9591B: Quantitative Methods in Political Science
9:30AM-12:30PM, Thursday (1/5/17-4/6/17), SSC 4105

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This course is somewhat unusual among similar courses in that it has two related, yet still distinct goals. First, the course is designed to get you thinking about how quantitative models work, what assumptions we need to make to use them appropriatley and exactly what they might be good for. Further, you will also be asked to apply these new skills to answer scial scientific questions. The other goal of the course is to enable you to be critical consumers of quantitative work. Often times, these two goals go hand-in-hand and as you get more comfortable with doing statistical analyses and you learn how to understand, implement and interpret more and more complicated methods, you almost necessarily become more savvy consumers of quantitative work. In this course, we do not have the luxury of time, to allow your skills to bloom organically, so we will have to put more energy into the critical consumption of quantitative work without the benefit of a deep understanding of the statistical tools employed.

I realize that for many, if not most students in this course, this will be their first inter-action with quantitative methods. Some may have had little to no math experience since high school either by coincidence or design. While there will certainly be some math in the course, I will approach these concepts assuming no comfort with mathematics aside from basic arithmetic (and even then, we will go over, important mathematical results and formulae). If you are having trouble with the concepts, please ask questions in class. Others will likely be confused by some of the same issues. If you continue to have trouble in the course, please see me during office hours or make an appointment and we can clear up any problems as they arise. DO NOT wait until right before the test to try to clear up all of your accumulated problems. Statistics is a cumulative enterprise, so a lack of understanding early can compound itself as the class moves forward.

As you are all graduate students, I expect that you will take this class seriously regardless of your inherent interest in the subject matter. I expect that you will attend class regularly, do the readings and ask questions when something is confusing. You are ultimately responsible for knowing the material. I will do my best to teach it in a way that is likely to make sense, but if you do not understand something, you need to take responsibility for figuring it out by asking questions, either in or outside of class. If you miss class, you are responsible for learning the material you missed in a manner that proves least distracting for the other participants in the course. Also, the late work policy is that make-up exams are not given to graduate students and late papers are not

accepted (rare exceptions may be allowed on a case-by-case basis when arrangements are made before the due date).

Computing

This class has both theoretical and applied aspects. Thus, you will not only learn the reasoning behind statistical analysis, you will also learn how to analyze data yourselves using **Stata**. Stata provides what is probably the best compromise of eas-of-use and functionality. You should have access to Stata through the SSTS virtual labs (http://myvlab.uwo.ca/). We will try to put aside an hour each class to work on data examples.

When you have work using the computer that needs to be turned in, it should be done in such a way that facilitates easy reading and evaluation.

Grading

You final grade in the course will depend on the following:

Short Data Papers	20%
Methodological Review	20%
Homework	20%
Final Paper	30%
Presentation of Final Paper	10%

Short Data Papers

One of the most important things you can learn from this class is the ability to find data that will allow you to answer empirical questions of interest. To that end, I am having you do three short data papers (roughly evenly spread throughout the course). In these papers, I want you to pose an empirical question (it can be related to Political Science or not, e.g., it could be baseball-related). Obviously, the questions need to be answerable with the skills you have, so I will provide a lot of guidance on this as we move forward. I also don't want to see any theoretical justification, etc... You can learn how to write research papers in other classes; here we are just interested in acquiring the skills of collecting data and analyzing it. The grade on these papers will reflect the extent to which you were able to get data and the quality of the answer you provide to your question. While I expect you will consult your colleagues if you have problems, you must do this work on your own. Your colleagues cannot find or get data for you or provide code to generate the answers.

Homework

You will get assignments each class of various lengths and types some of the questions can/should be answered with pencil and paper while others will utilize the computer. You

should consider your colleagues a resource and I encourage you to discuss the problem sets with your them. That said, each person must turn in their own, original answers to the homework problems.

Methodological Review

In the last few weeks of the course, we will focus our energies on critically evaluating manuscripts for methodological strengths and weaknesses. Each student will be responsible for writing up one such review and to lead the class discussion of that article. We will discuss the nature of the enterprise and the articles up for discussion around the end of January.

Final Paper & Presentation

The class culminates in a final paper that will be written in the form of published papers you have read. You will need to do some analysis and justify the analytical process, interpret the analyses and answer the question you posed. There is no formal requirement for length, but let me suggest a couple of things. First, your literature review shouldn't be more than three or four pages. Separately from the literature review, you should present your theory - the way in which you think the conceptual pieces fit together. Part of this discussion should be a formal presentation of hypotheses that will be tested. You should describe the data you're using - where you go it, what you did to it after you got it and how you think the variables you are using match the concepts they are meant to measure. You should talk about the procedure you use for testing the hypotheses along with the strengths and possible weaknesses of the procedure for this purpose. You need to discuss the results and then conclude by putting the results back in context and highlighting the most important results.

Textbook

There are two required texts for the course:

- Pollock, Philip. (2015) "Essentials of Political Analysis, 5th ed." CQ Press.

- Pollock, Philip. (2015) "A Stata Companion to Political Analysis, 3rd ed." CQ Press

I may provide some additional reading materials that will elucidate points covered in the lecture, but I will make those available electronically as they are needed either on the course D2L site or some other web-accessible place.

Miscellaneous

For those interested, there are some "popular" media outlets that try to make sense of numbers (i.e., increase your numeracy). Some of these are more "social sciency" while

others are aimed more squarely at statistics in general. They are all interesting, though. If you're interested, but not a blog follower, google reader (`http://google.com/reader`) is a good way to follow this sort of information.

- *The Numbers Guy* (a Wall Street Journal blog): `http://blogs.wsj.com/numbersguy/`

- *Freakonomics* (blog and podcast): `http://www.freakonomics.com/blog/`

- *Numbers Rule Your World*: `http://junkcharts.typepad.com/numbersruleyourworld/`

- *Understanding Uncertainty*: `http://understandinguncertainty.org/`

- *Probability and Statistics Blog* (perhaps a bit technical, but still interesting stuff): `http://www.statisticsblog.com/start-here/`

- *Significance* (blog and magazine): `http://www.statslife.org.uk/significance`

- *Flowing Data* (mostly about visualization, but neat stuff): `http://flowingdata.com/`

- *More or Less* (great podcast, $\sim$ 20 minutes/week, about numeracy and numbers): `http://www.bbc.co.uk/programmes/b006qshd`

Outline

In the outline below, we will discuss the readings associated with each week. Readings from "Essentials" are from Pollock's "The Essentials of Political Analysis" and readings from "Stata Companion" are from Pollock's "A Stata Companion to Political Analysis".

1. Introduction (1/5)

2. Measuring and Describing Variables (1/12)

    (a) "Essentials" Chapters 1 and 2
    (b) "Stata Companion" Chapters 1 and 2

3. Making Comparisons (1/19)

    (a) "Essentials" Chapter 3
    (b) "Stata Companion" Chapters 3 and 4

4. Statistical Control (1/26)

    (a) "Essentials" Chapters 4 and 5
    (b) "Stata Companion" Chapter 5

5. Foundations of Statistical Inference (2/2)

    (a) "Essentials" Chapter 6

6. Confidence Intervals (2/9)

    (a) OpenIntro §4.1, 4.2

7. Tests of Statistical Significance (2/16)

    (a) "Essentials" Chapter 7
    (b) "Stata Companion" Chapters 6 and 7

8. Correlation and Regression (3/2-9)

    (a) "Essentials" Chapter 8
    (b) "Stata Companion" Chapters 8-9

9. Logistic Regression (3/16)

    (a) "Essentials" Chapter 9
    (b) "Stata Companion" Chapter 10

10. Reading Quantitative Work I (3/23)

    (a) Readings TBA

11. Reading Quantitative Work II (3/30)

    (a) Readings TBA

12. Paper Presentations (4/6)

13. Final Papers Due (4/13)