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Office Hours: TBD; will be announced in class and posted on Canvas
Webpage: https://canvas.uw.edu/courses/1436174

TAs
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All office hours will be posted on Canvas on the online syllabus page once they are set. Feel free to attend any of the office hours. The TAs and I meet weekly so everyone should have the same information.

Course Description
This course provides an introduction to the use of statistical methods from the points of views of both consumers and producers of statistics. We begin with definitions and examples to get you thinking about statistical reasoning and the concept of uncertainty. This is followed by introducing types of data, data collection methods, methods for data visualization and the use of descriptive statistics. The course then moves on to parameter estimation and several inferential methods. Specific topics include graphical displays for qualitative and quantitative data; calculation and interpretation of summary statistics; elementary concepts of probability and sampling; random variables and probability distributions; basic concepts of hypothesis testing, estimation, and confidence intervals; t-tests; and correlation and simple linear regression.

STAT311 is intended as a first course in statistics for students in many different disciplines. This course is also appropriate for students who need a statistics course as a prerequisite for applying to graduate school, or for individuals who want a better command of elementary statistical methods for use at work.

Core Learning Objectives
By the end of the course, you will be able to
• summarize single variable data sets by computing summary statistics and by creating appropriate graphs such as histograms, stem-and-leaf plots, and boxplots;
• interpret summary statistics and visual displays created either by yourself or others;
• use computed means and standard deviations to apply normal approximation methods;
• relate data to a standard normal distribution or percentiles when appropriate;
• plot points and lines to look at relationships between two variables;
• compute correlation coefficients and relate the correlation coefficient to the effect of regression;
• perform simple linear regression analysis, including finding the equation of the regression line, as well as conducting inference related to the regression slope parameter;
• distinguish between estimation and prediction with respect to linear regression and be able to create confidence and prediction intervals;
• explain elementary probability rules, and extend these concepts to setting up correct chance models in order to make a statistical inference;
• define the concept of uncertainty;
• compute standard errors and confidence intervals as measures of reliability for parameter estimation;
• interpret confidence intervals;
• set up and interpret hypothesis tests, using \( z \)-tests, and \( t \)-tests, in order to make inferences about populations based on information from samples; and
• discuss the assumptions for the various tests and when it is appropriate to use each type of test; and,
• use statistical software for graphical and numerical summaries, correlation and regression, and various forms of inference, including an introduction to simulation and nonparametric methods.

Textbook
Our main textbook is *OpenIntro Statistics, 4th Edition*, by Diez, Çentinkaya-Rundel and Barr. A free pdf copy of the book can be found [here](#). Three other books may be referenced for this class. All books have freely available pdf or online versions. All books are available for purchase as well, but this is not necessary.

• *Statistical Inference via Data Science: A ModernDive into R and the Tidyverse.* You can link to the online version [here](#).
• *Introductory Statistics with Randomization and Simulation*, which can be found [here](#).
• An additional Reference for R that you might find useful is *R for Data Science*, which can be found [here](#).

Calculator
No particular calculator is needed for this course as you can use R as a calculator for homework and quizzes. Many of the problems can be (and should be) done by hand. Working problems by hand may help students develop intuition around the methods. If asked to show your work on a quiz, calculator or R function calls do not count unless explicitly stated. Otherwise, be able to show your work.

The Lessons
The main information is contained in Lessons 1 – 9. Each lesson has multiple components:

a. **PowerPoint lectures:** There are one to six PowerPoint lectures with audio per lesson (posted as mp4 files). YOU ARE RESPONSIBLE FOR THE MATERIAL IN THE LECTURES! Most of the lectures follow material in the textbook but there is some information in the lectures that is not covered, or not covered at the same level of detail, as in the textbook. Pdf files of the slides are provided (2 slides per page) so, if desired, you can load them on your iPad and add notes, or print them out ahead of time and take notes on them as you listen to the lectures. If printing, print double-sided to save paper.

b. **Reading:** The specific Chapters or Chapter Sections are listed for each lesson. The reading is meant to augment the lecture material. For topics covered in the textbook, there may be more detail in the reading than is provided in the lectures or vice versa. For topics not specifically covered in the textbook, however, you must refer to the lecture material. I describe the reading as recommended/reference reading. I do not expect that you will necessarily read all pages of each chapter, but you may find alternative explanations or alternative examples for material you find more difficult—use the book to help you out.

c. Each student needs to figure out what works best for their learning—book first or lectures first.

d. **Online Assignments:** After listening to lectures and augmenting with reading, I recommend you start the online problems. There is one WebAssign assignment per lesson. You will need to purchase a WebAssign access code in order to do the homework.

**Keep in mind that you do not have to memorize formulas.** Your quizzes will be open notes/book. I recommend that you try to understand how the various formulas are used, to focus on what information
they give you, to learn when it is appropriate to use the various formulas, and to work on learning how to interpret the numbers.

Also, keep in mind that you should ask questions. It’s easy to get stuck on something that keeps you from moving forward. **ASK, ASK, ASK—POST questions to the course Discussion Forum on Canvas—try to chime in and answer questions that are posted by other students. Just because this is an online course, it does not mean that you need to work in isolation.**

**WebAssign Homework**
You will have one homework assignment per Lesson; the due dates will vary but there will be an assignment due most weeks starting with the first due date being Friday, 15 January. The online nature of these assignments will allow you to get immediate feedback to help you determine your understanding of the material. Some WebAssign specifics:

- **You must purchase a WebAssign Access code to do the homework.** Cengage provides a trial period (either 7 or 14 days) that starts from 4 January.
- **You must enter WebAssign via the link on the Modules page.** If you are asked for a course key, then you are not entering WebAssign properly. No course key is required!
- **Note that WebAssign is set up with 11 weeks total. Week 11 is traditional finals week so no new assignments will be assigned that week.**
- You are allowed five chances to get each problem correct except for multiple-choice problems that are limited to prevent you from purely guessing your way to the answer (you get # possible answers minus 1 tries for multiple choice).
- You may request one three-day extension for all WebAssign homework assignments. You must request your extensions via the link in WebAssign within two hours after the assignment is due. **There is a 2% penalty for all late problems.** For example, if you complete 5 of 10 problems before the deadline, the penalty will only apply to the 5 uncompleted problems.
- **Do NOT ask homework questions via WebAssign.** You must submit homework questions via the Discussion Forum, email, or during Zoom office hours.
- **Make sure to complete all parts of a problem (so scroll down if necessary) before submitting your answers.** If you leave anything blank, it will be marked wrong!
- Point totals vary for each assignment, but all assignments are equally weighted out of 100 points; your lowest assignment (as a percentage) will be dropped.

I cannot easily troubleshoot technical issues with WebAssign. A couple of options for getting help are:

a) WebAssign tech support [http://support.cengage.com](http://support.cengage.com) (800-354-9706)

b) Student resources link: [https://www.webassign.com/support/student-support/](https://www.webassign.com/support/student-support/)

**R Assignments**
We will be using R and RStudio this quarter to introduce the use of statistical software. We will provide R tutorials for you to work through to introduce the various functions that you will need to complete your R assignments. Please refer to the **Resources link** in the top row of the Home Canvas page for more details about R and links for installing the software. Instructions/links are also provided under “Getting Started with R and RStudio on the Canvas Modules page.

R takes a bit of getting used to. The R Tutorials will provide examples of all the functions you need for the related assignments. **You will, however, need to spend some time to learn how R works.** You will
likely need to look at the output after each call to understand what the code is doing! The TAs and I can help with R.

**Quizzes**

There will be four online WebAssign quizzes throughout the quarter that will be available during a 24-hour window. Each quiz will emphasize material since the previous quiz, although there may be some topics that you will be expected to carry over from quiz to quiz since the course material builds from week to week. These will be pointed out before each quiz.

Quizzes will be open notes, open textbook and timed. Quizzes may have some required “Show your Work Problems.” Quizzes 3 and 4 will include an R computing component. You must take each quiz in a single sitting—once you open the quiz, the timer starts. You must plan accordingly so that you finish the quiz before the quiz closes.

Together, the quizzes count 60% of your grade (15% each). Make-up quizzes will only be given in the case of a properly documented, excused absence, which must be arranged before the quiz. Quizzes missed due to an emergency, without prior notice, will be evaluated on a case-by-case basis. Otherwise, missed quizzes will receive a 0.

**Course Announcements**

The TAs or I may post some class announcements under the “Announcements” section on Canvas. It is important for you to read all postings—you are responsible for all information posted via announcements. If you think you might have missed some information, you can check the “Announcements” section on Canvas at any time to see what has been posted throughout the quarter. Please do not reply to announcements as we do not monitor the announcements for comments. If you have a question/comment based on an announcement, please post under the proper thread on the Course Discussion Forum, email me or your TA, or attend office hours.

**Course Discussion Forum**

Use the Discussion Forum to post questions or comments about the course, including but not limited to questions from readings in the textbook, course materials, learning objectives, or other course content. I will try to post threads to use for various topics but feel free to start your own thread for a specific topic. Feel free to respond to the comments posted by your fellow students. For guidelines about effective posting on discussion forums, please see the Netiquette information.

**Grades**

Your final course grade will be determined by your overall weighted percentage based on the following categories and weights:

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>25%</td>
</tr>
<tr>
<td>R Assignments</td>
<td>15%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>60%</td>
</tr>
</tbody>
</table>

You need an overall weighted percentage of $\geq 70\%$ and you need to take all the quizzes to receive a 2.0 in the course. Final grades may be based on curved weighted percentages where the curve depends on how the class does overall.

**Statistics Tutor and Study Center**

The Statistics Tutor and Study Center (STSC) will be offering 1-on-1 30-minute tutoring appointments M – Th winter quarter starting 11 January 2020. Scheduled appointments must be made in advance (no
same day appointments). Starting the third week of the quarter, there will be some added some drop-in tutor hours. We will post an announcement with drop-in hours once they are scheduled. Click here to schedule an appointment.

**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](#). Accommodations must be requested within the first two weeks of this course using the [Religious Accommodations Request Form](#).

**Mental Health Resources**
Any member of the UW community can call [SafeCampus](#) anytime to anonymously discuss safety and well-being concerns for yourself or others. Caring, trained professionals will talk you through options and connect you with additional resources if you want them. Available 24/7 by phone at 206-685-7233, or M-F, 8am-5pm at [safecampus@uw.edu](mailto:safecampus@uw.edu). [Crisis Connections](#) provides immediate help to individuals, families, and friends of people in emotional crisis, dealing with addiction, or struggling to meet basic needs. Anyone in Washington State can receive support and resource referrals 24/7 through their crisis line at 866-4CRISIS (866-427-4747 or TTY 206-461-3219).

**Disability Services for Students** ([http://hr.uw.edu/dso/](http://hr.uw.edu/dso/))
To request disability accommodation, contact the Disability Services Office at: 206.543.6450 (voice), 206.543.6452 (TTY), 206.685.7264 (fax), or email at [dso@uw.washington.edu](mailto:dso@uw.washington.edu). The University of Washington makes every effort to honor disability accommodation requests. Requests can be responded to most effectively if received as far in advance of the event as possible, preferably at least 10 days.

**UW Diversity Statement:** Diverse backgrounds, embodiments, and experiences are essential to the critical thinking endeavor at the heart of university education. Therefore, I expect you to follow the UW Student Conduct Code in your interactions with your colleagues and me in this course by respecting the many social and cultural differences among us, which may include, but are not limited to age, cultural background, disability, ethnicity, family status, gender identity and presentation, citizenship and immigration status, national origin, race, religious and political beliefs, sex, sexual orientation, socioeconomic status, and veteran status.

**Guidance to Students Taking Courses Outside the US**
Faculty members at U.S. universities – including the University of Washington – have the right to academic freedom which includes presenting and exploring topics and content that other governments may consider to be illegal and, therefore, choose to censor. Examples may include topics and content involving religion, gender and sexuality, human rights, democracy and representative government, and historic events.

If, as a UW student, you are living outside of the United States while taking courses remotely, you are subject to the laws of your local jurisdiction. Local authorities may limit your access to course material and take punitive action towards you. Unfortunately, the University of Washington has no authority over the laws in your jurisdictions or how local authorities enforce those laws.

If you are taking UW courses outside of the United States, you have reason to exercise caution when enrolling in courses that cover topics and issues censored in your jurisdiction. If you have concerns
regarding a course or courses that you have registered for, please contact your academic advisor who will assist you in exploring options.

**Academic Integrity**

The University takes academic integrity very seriously. Behaving with integrity is part of our responsibility to our shared learning community. If you’re uncertain about if something is academic misconduct, ask me. I am willing to discuss questions you might have.

Acts of academic misconduct may include but are not limited to:

- Cheating (working collaboratively on quizzes/exams and discussion submissions, sharing answers and previewing quizzes/exams)
- Plagiarism (representing the work of others as your own without giving appropriate credit to the original author(s))
- Unauthorized collaboration (working with each other on assignments)

Concerns about these or other behaviors prohibited by the Student Conduct Code will be referred for investigation and adjudication by (include information for specific campus office).

Students found to have engaged in academic misconduct may receive a zero on the assignment (or other possible outcome).