Math 410A Winter 2017
Advanced Statistical Methods I

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Office Hours: MW 1 - 1:50 PM, TTh 11 - 11:50 AM, and by appointment.

Course Goals: This course is the first of a two-part sequence designed to cover beginning and intermediate regression, ANOVA, and non-parametric statistical models. We will learn the theory behind these models, and we will spend a lot of time using them to answer questions about real-world data. Topics will likely include: linear regression, multiple regression, logistic regression, and ANOVA. The first half of the course (410A) will introduce some very basic ANOVA, a lot of the more advanced details about regression, and the statistical software R. We will begin a significant project during winter term. The second half (410B) will include many details about ANOVA, non-parametric statistics, and will have a significant project component. Besides statistical content, a major goal for the sequence is to focus on statistical communication. We'll spend some time with written statistical communication in winter quarter, and add in oral statistical communication in spring quarter.

Required Text: Ann R. Cannon, et. al. *STAT 2: Building Models for a World of Data*, W.H. Freeman. We will be using this text for both quarters.

Evaluation and Grading: Grades will consist of the following components: (almost) weekly labs (20%), homework (10%), two exams (20% each), and a quarter-long project (30%) in which you will complete and write about a significant statistical analysis of your (possibly plural) own. This may serve as a prelude to a larger project you will complete in Math 410B. Grades will be assigned according to the following scale:

		A	100-93%	A- 92.99-90%
B+	89.99-87%	B	86.99-83%	B- 82.99-80%
C+	79.99-77%	C	76.99-73%	C- 72.99-70%
D+	69.99-67%	D	66.99-63%	D- 62.99-60%
		F	59.99%	and below

General Course Policies: Daily attendance is expected and considered necessary for success. It is your responsibility to find out what was covered on days you were absent. You are responsible for any announcements made in class regarding homework, exams, and labs. Handouts from class and homework assignments will be posted on Canvas. Please note that Thursdays are "lab days" where class will meet in the computer lab. You will generally have activities to do on these days using statistical software and write-ups based on these to submit; see below.

All work handed in for the course must be written neatly, legibly, clearly, using correct mathematical notation, and with sufficient explanation. A good rule of thumb is to write your solution so that a classmate who knows roughly what's going on in the course but doesn't know how to do this particular problem can understand your solution. As a side benefit, this makes it much more likely that you will be able to understand your solution when you go back to study for exams! The bottom line: for any written work handed in for the course, including lab write-ups, exams, and homework, *you must show your work.*

I reserve the right to adjust policies in this syllabus if necessary during the quarter.

Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning, discuss

your concerns with the instructor. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information.

Work due during the last week of classes: We will be covering new material through the end of the last week of classes. There may be homework due, and there will likely be a lab due. The second exam will be due (if take-home)/given during finals week, as will the final project.

Homework: Homework will be assigned often and will generally be due a week after it is assigned. See above for general comments about written work in the course. Homework must be stapled and written on clean-edged paper (no notebook fringes!) or it will not be accepted.

Labs and Lab Write-ups: Lab assignments will include questions to be answered, including relevant statistical analyses. Your lab write-ups must be submitted through Canvas by 3PM on the due date (typically these will be Tuesdays). *NO credit will be given for late work, and there are no dropped lab scores.* Lab write-ups must be typed, written in complete sentences, and follow the general guidelines for written work given above.
We will be making use of the statistical software R in class, and you will be using R for labs and exams. R is a free, open-source software package that is incredibly powerful. I strongly recommend the interface R Studio and this is what I will be using and demonstrating in class. R has a bit of a learning curve, but it's well worth working through! R is becoming more and more of a standard in industry and other disciplines.

Exams: For in-class exams, make-up exams must be arranged ahead of time unless you can document an unexpected circumstance beyond your control that prevented you from taking the exam. For instance, in the case of illness, a doctor's note will be required. All make-up exams must be requested as early as possible. Exams requested more than 24 hours after the scheduled exam will be given only in extreme extenuating circumstances (e.g. hospitalization, jail . . .). When a make-up exam cannot be taken in a timely manner, typically before exams are returned to the class, I reserve the right to instead replace that portion of the course grade with an alternate assessment (possibly the second exam or final project, as appropriate).