Course Description

STAT 340 is the first course in a three quarter sequence on Probability & Mathematical Statistics. It covers the probability background required for statistics.

The study of probability gives us both theory and tools to model many aspects of the way our world works. In addition, probability works in synergy with statistical theory and methods to allow us to construct and assess our probabilistic models and to even re-build and further our understanding. ¹

The overarching objective of this course is to study many common probability models for discrete and continuous outcomes and to examine their usefulness as models for data. We will cover the following topics

1. Probability measure
2. Conditional probability
3. Random variables
4. Probability distributions
5. Expected values
6. Common families for univariate discrete and continuous outcomes

Prerequisites

Students must be comfortable with calculus. I will assume familiarity and comfort with taking limits, continuity of functions, differentiation, integration with 2 variables and more. Formally, we require

- one of STAT 311 or MATH/STAT 390 or QSCI 381, and
- one of MATH 126 or MATH 136.

¹ from original course proposal
Required Materials

- **Laptop** with R, Rstudio installed

Course Structure

Most weeks, the course will be divided into 3 lectures and a section on Mondays. The lectures will be taught by the instructor while the TA will lead discussions during section.

All instruction will be “in person” at least at the start of the quarter. We may however move to an online “live” format if necessary. We will have a 10 minute break in between the Friday double headers.

Assessments

There will be a written homework assignment due by noon on Saurday. In addition, you will have two in-class quizzes. All quizzes are planned as in-person tests at this point. This may change depending on the circumstances. The dates are as follows.

- Quiz 1 Wednesday October 27
- Quiz 2 Wednesday November 17

There will be a comprehensive final on Dec 15 from 2:30-4:20. Finally, to ensure that students are keeping pace with the material, I will have students work on problems in groups during the second Friday hour and monitor participation via low stakes CANVAS check ins.

Grading Policy

The UW undergraduate grading scale will be used. I reserve the right to curve the scale dependent on overall class scores at the end of the semester. Any curve will only ever make it easier to obtain a certain numeric grade. The grade will count the assessments using the following proportions:

- **30%** of your grade will be determined by 2 in class quizzes (15% each).
- **30%** of your grade will be determined by your homework.
- **30%** of your grade will be determined by the final exam.
- **10%** of your grade will be determined by participation.

I do not have a set grading scale. Typically the mean GPA in the course is around 3.5 - 3.6.

Course Communication

All course communication will take place via Ed discussion.

Course Policies

- **Attendance** is strongly encouraged.
- Homework must be submitted in Gradescope by noon on the due date. Late assignments will only be accepted provided the instructor is notified in advance of the due date and it is approved. Please note that extension requests will typically not be approved during weeks prior to a quiz week.
• **Missing a quiz** In the event of illness, please contact the instructor as soon as possible.

• **Academic Accommodations:** Your experience in this class is important to me. If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course.

• **Academic integrity** is essential to this course and to your learning. Violations of the academic integrity policy include but are not limited to: copying from a peer, collaborating where it is not allowed, copying from an online resource, using a solutions manual, and using resources from a previous iteration of the course. If you are unsure about whether a particular action would be construed as academic misconduct, please ask. *Anything* found in violation of this policy will be automatically given a score of 0 with no exceptions. If the situation merits, it will also be reported to the Office of Community Standards and Student Conduct for investigation.

• **Religious Accommodations:** Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW’s policy, including more information about how to request an accommodation, is available at [Religious Accommodations Policy](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy). Accommodations must be requested within the first two weeks of this course using the [Religious Accommodations Request form](https://registrar.washington.edu/students/religious-accommodations-request/).

• **Safety and Health** Take care of yourself. Do your best to maintain a healthy lifestyle this quarter by eating well, exercising, avoiding drugs and alcohol, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress. All of us can benefit from support during these times of struggle. You are not alone. Asking for support sooner rather than later is often helpful.