

Course Syllabus: EE 503 – Probability

I. COURSE INFORMATION

Class location and time:

Lectures: M/W 10-11:50am PST (Online — OHE 122 if we resume classroom meetings)
Discussion: Friday 8-8:50am PST (Online — OHE 122 if we resume classroom meetings)

The course lectures will be online using the DEN D2L/Webex.

Online links

- Course discussion page is on Piazza. Piazza signup link:
<https://piazza.com/usc/spring2022/ccf8>
- Personal Webex link for Professor Neely (online office hours)
<https://viterbi.webex.com/meet/mjneelyusc.edu>

Office hours and contact info

- Professor:
Michael J. Neely (mikejneely@gmail.com)
<https://viterbi-web.usc.edu/~mjneely/>
Monday 12-1:55pm PST (after lecture)
Personal Webex link: <https://viterbi.webex.com/meet/mjneelyusc.edu>
- Teaching Assistants:
 - 1) Bassel Abou Ali Modad (aboualim@usc.edu)
Friday 9:30am-11:30am PST
<https://usc.zoom.us/j/99430600043>
(EEB 524 if we resume regular in-person meetings)
 - 2) Omar Zamzam (zamzam@usc.edu)
Thursday 10-12am PST
Zoom ID = 608 874 3665, Passcode: 847067
(EEB 424 if we resume regular in-person meetings)
 - 3) Haoqian Song (haoqians@usc.edu)
Tuesday 10am - 12pm PST
Zoom: <https://usc.zoom.us/j/9870203718>
(EEB B20 if we resume regular in-person meetings)

Note: When emailing the Professor or the TAs, please include “EE 503” in the subject.

Textbook:

Probability, Statistics, and Random Processes for Electrical Engineering (3rd edition), by A. Leon-Garcia.

Notes on infinity (for lecture 1):

<https://viterbi-web.usc.edu/~mjneely/docs/infinity.pdf>

Grading:

There will be problem sets (roughly one every week), two mid-terms, and a final, with weights:

Homework/Participation: 20%, Midterm1: 25%, Midterm2: 25%, Final: 30%

The following minimum letter grades are guaranteed to students scoring within the specified intervals: 85-100 A, 75-85 B, 60-75 C. The above thresholds may be adjusted at the end of the semester at the discretion of the instructor. Any such adjustments will be in favor of a higher letter grade. Class participation may also factor into the homework score. For example, you may be asked to present your solution to a problem to the class. There may be occasional pop quizzes given in class, worth points toward the homework/participation score. To accommodate asynchronous learning (such as for DEN students), students can always email their answers to in-class questions to either the Professor or the TA, as appropriate.

Special dates/times for Spring 2021 semester:

- First day of EE 503 class: Monday Jan. 10, 2022
- Last day of EE 503 class: Friday April 29, 2022
- Exams:
 - EE 503 Midterm 1: Wednesday Feb 23 (10-11:59am PST)
 - EE 503 Midterm 2: Wednesday March 30 (10-11:59am PST)
 - EE 503 Final Exam: Monday, May 9, 2022 (8-10am PST)
- Days with no class:
 - Monday January 17, 2022 (Martin Luther King holiday)
 - Monday February 21, 2022 (President's day)
 - March 13-20 (Spring break)

Statement for students with disabilities:

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.-5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on academic integrity:

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

Plagiarism (copying or modifying someone else's work and presenting it as your own) and other forms of cheating will not be tolerated. Please ask the TA or instructor if you have questions about proper behavior.

II. TOPICS

- Countable and Uncountable Sets, Outcomes, Events, Probabilities
- Counting, Playing Cards and Balls and Bins
- Conditional Probabilities, Independence
- Baye's Rule, Random Variables, CDFs and PDFs
- Functions of Random Variables, Expectations, Iterated Expectations
- Law of Large Numbers
- Central Limit Theorem and Gaussians
- Hypothesis Testing, Minimum Mean Square Distortion
- Poisson Process
- Statistics, independent Gaussian samples
- Discrete Time Markov Chains, Simulation (if time permits)