STAT 311: Elements of Statistical Methods
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Office Hours: TBD

Course Description
STAT 311 is a modern introduction to the discipline of statistics. Students are immersed in realistic data-driven tasks from the start of the quarter and will learn to navigate their way using a mix of statistics, computer literacy, and last but not least, good old-fashioned common sense.

Course Objectives
At the end of this course, students should be able to

1. Identify limitations in data collection methods and explain how this limits the scope of inference.
2. Use the programming language R to summarize patterns in data visually and numerically.
3. Explain the unifying logic of statistical inference.
4. Apply estimation and testing methods to analyze single variables, and also the relationship between a numerical response and a binary predictor.
5. Model a numerical response using a single numerical predictor variable (simple linear regression).

Required Materials
- Intro to Modern Statistics, 1st edition (available as a free PDF)
- Laptop with reliable internet access
  - The Student Loan Tech Program is a great resource in case you do not have access to a laptop.
  - Xfinity WiFi Hotspots will be available for free to anyone who needs them. A map of hotspots can be found here. At a hotspot, select the “xfinity wifi” network and then launch a browser to connect.
- An updated version of the Zoom application. Please see here for more details.


Course Structure
The course will cover six themed units as detailed below:

- Introduction to data
- Summarizing data
- Linear Regression
- Foundations for inference
- Inference for categorical data
- Inference for numerical data

Roughly speaking, each Tue/Thur class will involve presentation of new material by the instructor followed by guided practice. The Mon/Wed sections will involve a mix of guided practice and computer instruction in the R programming language with the TAs.

The Tue/Thur classes will be taught synchronously online via Zoom. They will also be recorded for later viewing. Keep in mind however that breakout room activities are not recorded, and there will be such activities in almost every class.

Students are expected to meet in person for sections on Mon/Wed. Most sections will involve a computer lab assignment which will be graded.

This class is structured as a live class; students who are looking for an asynchronous class should consider STAT 311 B.

Course Communication
Given the large number of students in this class, I ask that you contact the TA in charge of your section whenever possible with questions. Contact information for the TAs is below.

- AA/AB: Harshil Desai (hhdesai@uw.edu)
- AC/AD: Vydhourie Thiageswaran (vrtt@uw.edu)
- AE/AF: Malcolm Hoff (mlw32@uw.edu)

Questions asking for clarification on the course material should be posted on the Ed Discussion board in CANVAS. The TAs and I will monitor the discussion board and will be happy to answer your questions there.

Grading
There will be no timed tests in this class. Your grades will instead be determined by your performance on the lab assignments (70%), in class participation (10%) and a group project (20%). Note that lab assignments will become increasingly open ended as we progress through the quarter, and students will need to stretch their technical skills and creativity in order to earn full credit.

All questions regarding grading of lab assignments should be brought to your TA within a week after they are graded. You can request to have a submitted assignment regraded, however, the new grade will be used even if it ends up being lower.

Final grades are determined based on the following interpolated scale: 4.0 ≥ 97%, 3.5 ≥ 90%, 3.0 ≥ 85%, 2.5 ≥ 80%, 2.0 ≥ 75%, 1.5 ≥ 70%, 1.0 ≥ 65%, 0.7 ≥ 60%, 0.0 ≤ 59%.
Course Policies

- **Attendance** is strongly encouraged and expected. In class participation counts for 10% of your course grade. If you prefer asynchronous classes, please consider STAT 311 B. STAT 311 A is structured very differently in terms of the expectations of due dates, assignment times, office hours, and response times. It will work best for students who are able to participate.

- Late assignments will only be accepted provided the instructor is notified in advance of the due date and it is approved.

- **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. The simple rule is: do not claim anyone else’s work, code, words, or ideas as your own. If you are unsure about whether a particular action would be construed as academic misconduct, please ask. If we determine that you have committed academic misconduct, you will be automatically be given a score of 0 on the assignment reported to the Office of Community Standards and Student Conduct.

- **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 policy, including more information about how to request an accommodation, is available at Faculty Syllabus Guidelines and Resources. Accommodations must be requested within the first two weeks of this course.

- **Safety and Health** Take care of yourself. Do your best to maintain a healthy lifestyle this quarter by eating well, exercising, 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.