Soc 333: Quantitative Analysis of Sociological Data
Fall 2020, MW 3:30-4:45, White Lecture Hall 107*

Professor: Scott M. Lynch
Office Hours: Email for appointment. We will schedule a Zoom meeting.
Website: Check Sakai for all course information, including posted Zoom meeting recordings
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Teaching Assistant: Christina Kamis (christina.kamis@duke.edu)

*Due to Covid-19, we will most likely hold class on Zoom most days, rather than in person. I will email you regularly to keep you posted on the real or virtual location of class meetings. EVEN IF we meet in person, lectures will also be held over Zoom for those who cannot attend in person. All lectures will be recorded and uploaded so that they can be viewed at any time. However, you should plan to attend the Zoom (or in person) meeting at the scheduled class time so that you can participate in class discussions and ask questions when they arise. **We will not have multiple, individual meetings or respond to emails to repeat material and answer questions covered in class.**

Objectives

This course is an applied statistics course. The goal is to introduce you to the process of conducting statistical analyses of social science data in order to answer a research question grounded in substantive theory. The course involves some mathematics. Knowledge of algebra and geometry is expected. The course will cover the basics of research design and philosophy, including the logic underlying scientific research, probability theory, the Central Limit Theorem and its importance for statistical inference, and several methods for analyzing data and making inference, including z tests, t tests, chi square tests, analysis of variance, correlation, and linear regression. At the end of the course, you should be able to conduct basic quantitative social science research and be able to critically evaluate its merits.

Format and Requirements

This course follows a lecture format, but participation is expected, even though most lectures will be held over Zoom. Some lectures will involve discussion of new material; some will involve computer demonstrations; and some will involve discussing homework problems. In-person or Zoom attendance is expected. I cannot require attendance, given that you may be in another time zone. However, it is in your best interest to attend the class live so that you can ask questions as needed.

Book

Lynch, Scott M. (2013). *Using Statistics in Social Research: A Concise Approach.* New York: Springer.

Grades

Grades will be determined by homework completion and performance on four exams. Your final grade will follow a typical, 10-point A-F format. See the table below for grade allocation and cut-points:

Grade Allocation		Cut-points for Final Grades	
Item	% of grade	Final Grade	%-Point Range
Homework Completion	15%	A	92-99
Test 1	10%	A-	90-91
Test 2	20%	B+	88-89
Test 3	25%	B	82-87
Test 4 (Final)	30%	B-	80-81
		C+	78-79
		C	72-77
		C-	70-71
		D	60-69
		F	0-59

Notes:

1. Homework will consist of exercises from the back of the book (10%) as well as exercises to be completed in R (a statistics software package; 5%). Computer exercises in R will be graded. Exercises from the back of the book will not be graded. However, you will submit your end-of-chapter homework the day of the scheduled exam, either in person or via email, and we will simply check to see that you did it. If the test is taken in person, this means you will submit your homework prior to receiving the exam. If the test is taken online/otherwise, you will submit your homework via email prior to receiving the exam. **You will not receive an exam, in person or online, unless you submit your homework or tell us that you did not complete it. If you request an exam but do not turn in your homework at that time, you will receive no credit for that homework.** Each set of end-of-chapter homework is worth 2.5% of your final grade. Failure to turn in any homework is therefore worth an entire letter grade. So, do it and turn it in on time.

2. Exams will be held on the day shown in the schedule on the next page and will be in person if possible. I am aware that some students may be in different time zones. We will establish a test-taking protocol based on enrollees' situations as appropriate.

3. The final exam will not be cumulative more than necessary. It will focus primarily on material covered later in the semester. The final exam date and time will follow the University's schedule.

Course Schedule

Date	Topic	Readings
Aug 17	Overview of course	Ch. 1
Aug 19	The Research process	Ch. 2
Aug 24	Types of data and their acquisition	Ch. 3
Aug 26	Summarizing data	Ch. 4
Aug 31	continued	
Sep 2	Summarizing data using R	handout
Sep 7	Test 1	
Sep 9	Probability theory	Ch. 5
Sep 14	continued	
Sep 16	continued	
Sep 21	continued	
Sep 23	Probability in R	handout
Sep 28	The Central Limit Theorem	Ch. 6, p. 83-86
Sep 30	Test 2	
Oct 5	One sample statistical tests	Ch. 6, p. 87-90
Oct 7	Confidence intervals	Ch. 6, p.90-95
Oct 12	Two sample tests and intervals	Ch. 6, p. 95+
Oct 14	Two sample tests/intervals in R	handout
Oct 19	Chi-square tests	Ch. 7
Oct 21	Analysis of Variance (ANOVA)	Ch. 8
Oct 26	Correlation and simple regression	Ch. 9
Oct 28	continued	
Nov 2	Causality	Ch. 10, p. 143-152
Nov 4	Test 3	
Nov 9	Multiple regression basics	Ch. 10, p. 153-162
Nov 11	Multiple regression extensions	Ch. 10, p. 162+
Nov 16	Multiple regression in R	handout