

# MATH 4740: Theory of Probability

## Spring 2022

**Instructor:** Tony Shaheen

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**Office Hours:** to be announced in class.

**Course Website:** Follow the link from <http://www.calstatela.edu/research/ashahee/>

**Lectures:** Monday and Wednesday, 4:30pm – 5:45pm, in SH 237.

We will start on zoom until the school tells us we can go back to campus.

**Zoom links and recordings:** Any zoom recordings that we do will be on canvas.

**Textbook:** There is no required textbook for the course. If you want to get one here are some suggestions: (1) A First Course in Probability by Sheldon Ross, (2) Fundamentals of Probability by Saeed Ghahramani.

**Calculators:** Please have a calculator for the exams that is not your phone. I saw some on amazon for \$5. You will be allowed to use this calculator on your exams.

**Other items you could consider buying (optional):** some coins to flip, a deck of cards, some dice to roll.

**Prerequisite:** Math 2130. Recommended: Math 2450.

**Description:** We will learn about probability spaces, counting techniques, random variables, expected value, variance, binomial distributions, the normal distribution, other distributions.

**Student learning outcomes:** Students will learn the basic theory of probability spaces. Given a problem they will learn how to construct a probability space that models the problem. They will learn how to do basic counting so that probabilities can be calculated. Students will learn how to create random variables to model the aspect of the problem that they want to study. Students will learn to compute the expected value and variance of a random variable. Students will learn how to calculate probabilities in spaces that have a probability distribution. Students will learn how to approximate the binomial distribution with the normal distribution. Students will learn other topics in probability theory.

**Grading:** Your grade will be based on two tests and a cumulative final. Each exam will be worth 1/3 of your grade.

**Homework:** Homework will be assigned, but not collected. The homework problems and solutions will be posted on the course website.

**Exams:** There are two tests and a final. The below dates are tentative. The final time/day is scheduled by the school and it may change.

Test 1: Wednesday, 3/9.

Test 2: Monday, 4/25.

Very Tentative Final Date: Wednesday, 5/18, 2:30pm – 4:30pm.

**ADA statement:** Reasonable accommodation will be provided to any student who is registered with the Office of Students with Disabilities and requests needed accommodation. All tests will be taken at home this semester. If you get time and a half or double time with ODD, then you will be allowed to use the same amount of time as with OSD for your exams at home.

**Academic honesty statement:** Students are expected to do their own work. Copying the work of others, cheating on exams, and similar violations will be reported to the University Discipline Officer, who has the authority to take disciplinary actions against students who violate the standards of academic honesty.

**Student responsibilities:** Students are responsible for being aware of all announcements that are made in class, such as changes in exam dates, due dates of homework and papers, and cancellation of class due to instructor's absence. Students are responsible for announcements made on days that they are absent.

Students must check their CSULA email account regularly for information from the instructor and the Department. Failure to do so may result in missed deadlines or other consequences that might adversely affect students. Note that you can forward this email account to any other account of your choosing.