

# M208: Elementary Probability and Statistics

## Spring 2022

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**Grader:** Kelly Wen, email: [quanwen@usc.edu](mailto:quanwen@usc.edu), office: KAP 263 (Math Center)

**Schedule & classroom:** Mon/Wed/Fri 11:00-11:50 am, LVL 16

**Office hours:** Wed 12:30-2:30 pm for Instructor, Mon 15:00-17:00 for Grader

**Textbook:** D. Freedman, R. Pisani, and R. Purves. Statistics (4th ed.)

**Zoom room:** Blackboard → Course page → USC Zoom Pro Meeting

**Disclaimer.** *This syllabus is not a contract; the Instructor has the right to to make changes at his discretion throughout the semester. However, these changes are unlikely to be significant.*

**About the course.** By the end of the semester, you will be familiar with the most basic concepts and tools of statistics and probability. Applications (in clinical trials, statistical studies, etc.) will be heavily stressed. Depending on the speed of our progress time, we might cover estimation and hypothesis testing at a more advanced level (closer to the level of Math 541a). In this case, I will circulate extensive notes for the extra material, so no textbook will be necessary; for those interested, the notes roughly follow Casella and Berger, *Statistical Inference* (2nd ed.)

**Course content.** Descriptive statistics, probability, expectation and variance, normal distribution and the Central Limit Theorem, basics of point estimation, regression, confidence intervals, basics of hypothesis testing. Emphasis on applications in health and social sciences.

**Contact.** The best way to contact me is by email (put M208 or Math 208 into the subject field); I do my best to respond within 24 hours, but sometimes it might take longer. I am not committing to responding on weekends. Also, you may come in during the office hours; prior notice is not required (although appreciated), but please **knock on the door** before coming in. If you cannot attend the office hours, but need to discuss, email me to book an appointment.

**Prerequisites.** The course is elementary; the only prerequisite is Math 118xg or Math 125.

**Homework.** Homework assignments will be posted on blackboard (BB) every other week on Monday, and will be due two weeks later (the deadline is on Monday **11:59 pm**). Some advice:

- Always start to work on homework assignments as early as possible.
- It's okay to work in a small group. However, always try on your own first. If you are blocked, use the office hours (Instructor's and Grader's). Take notes during such sessions!
- Always write the solution on your own; suspected plagiarism will receive **0 credit** and further sanctions in case of a relapse.
- Please make sure that it is readable—show respect to your grader.

**Please submit your homework solutions on BB as a PDF file.** Pages must be numbered. You can either scan your handwritten solution, use iPad + iPencil + a handwriting app (such as Notability), or typeset your solution in LaTeX <https://www.latex-project.org/> if you dare ;) LaTeX is extremely useful for researchers in STEM as the de-facto standard for typesetting.

**Conduct code.** You can collaborate on homeworks. However, you must **write solutions on your own**. If I get convinced that a solution has been copied (from your peer, a textbook, or Internet), you will get a **zero score** for the whole assignment. If this repeats, I will take disciplinary measures as per the USC Student Conduct Code; see <https://dornsife.usc.edu/usc-policies/#plagiarism>. Similarly, cheating on an exam **nullifies** the score for that exam. Mobile phones must be **turned off** (even if you only use them to track time).

**Exams schedule.** There will be two midterms, one on the last week of February and another one somewhere in the first two weeks of April, not long before the final exam. They will take place in our regular classroom and take 1 hour each. The (comprehensive, 2-hour) final exam will take place on **Wednesday, May 4**, 11 am–1 pm, in our regular classroom. In case of a scheduling conflict, familiarize yourself with <https://classes.usc.edu/term-20221/finals/>.

**Grading breakdown.** The grade will be assigned according to the largest of the two schemes:

1. class participation (3%), homeworks (27%), two midterms (20% each), the final (30%);
2. class participation (3%), homeworks (27%), your best midterm (30%), the final (40%).

The class might be (slightly) curved by way of (slightly) changing the percentages above. To hedge against non-attendance and emergencies, I will drop a homework with the lowest score.

**Other resources.** The Math Center is located in 263 KAP and is open Monday-Friday from 8am to 7pm on most days. It is primarily run by math graduate students here at USC. You may also access the virtual Math Center zoom room at <https://usc.zoom.us/j/97118086999>. For more information on the Math Center, see <https://dornsife.usc.edu/mathcenter/>. For help with Blackboard, see <https://itservices.usc.edu/blackboard/>

**Attendance.** I shall not keep track of attendance, relying on your motivation and prudence. I recommend to attend as much as possible: it gives a complementary perspective on the material.