: If you feel significantly sick, please stay home. We'll be following the textbook closely and you can learn what you missed on your own.

If you are forced to miss a quiz or exam due to illness or some other unavoidable circumstance, please contact me immediately and we will discuss the situation. The most likely solution is that your remaining exams will be weighted more heavily to make up for it. I do not typically give make-up exams: this policy allows me to return everyone's exams and post solutions as quickly as possible. Here are some other valid reasons to miss a test besides illness: observance of religious holidays, participation in certain university sponsored activities, and family emergencies. Please try to make arrangements at least a week in advance, if possible. Of course, if you have an emergency, just write to me as soon as you can.

Disabilities: If you have a documented disability and wish to discuss academic accommodations, contact me as soon as possible.

Bringing small children to class: If you're the caretaker of a small child and your plans for childcare break down, it's fine to bring the child to class. Just sit near the door in case you need to take the child out of the room.

The Unexpected: Unexpected things happen to everyone, and the policies in this syllabus might not treat your particular circumstances fairly. If that's the case, please don't be afraid to bring it up with me, and I'll do my best to accommodate them.