

# POLS 642: Intermediate Analysis of Political Data

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Class Hours: Tue 12:30-3:10 p.m.

Class Room: 464 DuSable

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## Course Description

This is the second course in the NIU Political Science Department's quantitative methods sequence. It is taken by most graduate students in the department who wish to satisfy the methodological requirements through a balance of quantitative and qualitative methods courses. It is taken by all students seeking to eventually take more advanced courses in quantitative methods outside the department. The course focuses on linear regression models with an emphasis on the concepts of probability and inference, the assumptions of linear regression estimation, and the application of linear models to research questions. Students should leave the course with the ability to engage with quantitative empirical research, to employ basic OLS and logit models in their own research, and to further their statistical skills through either more advanced coursework or self-learning. In order to accomplish these goals, we will spend a significant amount of time learning statistical computer programming in R.

## Texts

The main required textbook for the course is:

- Michael A. Bailey. *Real Stats: Using Econometrics for Political Science and Public Policy*. Oxford University Press, 2016.

I also strongly recommend the following new book on data visualization using R and GGPlot. You can buy a hard copy online, or use a free online version available [here](#).

- Kieran Healy. *Data Visualization: A Practical Introduction*. Princeton University Press, 2018.

Finally, students are required to choose one of the following texts to consult as an alternative text to build upon and reinforce the material introduced in Bailey:

- Colin Lewis-Beck and Michael Lewis-Beck. *Applied Regression: An Introduction*. Sage, 2016.
- Damodar N. Gujarati and Dawn C. Porter. *Basic Econometrics*. McGraw-Hill/Irwin, 2008.
- John Fox. *Applied Regression Analysis and Generalized Linear Models*. Sage, 2016.

Which text you choose is completely up to you. You may wish to look at online previews and see what resonates. The texts are listed in order of difficulty from most straightforward to most

sophisticated (based largely on how much they rely on basic intuition as opposed to formal mathematics). You should also look on the internet for what deals you can find. Older editions are fine and I expect that you should be able to get your hands on an adequate text for less than \$20, if not for free.

## Computer Programming in R

As part of this course, we will continue to use the statistical programming language R. It is assumed that students have developed a solid introduction to R in POLS 641 and we will build on that foundation. We will continue with biweekly R Workshops which are *strongly recommended*. I will continue to teach R skills in class, but I will ask you to increasingly figure things out on your own. Part of the skillset being developed in this class is the ability to teach yourself going forward.

## 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 (20%):* 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. The final problem set should be fully "knitted" and submitted as either a .doc, .pdf, or .html file.

*Final Project (50%):* You will produce a final project in written and presentational form. This project will be the equivalent of a conference paper and presentation that involves some sort of quantitative analysis. This may be a continuation of your POLS 641 "mini-paper" or something new. I welcome you to write this paper in conjunction with another graduate course. In other words, I am happy to have you write a single (superior!) paper to meet the requirements for both this course and another, *conditional on the approval of the instructor of the other course*. If I am the instructor of the other course, consider this my statement of approval!

## Grading Standards

Grades in graduate school are a little bit silly, in my opinion, as you are at the point in your careers where it is your written work itself that matters (and how it is received by a broader scholarly community) more than the grade arbitrarily assigned by a single cantankerous professor. Nevertheless, they can serve as a helpful signaling device for your own self-assessment, for departmental funding decisions, and to admissions committees at PhD programs (for MA students planning to continue on...). While I have outlined a mathematical weighting above, the inherently qualitative nature of class participation and final project evaluation has made me realize that a more generally qualitative statement of grading standards might be more useful. The scheme below is

taken from Prof. Kyle Beardsley in the political science department at Duke University with some modifications to adapt to our departmental norms and my own personal views. I think Dr. Beardsley does a really nice job of articulating the attributes of strong graduate-level work in political science.

It may also be helpful to think about the grading distributionally. In the past, I have generally awarded between 1 and 3 straight As per graduate seminar. The modal grade has been an A-, with a few Bs and B+s.

- **A** : *Exceptional Performance*. Consistently outstanding work on all course-related tasks at a level that distinguishes the student from other members of the class. A comprehensive and incisive command of the issues, literature, and substantive information relevant to the course. A frequently demonstrated exceptional capacity for original, creative, critical and logical thinking. The ability to master and integrate large amounts of factual material and abstract theories. An outstanding ability to discuss effectively course subject matter using both written and oral communication skills.
- **A-** : *Very Good Performance*. Consistently strong work on all course-related tasks. A command of the issues, literature, and substantive information relevant to the course. A clearly demonstrated capacity for original, creative, critical and logical thinking. Understands well and can integrate the relevant factual and theoretical material central to the course. A strong ability to discuss effectively course subject matter using both written and oral communication skills.
- **B+** : *Good Performance*. Solid work on all course-related tasks. A good grasp of the issues, literature, and substantive information relevant to the course. A generally demonstrated capacity for original, creative, critical, and logical thinking. A very good command of factual and theoretical material, and some capacity to integrate the two. A solid ability to discuss effectively course subject matter using both written and oral communication skills.
- **B** : *Decent Performance*. Generally consistent work on most course-related tasks. A general understanding of the issues, literature, and substantive information relevant to the course. Modest evidence of the capacity for original, creative, critical and logical thinking. An acceptable understanding of factual and theoretical material, but limited evidence of the capacity to integrate the two. A basic ability to discuss effectively course subject matter using both written and oral communication skills.
- **B-** : *Barely Satisfactory Performance*. Mostly satisfactory work on course-related tasks, but with notable deficiencies. A general understanding of the issues, literature, and substantive information relevant to the course. Understands at a basic level the facts and theories related to the course, but with clear gaps, errors, or incomplete work. A limited or inconsistent ability to discuss effectively course subject matter using both written and oral communication skills.
- **C+/C** : *Inadequate Performance*. Some, but generally insufficient understanding of the basic elements of the issues, literature, and substantive information relevant to the course. An inability to go beyond a recitation of basic factual material related to the class. Demonstrated weaknesses in the ability to discuss effectively course subject matter using both written and oral communication skills.
- **D** : *Unacceptable Performance*. A superficial and inconsistent familiarity with the issues, literature, and substantive information relevant to the course. An uneven understanding of basic

factual material related to the course; no evidence of fact/theory integration. Demonstrates significant gaps in the ability to discuss effectively course subject matter using both written and oral communication skills.

- **F : Failure.** A general lack of familiarity with the issues, literature, and substantive information relevant to the course. The absence of even a basic understanding of the factual material related to the course.

### 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. This should not be common practice as it can lead to getting seriously behind in the course. That said, I would rather you take the time to do the problem sets to the best of your ability than to rush through and not really learn the skills you need to learn.
- 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](mailto: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 Monday's class session. Important: class readings are subject to change, contingent on the progress we make as a class.

### Week 1 (Jan. 15): Introduction and Probability Review

- RS: Chs. 1-2, Appendix

#### *Supplemental Readings*

- Gujarati, Ch. 1
- Fox, Ch. 1

### Week 2 (Jan. 22): Data Visualization

- Healy, *Data Visualization*, [Chs. 1-3](#)
- **Problem Set #1 Due - Friday Jan. 25 @ 5PM**

### Week 3 (Jan. 29): Bivariate OLS

- RS: Chs. 3, 14.1

#### *Supplemental Readings*

- Beck, Chs. 1, 2: pp. 23-28
- Gujarati, Ch. 3
- Fox, Ch. 5.1

### Week 4 (Feb. 05): Interval Estimation and Hypothesis Testing

- RS: Ch. 4

#### *Supplemental Readings*

- Beck, Ch. 2: pp. 29-38
- Gujarati, Ch. 5
- Fox, Ch. 6.1

### Week 5 (Feb. 12): Multivariate OLS

- RS: Chs. 5-5.3, 14.1-14.5

#### *Supplemental Readings*

- Beck, Ch. 3
- Gujarati, Ch. 7
- Fox, Chs. 5.2, 6.2-6.4

**Week 6 (Feb. 19): Model Specification**

- RS: Chs. 6-7
- **Problem Set #2 Due - Friday Feb. 22 @ 5PM**

*Supplemental Readings*

- Gujarati, Ch. 15
- Fox, Chs. 4, 7

**Week 7 (Feb. 26): Multicollinearity and Heteroskedasticity**

- RS: Ch, 5.4

*Supplemental Readings*

- Gujarati, Chs. 10-11
- Fox, Chs. 12-13

**Week 8 (Mar. 05): Presenting Findings**

- Healy, *Data Visualization*, Ch. 6

**Week 9 (Mar. 12): Spring Break**

**Week 10 (Mar. 19): Bivariate Dependent Variables**

- RS: Ch. 12
- **Problem Set #3 Due - Friday Mar. 22 @ 5PM**

*Supplemental Readings*

- Gujarati, Ch. 16
- Fox, Ch. 14

**Week 11 (Mar. 26): Fixed-Effects Models**

- RS: Ch. 8

**Week 12 (Apr. 02): Time Series Data**

- RS: Ch. 13
- **Problem Set #4 Due - Friday Apr. 05 @ 5PM**

**Week 13 (Apr. 09): Mixed Methods Research**

- Lieberman, "Nested Analysis"
- Seawright and Gerring, "Case Selection Techniques in Case Study Research"
- Thaler, "Mixed Methods Research in the Study of Political and Social Violence and Conflict"

**Week 14 (Apr. 16): Experiments**

- RS: Ch. 10

**Week 15 (Apr. 23): Final Presentations 1**

**Week 16 (Apr. 30): Final Presentations 2**

**Final Papers Due: Monday 5/6 at 5pm.**