

GOV 255: Quantitative Analysis in Political Science

Spring 2006
Kanbar Hall—Room 101

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Office Hours:

Tuesday, 10am-12pm
Wednesday, 11am-1pm
And by appointment

This course examines the use of empirical methods to study political phenomena. It is designed to help you think like a social scientist and to give you the tools to investigate interesting and important social/political phenomena. Research begins with a puzzle and a question. What makes a puzzle worth investigating? What makes a particular research project worth pursuing? Ask first, who cares? After surmounting this hurdle (a hard enough challenge), it is imperative that we think first about process. How is my puzzle generated? For example, what process generates turnout rates on Election Day? Do voters make rational decisions about the costs and benefits of voting? Or do they care more about civic and democratic responsibilities? Once we hypothesize a process, we must then consider its implications—what should we observe if I'm right? This should motivate us to collect data and leverage it against our expectations. Does the evidence support my claims? How might I be wrong? Finally, we must write it all down, and in a way that is digestible to our readers.

We begin the semester with the challenge of defining science. What is scientific inquiry? How do we pursue a scientific investigation of the social world? As we will see, the social world is complex and messy, complicating any scientific exploration of its operation. We follow this with a consideration of the major components of a research project: research question; theory; hypotheses; concepts; indicators; data; and interpretation. Finally, we explore the use of quantitative analysis in political science. How do we identify relationships between variables? When are those relationships significant?

The goal of this course is to provide an introductory survey of all of these topics. Ultimately, the best way to think like a social scientist is to act like one. As such, your assignments will push you to practice the tools we will read about and discuss in class, and your final paper will ask you to design a major research project. This course might be useful to those who are considering a Senior Honors Project, and your final paper might be a good first step.

Course Requirements

There are four major components to your grade:

1. **Five small assignments** (each worth 3 points)—these are short reactions of about 2 pages (double-spaced). Due dates are specified on the syllabus, as are instructions for each assignment.
2. **Four longer assignments** (each worth 12.5 points)—these are 5-6 page papers (double-spaced). Due dates are specified on the syllabus, as are instructions for each assignment.
3. **Class participation** (10 points)—this includes attendance and class participation. Attendance is required, and I will take regular note of who is and who is not in class. I understand that people get sick, have doctor's appointments, and so on, but I will only grant excused absences in rare circumstances.
4. **Final paper** (25 points)—this is a 10-12 page paper that sets out a research design for a major research project. You will state what your question is; what your theory and hypotheses are; and what data you would use to test your empirical expectations. You will also provide a literature review of prior work in your issue area. This might be a valuable beginning to anyone thinking about doing an Honors Project next fall.

A word on due dates: All short and long reactions are due on the class date as listed in the syllabus. I will not accept late papers. However, I understand that printers break down and your schedule is often busy. As such, I offer the following limited extension opportunity. You may turn in a paper up to 3:30pm of the due date. You must do this to me, in my office. If your printer is broken, and you cannot get to a computer lab to print a copy, you can email it to me, but before 3:30. There are no exceptions to this rule.

Software: There are a few assignments that will involve your use of a statistical software package (most often Excel). We will discuss this in more detail when the time warrants, but the necessary software will be available in most computer labs. Alternatively, I often use a free statistical package called R. As the semester progresses, I will describe R in more detail, and provide examples of its flexibility. You are not required to use this package, but because it is free, it might prove more valuable than other alternatives.

Readings

There are five books for this course, and a number of outside articles. The books are available through the campus bookstore, and all of the outside readings are on electronic reserve (which can be accessed through Blackboard and the library website).

1. *Einstein's Dreams*, by Alan Lightman
2. *What Is This Thing Called Science: An Assessment of the Nature and Status of Science and Its Methods*, by Alan Chalmers
3. *Tricks of the Trade*, by Howard Becker
4. *Designing Social Inquiry*, by Gary King, Robert Keohane, and Sidney Verba

5. *The Tao of Statistics*, by Dana Keller

Other Issues

1. I expect all students to abide by the Bowdoin Academic Honor Code, which can be accessed online at <http://library.bowdoin.edu/>. Click on "Getting Started," and then "Concerning Plagiarism." If you have any concerns or questions about how to cite work appropriately, please consult me or a reference librarian. We will be going over some rules prior to the due date of the first paper.
2. I encourage you to keep up on current events by reading a major newspaper (i.e., *New York Times*, *Washington Post*, *Washington Times*, *Christian Science Monitor*). You can either subscribe to one of these papers, or read daily editions online. I also encourage you to keep up with popular or current blogs, as these are developing mediums of political news/ideas/commentary.
3. Finally, I will make use of Blackboard to convey information and class discussion topics. I have also posted the syllabus there, and I encourage you to check the course page frequently.

Part 1—Understanding (Social) Science

January 23—Introductions and Expectations

January 25—Understanding Process

- Begin reading *Einstein's Dreams*, by Alan Lightman
- Begin reading Lave and March, Chapter 2, *An Introduction to Models in the Social Sciences*

January 30— Understanding Process, cont.

- Finish Lightman and Lave and March
- Thomas Schelling. 1978. *Micromotives and Macrobehavior*. New York: W.W. Norton And Company. Read Chapter 1 and skim Chapter 4

Short Exercise 1 (3 points): Having read Lightman, Lave and March, and Schelling, consider an outcome that puzzles you, and write a short explanation of what process you think generates the outcome. For example, you might note certain patterns in how and where students sit in the cafeteria. With the authors' insights as a guide, how do you explain the outcome that puzzles you?

February 1—Philosophy of science

- A.F. Chalmers. 1982. *What is This Thing Called Science?* Cambridge: Hackett Publishing Company. Chapters 1-3
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February 6—Philosophy, cont.

- Chalmers, Chapters 4-6

February 8—Philosophy, cont.

- Chalmers, Chapters 7-14

Long Exercise 1 (10 points): Is Intelligent Design (often called Creationism) science? Consider the theories in Chalmers' book. Consider also the arguments in the recent court decision in *Tammy Kitzmiller, et al. v. Dover Area School District, et al.*, decided on December 20, 2005 (the decision is on electronic reserve, and I recommend consulting pp.64-89 specifically).

Suggested additional readings on philosophy of science (Note: These are only suggested readings for your personal advancement. We will not discuss these—or other suggested readings—in class, nor are you responsible for them):

1. Scott Gordon. 1991. *The History and Philosophy of Social Science*. Routledge
2. Abraham Kaplan. 1998. *The Conduct of Inquiry: Methodology for Behavioral Science*. New Brunswick: Transaction Publishers.
3. Klemke, E.D., Robert Hollinger, and David Wýss Rudge, eds. 1998. *Introductory Readings in the Philosophy of Science*. Amherst, N.Y.: Prometheus Books.

Part 2— Understanding Research Design

February 13—Finding and Developing Ideas: Hypotheses and Theories

- Lave and March, Chapter 3, *An Introduction to Models in the Social Sciences*
- *Tricks of the Trade*, by Howard Becker, Chapters 1-2

February 15— Finding and Developing Ideas, cont.

- Gary King, Robert Keohane, and Sidney Verba (KKV). 1994. *Designing Social Inquiry*, Chapter 1

Short Exercise 2: Come up with a research question that you might like investigating. This should be something you consider worthy of serious research. For example, why does the party of the president usually lose seats in the House and Senate in midterm elections? Why did you choose this? How do you defend the “so what” question? Finally, briefly consider a model that might explain your hypotheses.

February 20— Concepts and Indicators

- Becker, Chapter 4
- Charles Jones. “Doing Before Knowing: Concept Development in Political Research,” *American Journal of Political Science*. 18(1): 215-228

Short Exercise 3: This exercise is twofold. **First**, define both sports and country music. List examples of what is included and excluded in your definition. For example, in your definition of sport, is poker included? Is choir? In your definition of country music, is Elvis

included? **Second**, choose a political concept (i.e., political party) and define that. What is included and excluded with that definition?

February 22— Concepts and Indicators, cont.; Independent and Dependent variables

- Zachary Elkins. “Gradations of Democracy? Empirical tests of Alternative Conceptualizations,” *American Journal of Political Science*. 44(2): 287-294.
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February 27—Descriptive Inference: The Case Study, Interviews, and History

- King, Keohane, and Verba (KKV), Chapter 2

March 1— Descriptive Inference, cont.

- KKV, Chapter 2
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March 6— Causal Inference

- KKV, Chapter 3

March 8—Causal Inference: Experiments and the Comparative Method

- “Executing Hortons: Racial Crime in the 1988 Presidential Campaign,” by Tali Mendelberg. *The Public Opinion Quarterly*. 61(1): 134-157.

Long Exercise 2: The two major (and related) debates in political science research design are (first) whether it is better to describe or explain, and (second) whether qualitative or quantitative research designs are better. Based on our discussions in class, and on the course readings thus far (possibly including the articles shown below), what is your take on one or both debates? In other words, what is the value of describing? Or explaining? Do we *need* to have large-N statistical studies, or do small-N and in-depth analyses make as much or more sense?

You might consult the following short review articles of KKV from the *American Political Science Review* (these are part of the e-reserve articles for the course):

- “Review: Disciplining Political Science,” by David Laitin. *APSR*, 89(2): 454-456.
- “Review: Research Design, Falsification, and the Qualitative-Quantitative Divide,” by James Caporaso
- “Review: Bridging the Quantitative-Qualitative Divide in Political Science,” by Sidney Tarrow

Suggested additional readings on experiments:

1. Donald Campbell and Julian Stanley. 2005. *Experimental and Quasi-Experimental Designs for Research*. Houghton Mifflin Company
2. William R. Shadish, Thomas D. Cook, Donald T. Campbell. 2001. *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Houghton Mifflin Company

3. Donald R. Kinder and Thomas Palfrey, Eds. 1993. *Experimental Foundations of Political Science*. University of Michigan Press. Ann Arbor, MI.
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March 11-26—***Spring Break***

March 27— Determining What to Observe

- KKV, Chapter 4
- Barbara Geddes. 1990. “How the Cases you Choose Affect the Answers You Get: Selection Bias in Comparative Politics,” *Political Analysis*. University of Michigan Press. Pp.131-150.
- Becker, Chapter 3

March 29—Understanding What to Avoid

- KKV, Chapter 5
 - Darren Davis. 1997. “Nonrandom Measurement Error And Race of Interviewer Effects Among African Americans,” *Public Opinion Quarterly*. 61: 183-207
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April 3—N

- KKV, Chapter 6

April 5—Presentation of Results

- No readings

Short Exercise 4: Using my dataset on Fantasy Baseball scores (on Blackboard), design a few graphs or tables that attempt to summarize the results. The focus of this exercise is to help you practice telling a story with data. Use Excel for graph-making. I will evaluate your paper on how clearly and concisely you tell a story with your pictures.

Suggested additional readings on data presentation:

1. <http://politicalarithmetik.blogspot.com/>
 2. www.edwardtufte.com/tufte/
 3. Edward Tufte. 2001. *The Visual Display of Quantitative Information*. Graphics Press.
 4. Edward Tufte. 1997. *Visual Explanations: Images and Quantities, Evidence and Narrative*. Graphics Press.
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April 10—Communication of Results

- Gary King, “Replication, Replication,” *PS: Political Science and Politics*. 28(3): 444-452
- Leroy Pelton. “Misinforming Public Policy: The Illiberal Use of Social Science,” *Society* 37(5): 61-69.
- Robert Frank et al. “Does Studying Economics Inhibit Cooperation,” *Journal of Economic Perspectives*. 7(2): 159-171.

Long Exercise 3—At this point in the semester you should be seriously considering your research design final paper. This paper is intended to force you to begin working on it. State what your research question is, and provide a 5-6 page review of relevant research in that area.

Part 3—Understanding and Explaining with Numbers (With an emphasis on commuting between Portland and Brunswick)

- For this section, read *The Tao of Statistics*

April 12—Stating the question, considering the model, identifying and collecting the data

April 17— Stating the question, considering the model, identifying and collecting the data, cont.

Short Exercise 5—Go out and collect some data. You can collect either political data (i.e., recent GDP for major industrial countries; or turnout rates in American states in presidential elections) or personal data (i.e., how much time you spend in the cafeteria during lunch and dinner; how much television you watch each night). Record variables that you might think is related to your principal data collection (in the personal data example, day of week, weather, etc; in the political example, region of country). Write up a short review of your data collection, highlighting any coding decisions or problems you may have had. Store the data as an Excel file and email it to me.

April 19—no class (conference)

April 24—Looking for relationships: Difference of means and proportions

April 26— Looking for relationships: Hypothesis testing

- Read “Understanding Regression Analysis,” by Larry Schroeder, David Sjoquist, and Paula Stephan. Sage, 1986. pp. 11-53.

May 1— Bivariate Regression

May 3— Bivariate Regression, cont.

May 8—Multivariate Regression

May 10—Multivariate Regression, cont.

Long Exercise 4: Using the dataset on election results, write a paper that explores the factors that increase or decrease Democratic share of the vote. Start by stating the importance of the

question. Offer some hypotheses. Overview the data. Finally, present your results. These could either be by cross-tabulations or regression tables. To do this, you might need to use a more advanced software package (SPSS, Stata, or R). We will discuss these issues in class.

Suggested additional readings on statistical methods:

1. Peter Kennedy. 1998. *A Guide to Econometrics*. Cambridge, Mass: The MIT Press
2. William Greene. 2000. *Econometric Analysis*. Upper Saddle River, NJ: Prentice Hall
3. Thomas Wonnacott and Ronald Wonnacott. *Introductory Statistics for Business and Economics*. 4th Edition.

Final Paper due May 18th by 2pm

THE RESEARCH PROCESS

