

CSE 107

Probability and Statistics for Engineers

Winter 2024

Description: Introduction to fundamental tools of stochastic analysis. Probability, conditional probability; Bayes Theorem; random variables and transforms; independence; Bernoulli trials. Statistics, inference from limited data; outcomes of repeated experiments; applications to design; assessment of relative frequency and probability; law of large numbers; precision of measurements. Elements of stochastic processes, Poisson processes; Markov chains.

Prerequisites: CSE 16; and AM 30 or MATH 22 or MATH 23A

Lecture: TTh 11:40am - 1:15pm Classroom Unit 002

Webpage: <https://people.ucsc.edu/~ptantalo/cse107/Winter24/>

Instructor: Patrick Tantalo <https://users.soe.ucsc.edu/~ptantalo/>

Email: ptantalo@soe.ucsc.edu

Office Hours: Wednesday: 10:00am - 12:00pm & 2:00pm - 4:00pm [Zoom Link](#) (Uses CruzID Gold)

Meeting ID: 950 0400 0649

Dates: Wednesday January 10 - Wednesday March 13

Teaching Assistants:

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Course Tutors: TBA

Required Text:

Introduction to Probability (2nd edition) by Bertsekas and Tsitsiklis (BT). Athena Scientific (2008). (ISBN 978-1-886529-23-6.) On Reserve (2-hour loan) at the [Science Library](#).

Recommended Texts:

Probability an Introduction (2nd edition), Grimmett & Welsh. Oxford University Press (2014).
Probability & Random Processes (2nd edition), Grimmett & Stirzaker. Oxford University Press (1992).
Grinstead and Snell's Introduction to Probability (2nd edition). Orange Grove Texts Plus (2009)
Basic Probability Theory, Robert B. Ash. Dover (2008).

Coursework:

- 20% **Homework:** Written exercises from the required text (7-8)
- 15% **Lab Assignments:** Random process simulations (5-6)
- 20% **Midterm Exam 1:** Thursday, February 1 (11:40-12:45, lecture to follow)
- 20% **Midterm Exam 2:** Thursday, February 29 (11:40-12:45, lecture to follow)
- 25% **Final Exam:** Wednesday, March 20 (4:00–5:30pm)

All scores will be rounded to the nearest 10th of a percent. They will not be rounded further. No scores are curved. The following letter grade boundaries will be used to determine your grade in the class.

Grading scale:

A+	98.0% - 100%
A	93.0% - 97.9%
A-	90.0% - 92.9%
B+	88.0% - 89.9%
B	83.0% - 87.9%
B-	80.0% - 82.9%
C+	78.0% - 79.9%
C	70.0% - 77.9%
C-	68.0% - 69.9%
D+	65.0% - 67.9%
D	61.0% - 64.9%
D-	59.0% - 60.9%
F	0% - 58.9%

Accommodations for Students with Disabilities

UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please contact the Disability Resource Center (DRC) by email drc@ucsc.edu or by phone 831-459-2089. Once I receive your accommodation authorization from the DRC, I will be happy to meet with you in office hours to discuss how to ensure your full participation in the course. See <https://drc.ucsc.edu/> for further information.

Academic Honesty:

The Baskin School of Engineering has a zero-tolerance policy for any incident of academic dishonesty. If cheating occurs, consequences may range from getting zero on a particular assignment to failing the course. In addition, every case of academic dishonesty is referred to the students' college Provost, who sets in motion an official disciplinary process. Cheating in any part of the course may lead to failing the course, suspension or dismissal from the Baskin School of Engineering, or from UCSC.

What is cheating? In short, it is presenting someone else's work as your own. Examples would include copying written homework solutions from another student, or allowing your own work to be copied. Sharing any kind of information on an exam would also be considered cheating. You may discuss your homework solutions with fellow students, but your collaboration must be at the level of *ideas* only. You may freely give and receive help with any example discussed in class, in the text, or in one of the handouts. However, you may not share in the act of *writing* your solutions to homework problems.

Most of you are aware that various large language models (LLMs) like ChatGPT are readily available. Our policy is that you may use LLMs while working on lab and homework assignments, but be warned that they often give answers that are incorrect or misleading in subtle ways. We will discuss how LLMs might be used effectively to understand the topics in this course.

Please see the following links for the official UCSC policies on Academic Misconduct for

Graduate Students: <https://www.ucsc.edu/academics/academic-integrity/>

Undergraduate Students: <https://ue.ucsc.edu/academic-misconduct.html/>

Important Dates:

Waitlists expire: Thursday, January 18 (permission codes required as of this date)

Add/Drop/Swap deadline: Monday, January 29 (add by petition only after this date)

Withdraw from class deadline: Tuesday, February 20

Registrar Information:

Enrollment FAQ: <https://registrar.ucsc.edu/faqs/students/enrollment/index.html>

Waitlist FAQ: <https://registrar.ucsc.edu/faqs/students/wait-list/index.html>

Enrollment Videos: <https://orientation.ucsc.edu/next-steps/slug-videos.html#enrollment>

More How-To Videos: <https://orientation.ucsc.edu/summer/how-to-index.html>