

POLS 641: Introductory Analysis of Political Data

Dr. Ches Thurber

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Class Hours: Wed 2:00-4:40 p.m.

Class Room: 464 DuSable

I use quantitative research in the sense that I'm really into distributions. I don't use a very high level of abstract quantitative work, but I do count! ...feminists count all the time; we count all the time. And then we ask the questions. What does it mean, how did it get that way?

– Cynthia Enloe

Course Description

This is the first course in the NIU Political Science Department's quantitative methods sequence. It is required of all graduate students and is intended as an introduction to the methodological tools used by social scientists in analyzing numeric data. The primary goal of the course is to increase students' comfort in engaging with and thinking about quantitative analysis. It will emphasize the linkages between concept and measurement, the fundamentals of distributions, randomness and uncertainty, and the challenges of statistical inference. The emphasis is on fundamental concepts and programming proficiency, with relatively little formal mathematics. Students should leave the course with the ability to engage with quantitative empirical research, even if they do not fully understand the methods being employed, and with the basic statistical and computer programming tools to pursue more advanced study.

Texts

The main required textbooks for the course are:

- Michael A. Bailey. *Real Stats: Using Econometrics for Political Science and Public Policy*. Oxford University Press, 2016.
- Kosuke Imai. *Quantitative Social Science: An Introduction*. Princeton University Press, 2018.

Additional texts will be available on the Blackboard site. This includes both some additional readings on the syllabus, as well as supplementary texts. Statistics can be hard and confusing and sometimes seeing the same thing presented in different ways can be helpful.

Computer Programming in R

As part of this course, you will learn to use the statistical programming language R. Why R? Because it's free. And also because it's the one your instructor uses in his own research (Why? See

reason 1...) We will talk about some of the other statistical programming languages in class and their relative advantages and weaknesses. Whatever software is being used however, learning to program, especially for the first time, can be difficult. In fact, even for advanced users, dealing with coding errors is time-consuming, mentally exhausting, and often extremely frustrating. We will therefore proceed at a slow pace, walk through everything in class, and I will encourage you to work in groups on homework problems. I only ask that your final submitted work be your own.

Evaluation

Class attendance, preparation and participation (30%): The time we spend in class is for me the most important of this course. As such, punctual attendance is mandatory. But more important than just being present at a desk is that you are actively engaged. I expect that you have done the readings and that you try to participate in discussion each and every class section. I also expect that you follow along with programming demonstrations and work with your classmates to complete in-class exercises.

Problem Sets (30%): You will have a number of problem sets to complete over the course of the semester. I encourage you to work in groups to complete the problem sets. However, I ask that the final work submitted be your own. This can be a little ambiguous, but to me means that 1) group work is conducted in a good-faith collaborative effort in which all participants are actively seeking to contribute; and 2) written work, including code, is produced by the individual student, not copied and pasted from other students' work.

Final Project (40%): You will produce a final project in written and presentational form. This project will involve an independent quantitative analysis of some type in which you develop a hypothesis or more, present relevant data and provide visualizations and basic descriptive measures, and evaluate your hypothesis with appropriate statistical tests including (but not limited to) linear or logit regression. You will write-up a 10-page (or so) mini-paper and deliver a 10-minute conference-style presentation on the final day of class.

Course Policies

- Successful completion of this course requires consistent, punctual attendance, and active participation in both class discussion and class exercises. If you must miss class due to a conflicting responsibility or an emergency, it is your responsibility to contact me to discuss the situation. I will generally require a short written assignment to be submitted in lieu of class attendance. Any more than 1 absence without prior notification and make-up work will affect your final grade.
- If you think you need to delay submitting a problem set, you should talk to me, generally at least two weeks before the due date. Such extensions are never guaranteed, but will be based on university policy, exigency of the circumstances, and timeliness of the request (the earlier the better). Any missed written assignment submitted after the deadline without prior authorization from me will not be accepted and a grade of 0 will be assigned.)
- All students are expected to adhere to the highest levels of academic integrity. Violations of university, departmental, and disciplinary standards will not be tolerated and will lead to

an F for the course. This includes forms of plagiarism as well as honesty and transparency in data analysis. We will talk at length in class about what this means.

- If you need an accommodation for this class, please contact the Disability Resource Center as soon as possible. The DRC coordinates accommodations for students with disabilities. It is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 or drc@niu.edu. Also, please contact me privately as soon as possible so we can discuss your accommodations. Please note that you will not be required to disclose your disability, only your accommodations.
- It is my personal policy to allow graduate students to call me by my first name, “Ches.” This reflects the idea that I view you all as colleagues-in-training. Please let me know how you prefer to be addressed, both in name and pronoun, if it differs from what is in the college directory. I will make every effort to address you in the way you wish to be addressed. Please try and do the same for your fellow classmates, as well as for other faculty in the department.
- I am committed to your success in this class – if you feel that you are not performing to your expectations, please come and see me. I am available to answer any questions you may have about course assignments, requirements or content. I generally answer e-mails within 24 hrs on weekdays, and would be happy to schedule an appointment to meet with you if you are unavailable during my posted office hours.

Class Schedule

Students are expected to read the following before Wednesday's class session. In the case of the QSS text, this means working through the programming examples in the main text. Important: class readings are subject to change, contingent on the progress we make as a class.

Week 1 (Aug. 29): Introduction

- Achen, "Advice for Students" (BB)
- RS: Preface for Students
- QSS: Ch. 1
- [Healy, "The Plain Person's Guide to Plain Text Social Science" \(Skim\)](#)

Week 2 (Sep. 05): (The Obsession with) Causality

- RS: Ch. 1
- QSS: Ch. 2

Week 3 (Sep. 12): Descriptive Statistics

- RS: Ch. 2
- QSS: Ch. 3

Week 4 (Sep. 19): Concepts and Measures

Problem Set #1 Due

- Pollock, Chs. 1 and 2 (BB)
- Tufte, "Visual and Statistical Thinking" (BB - suggested)

Week 5 (Sep. 26): The OLS Workhorse

- RS: Ch. 3
- QSS: Ch. 4, Section 4.2 Only!

Week 6 (Oct. 03): Probability and Distributions

Problem Set #2 Due

Week 7 (Oct. 10): Uncertainty and Hypothesis-Testing

- RS: Ch. 4

Week 8 (Oct. 17): Data and Society

Problem Set #3 Due

Pick ONE of the following:

- Kaplan and Marsh, "Pick the Statistic You Want to Be"
- Silver, "The Real Story of 2016"
- Jerven, "Poor Numbers"
- O'Neil, *Weapons of Math Destruction*, Ch. 1

Week 9 (Oct. 24): Multivariate OLS

- RS: Ch. 5

Week 10 (Oct. 31): Dummy Variables and Difference of Means

Problem Set #4 Due

- RS: Ch. 6

Week 11 (Nov. 07): Transformations

Problem Set #5 Due

- RS: Ch. 7

Week 12 (Nov. 14): Binary DVs

Problem Set #6 Due

- RS: Ch. 12

Week 13 (Nov. 21): *Happy Thanksgiving!*

Week 14 (Nov. 28): Mixed Method Approaches

- Lieberman, "Nested Analysis"
- Weller and Barnes, "Pathway Analysis"
- Seawright *Multi-Method Social Science*, Ch. 1.

Week 15 (Dec. 05): Final Presentations

Final Projects Due at the start of class

Additional Possible Topics

- Cool Data: Text, Social Networks, and Geospatial Data
- Experiments
- The Replication Crisis in Social Science
- Regression Diagnostics