

EE 503: Probability for Electrical & Computer Engineers

Fall 2022

I. Course Information

Instructor:

Ashutosh Nayyar (Office: EEB 318, email:ashutosn@usc.edu, phone: 213-740-2353)
Office Hours: Thursdays 12:30pm-1:30pm in EEB 318 and Thursdays 4:00pm-6:00pm on Zoom:
<https://usc.zoom.us/my/anayyar>

Teaching Assistants:

Chin-Cheng Chan <chinch@usc.edu>,
Omar Zamzam <zamzam@usc.edu>,
Qi Cao <caoq@usc.edu>,
Qingyang Zhou <qzhou776@usc.edu>
Office Hours: TBD

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

Class Time and Location:

Lectures: Tuesday and Thursday, 10:00pm-11:50am, OHE 122
Discussion: Friday, 10:00am-10:50am, OHE 132

Course website:

USC DEN (<https://courses.uscden.net>)

Required Textbook:

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

Prerequisites:

Calculus, linear algebra and matrices.

Exam Dates and Times:

Midterm 1: October 4 (in class)
Midterm 2: November 8 (in class)
Final: December 13, 8am - 10am
There may be occasional pop quizzes given in class.

Grading:

Homework/Quizzes: 20%, Midterm 1: 25%, Midterm 2: 25%, Final: 30%

II. Topics

- Outcomes, Events, Probabilities, Conditional Probabilities, Independence, Bayes' Rule, Combinatorics
- Discrete Random Variables, Continuous Random Variables, Expectation, Functions of Random Variables
- Jointly Distributed Random Variables, Conditional Probability for Discrete and Continuous Random Variables, Iterated Expectations, Random Vectors
- Modes of Convergence for Random Variables, Laws of Large Numbers, Central Limit Theorem
- Random Processes, Poisson Process.
- Discrete Time Markov Chains
- Statistics: Parameter Estimation, Confidence Intervals, Hypothesis Testing.

III. 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.

IV. 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/>.

Academic Conduct

Plagiarism - presenting someone else's ideas as your own, either verbatim or recast in your own words - is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu/> or to the *Department of Public Safety* <http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community - such as a friend, classmate, advisor, or faculty member - can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. The *Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.