

# POLS 670: QUANTITATIVE METHODS FOR POLITICAL SCIENCE AND PUBLIC POLICY

NORTH DAKOTA STATE UNIVERSITY, FALL 2023, 3 CREDITS

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## Basic Information

Professor: Daniel Pemstein  
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Class Location: TBA  
Class Time: TBA  
Office Location: Putnam 12  
Office Hours: TBA

## Course Description

### Bulletin Description

Introduction to social science data analysis with a focus on political science and public policy applications. Students will learn to describe and model social data and determine if patterns in those data are meaningful.

### Course Objectives

Political science is the systematic analysis of politics: we propose that the world works in certain ways and test those hypotheses by looking for patterns in data. Similarly, public policy analysis asks if specific policies and programs achieve specific social goals. Data and analysis can come in many forms, but in this course we will specifically learn how to describe patterns in quantitative data and determine whether those patterns are meaningful. Don't let the objectives of the course scare you away: this is not (or not only) a course about defining terms and running calculations. It is a course designed to teach you what data can tell us and how you can use quantitative tools to credibly answer questions that matter to you. The course provides a foundation for more specialized methods courses and will prepare you to understand and critique academic articles that use a quantitative approach and evaluate the credibility of quantitative program evaluations.

## Required Student Resources

Textbooks:

- Imai, Kosuke. 2018. *Quantitative Social Science: An Introduction*. Princeton University Press.
- Gelman, A., J. Hill, and A. Vehtari. 2021. *Regression and Other Stories*. Cambridge University Press. (hereafter ROS)

## Schedule

Weeks	Topic	Reading
1	Introductions	ROS Ch. 1
2–3	Software Bootcamp	Imai Ch. 1
4–5	Causality in Social Science & Program Evaluation	Imai Ch. 2
6–7	Measurement in the Social Sciences	Imai Ch. 3, ROS Ch. 2
8–9	Models of Politics and Policy	Imai Ch. 4, ROS A.1–A.3
10	Review & Midterm	
11–12	Exploratory Social Data Analysis	Imai Ch. 5, ROS Ch. 3
13	Thinking Probabilistically	Imai Ch. 6, ROS Ch. 4–5
14	Testing Social Scientific Hypotheses	Imai Ch. 7, ROS Ch. 6–7
15	Drawing Conclusions About Policy Program Effectiveness	Imai Ch. 7, ROS Ch. 8
16	Final Projects	

## Evaluation

### Summary

Homework	40% (5% each)
In-Class Checkpoints	25% (5% each)
Midterm	15 %
Final Program Evaluation Paper	20%

### Homework

There will be eight homework assignments throughout the semester. You may type or hand-write your answers. Turn in a hard copy. POLS 670 students will complete the homework assigned in 470 and, for each assignment, an additional set of more advanced questions based on the grad-specific readings.

### In-Class Checkpoints

There will be five in-class “checkpoints” throughout the semester to ensure you have mastered skills that you will need to move forward in the class. You will have 20 minutes to complete each checkpoint. *You must complete checkpoints on your own.* 670 checkpoints will focus primarily on the material in the 670-only readings, although all material is fair game.

### Midterm

The midterm will take place in class. You will have already seen every problem in the homework and checkpoints, but with different details and phrasing. The 670 midterm evaluates mastery of the advanced topics covered in the 670 homework and checkpoints, in addition to the more basic skills evaluated by the 470 midterm.

## Final Data Analysis Paper

For your final paper, you will choose one of three programs to evaluate using data I will give you. You will select and justify your statistical approach, run the analysis, interpret the results and present them in a format that would be appropriate for communicating program evaluation to policymakers. The paper will be 6–8 pages long, **not including** tables and figures. Program descriptions, data, specific instructions, and a rubric will be handed out a month before the due date.

## Grades

I use a flat grade scale:  $A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F$ . If you have a complaint about a grade you must type a formal appeal describing the problem. Your appeal should clearly explain why you believe your grade is incorrect and make a cogent argument for improving your grade.

## Class Policies

### Deadlines

All take-home assignments are due at the beginning of class. Late work loses ten percent per 24 hours late. Make-up work or extensions will be allowed only if you alert me to your absence or difficulty before the relevant class. I will consider situations in which you could not possibly have contacted me before class on a case-by-case basis.

### Attendance

According to NDSU Policy 333 (<http://www.ndsu.edu/fileadmin/policy/333.pdf>), attendance in classes is expected. In this course attendance is mandatory unless you have a valid reason to miss a session.

Veterans and student service members with special circumstances or who are activated are encouraged to notify the instructor as soon as possible and are encouraged to provide Activation Orders.

### Academic Honesty

The academic community is operated on the basis of honesty, integrity, and fair play. **NDSU Policy 335: Code of Academic Responsibility and Conduct** applies to cases in which cheating, plagiarism, or other academic misconduct have occurred in an instructional context. Students found guilty of academic misconduct are subject to penalties, up to and possibly including suspension and/or expulsion. Student academic misconduct records are maintained by the **Office of Registration and Records**. Informational resources about academic honesty for students and instructional staff members can be found at <http://www.ndsu.edu/academichonesty>.

Please make sure that you understand common standards of academic integrity and plagiarism and consult the instructor if you are ever in doubt. I have a no tolerance policy for

academic misconduct and students who commit such misconduct should expect, at minimum, to receive a failing grade for this class.

### **Students with Special Needs**

Any students with disabilities or other special needs, who need special accommodations in this course, are invited to share these concerns or requests with the instructor and contact the Disability Services Office (<http://www.ndsu.edu/disabilityservices>) as soon as possible.

### **Discrimination and Harassment**

NDSU is committed to providing a safe and non-discriminatory learning, living, and working environment for all members of its university community. NDSU's policy on discrimination and harassment is available [here](#) and the equity office provides information about filing complaints [here](#). Any form of violence or harassment, including sexual assault, relationship violence, and stalking is unwelcome at the University. NDSU provides a Sexual and Gender-Based Harassment and Sexual Assault [Resource Guide](#).

Low-grade discrimination and harassment can be especially pernicious in a classroom setting. Please read this [blog post](#) and work to avoid the behaviors that the post describes.

Please note that the instructor has a mandatory responsibility to report instances of discrimination, harassment, sexual assault, and retaliation, as described [here](#). What this means is that as your professor, I am required to report any incidents of such misconduct that I observe, or that students or others report to me.