

POLS 203— SOCIAL STATISTICS

Fall 2020

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Course Description

This course provides an introduction to statistical theory, reasoning, and argument. Social sciences increasingly rely on quantitative methods, including surveys, and supervised and unsupervised regression techniques at the age "Big Data." Statistical knowledge therefore is essential to understanding contemporary academic work. By the end of this course, students will have acquired the skills to implement statistical methods and interpret their output, and to design a study of their own to answer a research question of interest. Learning a programming language to conduct statistical analyses is an integral part of this course. We will be using the open source statistical package, R (<http://www.r-project.org>). R is free and open source. Therefore, this programming language is quickly becoming an industry and academic standard. Having a working knowledge of R is useful for both your future academic work and your professional life, since companies as diverse as Google, Pfizer, Merck, Bank of America, the InterContinental Hotels Group, and Shell use R. The course will be online.

IMPORTANT! *This course is TOUGH. Take it seriously.*

- You cannot learn coding the night before the exam. It requires practice, like throwing 3-point shoots in basketball (others can show you the technique but you cannot throw unless you practice it yourself).
- I recommend regular attendance lest you will fall behind. This course is cumulative. If you miss one topic, you will most likely not be able to comprehend the next one.
- Attending problem sessions to do exercises is highly recommended. Teaching assistants are fully competent in R and willing to help you. You can ask them your questions in a low-key environment.
- If you feel you are falling behind do contact your instructors immediately.

Course Requirements

- Exams: 40%
- Term project: 60%

Exams: Exams will be 30 to 45-minute open book take home exams. They will cover all the material from the first to the last class until the day of the exam.

Research project: Throughout the semester, you'll be working on a research project in groups of 4, which you'll turn in, and whose findings you'll present on the last day of

classes. For this assignment, each group is expected to find a different dataset that they are interested in exploring and test hypotheses with. There are no limitations on what the dataset must be about except that it should help to answer a political science question. BUT, make sure that it comes from a trustworthy source (you'll be noting the source of the data) and is collected with diligence. If your dataset only allows you to run some kind of models but not all (e.g., regression but not test of proportion), you are expected to find different datasets for the others.

Steps of research project

- Week 1: Agree on a topic and find a corresponding dataset
- Weeks 1-7: Run descriptive analyses & significance tests
- **Week 7: Turn in results of your analysis**
- Weeks 7-13: Formulate testable hypotheses and test them using your dataset. You are expected to present results on each type of model we cover in the course.
- Week 13: **Final report due.** Present findings in class

Plagiarism and Academic Honesty:

Plagiarism is a serious problem and refers to dishonestly representing someone else's ideas as your own. Plagiarism is punished by disciplinary committee and usually results in an F as course grade and sometimes heavier penalties. All students must understand the meaning and consequences of cheating, plagiarism and other academic offences (<http://www.buowl.boun.edu.tr/students/favoidingplagiarism.htm>). The Department of Political Science and International Relations has the following rules and regulations regarding academic honesty.

1. Copying work from others or giving and receiving answers/information during exams either in written or oral form constitutes cheating.

2. Submitting take-home exams and papers of others as your own, using sentences or paragraphs from another author without the proper acknowledgement of the original author, insufficient acknowledgement of the consulted works in the bibliography, all constitute plagiarism.

3. Plagiarism and cheating are serious offenses and will result in:

a) an automatic F in the assignment or the exam,

b) an oral explanation before the Departmental Ethics Committee,

c) losing the opportunity to request and receive any references from the entire faculty,

d) losing the opportunity to apply in exchange programs,

e) losing the prospects of becoming a student assistant or a graduate assistant in the department.

The students may further be sent to the University Ethics committee or be subject to disciplinary action.

Required books

Imai, Kosuke. (2017) Quantitative Social Science: Introduction. Princeton University Press.

Agresti, Alan and Barbara Finlay. (2008). Statistical Methods for the Social Sciences. 4th eds. Prentice Hall.

Schedule of Topics

Week	Topics
1	Introduction & principles of scientific inquiry
2	Sampling & measurement
3	Descriptive statistics
4	Probability distribution
5	Statistical inference: Estimation
6	Significance tests
7	MIDTERM & Comparison of two groups
8	Categorical variables
9	Linear regression & correlation
10	Multivariate relationships
11	Model building
12	FINAL
13	RECAP & WRAP-UP