

Syllabus for STAT 320: Intro to Probability Theory

Fall 2022 (3 units)

Instructor: Eric Fox
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Lecture: M/W 2-3:15 at North Science 320

Office Hours: M/W 3:30-4:30 at North Science 303A

Website: Course materials will be posted on Canvas.

Textbook: Darrin Speegle and Bryan Chair. *Probability, Statistics and Data: A Fresh Approach Using R*. CRC Press, 2022.

Free online version: https://mathstat.slu.edu/~speegle/_book/preface.html

Reference: Sheldon Ross. *A First Course in Probability*. 10th edition, Pearson, 2019.
(you can also use previous editions)

Software:

R, can be downloaded here <https://www.r-project.org/>
RStudio, can be downloaded here <https://www.rstudio.com/>
RStudio Cloud, <https://rstudio.cloud/>

Prerequisite: Single variable calculus up to integration (Math 130)

Course Topics:

- Sample space and events, axioms of probability
- Conditional probability and independence, Bayes' rule
- Combinatorics: permutations and combinations
- Discrete random variables (binomial, geometric, Poisson)
- Continuous random variables (normal, uniform, exponential)
- Expectation and variance
- Probability simulations using R and RStudio

Grading:

- 40% Homework
- 60% Three Exams (20% each)

Policy on Late Assignments: Late homework will generally not be accepted. However, your lowest scoring homework assignment will be dropped. I may agree to extensions on due dates if you are experiencing an emergency or illness.

Attendance Policy: Students are required to attend class on campus during the scheduled times and participate in class activities.

Student Learning Outcomes: Upon successful completion, this course will provide students with an introduction to

- Fundamental concepts in probability: sample space and events, axioms, random variables, conditional probability, independence, expectation and variance.
- Various discrete and continuous probability distributions.
- Using simulations to estimate probabilities in R.
- Applications of probability theory to a variety of fields (e.g., social and health sciences, ecology, engineering).

Important Dates:

- First day of classes: Wednesday, August 17
- Last day to drop: Tuesday, August 30
- Labor Day (campus closed): Monday, September 5
- Last day to withdraw: Friday, November 4
- Fall Recess: November 21-25
- Last day of classes: Friday, December 2

A complete list of important dates:

<https://www.csueastbay.edu/registrar/important-dates/fall-2022.html>

Common Syllabus Items: Items such as policies on academic dishonesty, disability, and handling emergency situations can be found under “University Policies” on Blackboard.

A Note on Discrimination, Harassment, and Retaliation (DHR):

California State University East Bay is committed to a community free from sexual assault and violence. Title IX and CSU policy prohibit discrimination, harassment and retaliation, including Sex Discrimination, Sexual Harassment or Sexual Violence. CSUEB encourages anyone experiencing such behavior to report their concerns immediately. CSUEB has both confidential and non-confidential resources and reporting options available to you.

As a faculty member, I am required to report all incidents and thus cannot promise confidentiality. I must provide our Title IX coordinator and or the DHR Administrator with relevant details such as the names of those involved in an incident.

For confidential services, contact the **Confidential Advocate at 510-885-3700** or go to the Student Health and Counseling Center. For 24-hour crisis services call the Bay Area Women Against Rape (BAWAR) hotline at 510-845-7273. For more information about policies and resources or reporting options, please visit the following websites: <https://www.csueastbay.edu/diversity/title-ix/>