

# Course Syllabus: EE 503 – Probability

## I. COURSE INFORMATION

### *Instructor:*

Michael J. Neely (EEB 520, mikejneely@gmail.com, 213-740-3505)  
Office Hours: Mon/Wed 2-4pm (EEB 520)

**Note:** When emailing myself or one of the TAs, please include “EE 503” in the subject.

### *Teaching Assistants:*

- 1) Yunsong Liu (yunsongl@usc.edu, office hours Tuesday 3:30-5:30pm PHE 320)
- 2) Ajinkya Jayawant (jayawant@usc.edu, office hours Thursday 1-3pm PHE 320)

### *Class Location and Time:*

Lectures: Monday/Wednesday 10-11:50am (OHE 122)  
Discussion: Friday 8-8:50am (OHE 122)

### *Electronic Documents and DEN:*

Electronic documents for this course will be routinely available on the DEN website.

### *Textbook:*

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

### *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, 65-85 B, 45-65 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. DEN students can always email their answers to in-class questions directly to the instructor.

### *Exam Dates and Times:*

Midterm 1: Wednesday, Feb. 20, 2019 (10-11:50am) [Location TBA]  
Midterm 2: Wednesday, March 27, 2019 (10-11:50am) [Location TBA]  
Final Exam: Monday May 6, 2019 (8-10am) [Location TBA]

### *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  
Conditional Probabilities, Independence  
Counting, Playing Cards and Balls and Bins  
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  
Discrete Time Markov Chains  
Discrete Time Queues, Simulation  
Continuous Time Chains  
Poisson Processes, M/M/1, Renewal Theory