DESCRIPTION

This course covers basic statistical techniques and their application to political analysis. It introduces students to widely used statistical techniques and data analysis, and provides a basis for learning and understanding more advanced statistical methods.

Students take this course for various reasons. All political scientists need to be good readers of the quantitative literature, almost all will do some quantitative analysis in their own research or dissertation work, and some students will eventually wish to use advanced quantitative methods. This is not a “high end” course by itself, but it should enable all students to undertake serious quantitative analysis. PS204B will also provide the necessary skills for PS273 (Quantitative Methods II) for those that want to go further.

I do not assume any knowledge of math or statistics beyond basic high school algebra (although some willingness to learn along the way will be helpful). In particular, we will not make any use of matrix algebra for this course. Use of calculus will be minimal, primarily to indicate what is going on in some of the proofs. Although the ideas behind some proofs are very important, the specific details will be less essential for many students.

It should be obvious that PS204B caters to a heterogeneous audience. The trick is for everyone to try to get what they need out of the course. I trust that each of you will put in the effort to get what you need to get out of the course. Perhaps a few of you will discover that they can do much more than they thought they could in advance.

ORGANIZATION

This class is based on two lectures as well as a lab session. The lab sessions will be a combination of taught sessions and tutorials, as well as less formal sessions to give you an opportunity to receive help and input on your research project.

Disclaimer: The syllabus and course outline is intended to provide an overview over the course. You cannot claim any rights from it. In particular, scheduling and dates may change. Although the syllabus should be a fairly reliable guide for the course, official announcements are always those made in class.
The class homepage is http://weber.ucsd.edu/~kgledits/ps204b_w2005/ps204b.html. This will contain all the relevant information about course details, so please check often for any changes. Please note that I encourage questions by email, which will allow me to start each session with questions that have arisen since our last meeting.

REQUIRED TEXT


Wooldridge will be the key text for the course, and we will follow the text closely. The course will concentrate on the key ideas and their relevance to political analysis. Econometrics is simply the term that economists use for applications of statistical methods to economics, and there is nothing particularly “economic” about these methods themselves. Some topics stressed in econometrics textbooks are more important to us as political scientists than others. The sections of Wooldridge listed in the course outline are primarily meant to serve as a guide for your reading, and some parts will be more relevant than others.

Given the high quality of the text (and the high likelihood of multiple typos when time does not permit careful proofreading) I will not offer course notes in advance for this course. You should feel free, however, to ask for copies of overheads and other material that I present in class.

Additional articles with applications of the course material will be assigned along the way. The first exercises for the course will be based on an article that you should read during the first week of class; Muller, Edward N., and Mitchell A. Seligson. 1987. “Inequality and Insurgency.” *American Political Science Review* 87:425-51. This article is available in PDF format through JSTOR (http://www.jstor.org). Please let me know if you should have any problems accessing it.

RECOMMENDED TEXTS

Many of you may find it helpful to look at more than one book to learn this material. You may for example wish to look up particular topics in others source if you find something inadequately explained in Wooldridge. Some alternatives to consider are listed below.


Fox, John. 1997. *Applied Regression Analysis, Linear Models, and Related Methods.* Thousand Oaks, CA: Sage. This is a very good and thoughtful book. It covers most of the topics we will look at in this class and is generally written in an accessible style, but it uses matrix notation a great deal more than Wooldridge.

Gujarati, Damodar. 2003. *Basic Econometrics.* New York: McGraw-Hill. This text is similar to Wooldridge and may appeal to some as an alternative.


Maddala, G. S. 1992. *Introduction to Econometrics*. New York: Macmillan. This text is similar in difficulty to Wooldridge. The author is quite opinionated and has a somewhat quirky style. I like this text a great deal, but other people react less favorably.


**SOFTWARE**

We will use Stata as the main statistical software for much this course. Stata is relatively easy to learn, and includes many advanced procedures not commonly found in similar statistical packages.

Students are encouraged to purchase a personal copy through the so-called Stata grad plan. I do not have a vested interest in making you buy the software, but it will in all likelihood be helpful for you to be able to work with the material at home. In the long run, most of you will need to own some statistical package, and Stata will be a reasonable option given its price and flexibility and your needs.

For information about the Grad Plan program, see http://www.stata.com/info/order/new/edu/gradplans/gp3-order.html. Faculty and students can purchase this package by calling Stata Corp. at 800-782-8272 (800-STATAPC, ask for Sales). Be sure to identify yourself as a UCSD affiliate to get the special price. After you place your order, Stata will contact our designated representative, Jeff Fritsch, for license and distribution for pickup within a few days at the SSB 301 reception desk.

The best way to learn Stata is to use Stata, which you will do in the exercises for the course. If you have never used *Stata* before, I recommend reading *Getting Started with Stata* (College Station, TX: Stata Press, 2001) at the outset of the course to familiarize yourself with using the software. You should also learn to take advantage of Stata’s on-line help system.

**GRADING**

Your final grade will be determined by four problem sets (60% of the total grade, 15% each) and a final paper (40% of total grade).

The four problem sets will be handed out in class and should be done with Stata. I expect that each student has access to Stata either on personal machines or in the labs. Data will be distributed on the class web site. I expect that all graduate students can download the data from the web page and get it to the appropriate machine. Please contact me if you have any problems.

Each student must also submit an individual research project. This is due during the week of final. I will consult with each student about his or her project. The final paper should be similar to a research paper, but much
heavier on the methods and much lighter on front-end, theory, literature review and substantive conclusions. Some papers may wish to use more advanced methods that we will not be able to cover in this class. If so, you will be expected to read the relevant chapters in Wooldridge or other sources. Many of you, however, will probably find that the material we cover in class will suffice for your paper.

COURSE OUTLINE

1. Monday 3 January

   Topics: Overview and course details
   Math/stat review: random variables, linear functions, descriptive statistics
   Reading: Wooldridge Chapter 1, Apps. A.1-A.4; Muller & Seligson (1987)

2. Thursday 6 January

   Topics: Basic regression ideas, data analysis
   Math/stat review: expectations, probability distribution functions, transformations
   Reading: Wooldridge Chapter 2 (sections 2.1-2.4), Apps. B.1-B.3

3. Monday 10 January

   Topics: Two variable regression, OLS estimation
   Math/stat review: summation operators, variance, covariance
   Reading: Wooldridge Chapter 2 (section 2.5), App. B.4

4. Thursday 13 January

   Topics: Multiple regression; motivation, estimation, and interpretation
   Reading: Wooldridge Chapter 3 (sections 3.1-3.3)

(Monday 17 January is Martin Luther King Day, no formal class)

5. Thursday 20 January

   Topics: Multiple regression; standard errors, normality assumption, misspecification
   Reading: Wooldridge Chapter 3 (sections 3.4-3.5)

   1st problem set is due (in class)

6. Monday 24 January

   Topics: Inference in multiple regression analysis; confidence intervals and hypothesis testing
   Reading: Wooldridge Chapter 4 (sections 4.1-4.3) & McCloskey and Ziliak 1996 (Optional; Cohen 1994)
7. Thursday 27 January

Topics: Multiple regression; goodness of fit tests, testing multiple restrictions
Reading: Wooldridge Chapter 4 (sections 4.4-4.6) (Optional: King 1986; Luskin 1990, and Lewis-Beck and Skalaban 1990 controversy on the R-square)

8. Monday 31 January

Topics: Multiple regression; model selection, prediction, residual analysis, diagnostics

2nd problem set is due (in class)

9. Thursday 3 February

Topics: Dummy independent variables and interaction effects
Reading: Wooldridge Chapter 7 (7.1-7.4, 7.6) & Friedrich 1982

10. Monday 7 February

Topics: Non-constant variances
Reading: Wooldridge Chapter 8 (sections 8.1-8.4) (Optional: Downs and Rocke 1979)

11. Thursday 10 February

Topics: More on specification, measurement error, data analysis
Reading: Wooldridge Chapter 9

12. Monday 14 February

Introduction to problems & extensions: Autocorrelation & pooling observations

14. Thursday 17 February

Topics: Binary dependent variables, the linear probability model
Reading: Wooldridge Chapters 7 (section 7.5), 8 (section 8.5)

15. Monday 21 February

Topics: Limited dependent variables, logit, probit
Reading: Wooldridge Chapter 17 (section 17.1)
(Monday 21 February is President’s day, but we will meet this day to make up for classes lost later)

16. Thursday 24 February

Topics: Maximum likelihood estimation, inference in limited dependent variable models
Reading: Wooldridge Chapter 17 (section 17.1), App. C.4

4th problem set is due (in class)

17. Monday 28 February

Lab session only – meet at 12:00 in SSB 139/140 lab
No new reading assigned.

18. Thursday 3 March

Topics: More on limited dependent variables: time dependence, simulation
Reading: Wooldridge Chapter 17 (section 17.1), App. C.4 & Beck et al. 1998; King et al. 2000

No class on Monday 7 March

19. Thursday 10 March

Topics: Instrumental variables and two stage least squares

A make up class/review session may be scheduled for the week of final exams

Supplementary reading


