

# Math 407: Probability Theory

## Spring 2022

### 1. General Information

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<b>Instructor:</b>	Sangchul Lee ( <a href="mailto:sangchul@usc.edu">sangchul@usc.edu</a> )
<b>Lectures:</b>	(39992R) MWF <sup>[1]</sup> , 1:00pm – 1:50pm PT <sup>[2]</sup> , at LVL 16 and on Zoom
<b>Office Hours:</b>	TBA, at KAP 438D

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<b>TA:</b>	Jishnu Bose ( <a href="mailto:jishnubo@usc.edu">jishnubo@usc.edu</a> )
<b>Discussions:</b>	Register for <b>one</b> section below: (39993R) TTh, 2:00pm – 2:50pm PT, at THH 117 (39994R) TTh, 3:00pm – 3:50pm PT, at KAP 113
<b>Office Hours:</b>	TBA

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**Course Description** This course aims to introduce the basic concepts of probability theory. Topics include: set up of probability space, conditional probability and independence, various discrete and continuous random variables, properties of expectation, law of large numbers, and the central limit theorem (CLT).

We will cover the first eight chapters of the textbook. If time allows, we may also cover some selected topics in Chapters 9 and 10.

**Prerequisite(s)** Math 226g or Math 227 or Math 229

**Textbook** We will use the following textbook in this course:

- Sheldon Ross, *A First Course in Probability*. (Any edition will be fine. The most recent is 10th, from 2019. A former edition is freely available [online](#).)

### Important Dates

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Monday, January 17	Martin Luther King Jr. Day (no class)
Friday, February 18	Midterm Exam 1 (during class)
Monday, February 21	President's Day (no class)
March 13 – March 20	Spring Recesses (no class)
Wednesday, March 30	Midterm Exam 2 (during class)
Friday, April 8	Last day to withdraw with a grade of 'W'
Friday, April 29	Last day of class
Wednesday, May 4	Final Exam (2:00pm – 4:00pm). <sup>[3]</sup>

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<sup>[1]</sup>M = Monday, T = Tuesday, W = Wednesday, Th = Thursday, F = Friday

<sup>[2]</sup>PT (Pacific Time) is the time zone observed in CA. Check [this site](#) for more details.

<sup>[3]</sup>This is according to [Final Examinations Schedule](#).

## 2. Class Structure

**Lecture** Attendance is not required at lecture, yet regular attendance is important to your success in this course. A student who misses a class is responsible for finding out what was discussed and learning the material that was covered on that day. The teaching team is not responsible for re-teaching material missed by a student who did not attend class regardless of the reason for the absence. However, each class will be streamed through Zoom and the class materials will be uploaded to the Blackboard course webpage.

*Memo:* As of January 7, the University has announced that course meetings for the first two weeks will run remotely. To attend lecture on Zoom, log in to our Blackboard course webpage and click on 'Zoom Meeting' and then on the Zoom link associated to the relevant day. In-person instruction is planned to be resumed starting week 3 (Monday, January 24). However, this is subject to change according to university directives and instructor's health.

**Discussion Section** Discussion sections are great additional resources we have in this course. They will provide opportunities to see more guided examples and try your hand at exercises with a member of the teaching team present. More exposure to and practice with the material will greatly add to your learning.

## 3. Technology

- **Blackboard:** The online course-management system, called Blackboard, will be used in this course, to share the class materials, including recordings of classes, slides from lecture, assignments, and announcements.
- **Gradescope:** This is the platform where your assignments will be collected. You will receive an email notification when I add you to our Gradescope course webpage. More details can be found in the Homework section below.
- **Campuswire:** This is a discussion board for casual questions on homework, class logistics, etc. You will receive an email invitation to join the Campuswire roster.
- **No Calculators!** Calculators are not necessary for this class. No calculators, or other electronic devices, are permitted during quizzes or exams.

## 4. Grading

Your performance and achievement against the learning goals will be assessed based on quizzes, weekly homework assignments, and exams. More specifically, your course grade will be computed according to the following scheme:

- Quizzes (10%)
- Written Homework (15%)
- Midterm 1 (20%)
- Midterm 2 (20%)
- Final (35%)

An alternating grading scheme will be considered in case of emergency, see the Exams section below for more details.

**Quizzes** Quizzes will be administered weekly during discussion sections, usually (but not always) on Thursdays. Your lowest quiz score will be dropped automatically.

**Homework** Homework assignments will be posted to Blackboard on a weekly basis, usually (but not always) on Wednesdays. In principle, each homework assignment is due one week after it has been announced. The exact deadline of each homework assignment will be announced on Blackboard.

- Homework submissions will be handled via [Gradescope](#). Gradescope accepts only electronic submissions, so you will need to scan your homework before uploading it. Make sure to allot plenty of time to follow the [submission instructions](#) before each deadline.
- Use Gradescope's page-assigning procedure to indicate which problems you have written on which pages. Points will be deducted for out-of-order pages.
- Show your work and present it neatly. Points will be scarce for sloppy or illegible work.
- Late homework will only be accepted, with a 15% penalty, within 12 hours after the deadline. Reasonable requests for extensions will be considered, if the request is presented by email to the instructor within 24 hours after the deadline. Requests for extensions beyond this time window may not be considered.
- Your lowest homework score will be dropped automatically. The primary purpose of this policy is to accommodate situations such as a serious illness or anything else that may arise, so do not use this up early in the term.
- You are strongly encouraged to discuss homework problems with your classmates or the teaching team. However, you have to submit your own work, written in your own words. If you collaborated with someone, please indicate this at the top of your submission. Simply copying someone else's work and representing it as your own work constitutes academic dishonesty.

**Exams** There will be two midterm exams and one final exam. All the exams will be administered in person. They are scheduled for the following dates and times:

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<b>Midterm 1:</b>	Friday, February 18, during class (location TBA)
<b>Midterm 2:</b>	Wednesday, March 30, during class (location TBA)
<b>Final:</b>	Wednesday, May 4, 2:00pm – 4:00pm PT (location TBA)

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- If you expect any schedule conflict, you must contact the instructor no later than two weeks prior to the scheduled exam in order to request an accommodation.
- Your health and safety is always more important than anything. If you experience a emergency or a medical situation that requires you to miss a midterm exam, then an alternative scheme may be considered. This scheme puts extra weights on the other exams and assignments. If you happen to miss a midterm exam and want to be accommodated, you should contact the instructor as soon as possible. You will be expected to provide supporting documents.

**Grade Cutoffs** If the average course grade is a B- or better, your letter grade will be determined from your percentage grade using the following standard conversion table:

A	A-	B+	B	B-	C+
[93, 100]	[90, 93)	[87, 90)	[83, 87)	[80, 83)	[77, 80)
C	C-	D+	D	D-	F
[73, 77)	[70, 73)	[67, 70)	[63, 67)	[60, 63)	[0, 60)

If the average course grade is lower than a B-, the grading scheme will be adjusted accordingly.

## 5. Other Information

**Math Center** The [Math Center](#) hosts consulting hours, starting Week 2. It is run informally and is designed for easy drop-in usage, like a study room. You may casually drop by the Center and work with your peers or ask questions to TAs. The hours will be posted on the webpage starting Week 3.

**Academic Conduct** You are fully responsible to adhering to the [Student Conduct Code and Policies](#). Any form of academic dishonesty, including but not restricted to *cheating or plagiarism*, will not be tolerated in any circumstances. Please familiarize yourself with the conduct code.

**Accommodations** Any student requesting for academic accommodations based on special needs is required to register with the Office of Student Accessibility Services ([OSAS](#))<sup>[4]</sup>. OSAS provides verification letters for students with disabilities and helps arrange the relevant accommodations. Please be sure the letter is delivered to the instructor as early in the semester as possible. As an absolute deadline, the letter must be delivered to the instructor before one week of any class activities (especially exams) that you want to be accommodated.

**Statement on Academic Conduct and Support Systems** The information below applies university-wide and is available at [here](#).

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<sup>[4]</sup>It is formerly known as the office of Disability Services and Programs (DSP).