

Political Science 205: Measurement and Data Analysis in Political Research

Winter 2004

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<http://www.polsci.ucsb.edu/faculty/glasgow/PS205.html>

1 Course Objectives

This course introduces graduate students in political science to some basic tools used by political scientists in empirical research. We will cover basic statistics, hypothesis testing, and linear regression (the workhorse of most political science research). You will learn how to use Stata (a popular statistical software package) to conduct empirical research in political science using the tools covered in class. I do not assume any mathematical background or computer experience — everything necessary to understand the material covered will be discussed in class or in the readings.

2 Course Requirements

Grades will be based on two components:

- Homework assignments designed to give you hands-on experience with implementing the methods discussed in class and with using Stata, the software package that will allow you to estimate the models we discuss in class. You may work together on these assignments, but everyone must turn in their own writeup. (50%)
- A take home final exam. This exam will involve estimating the appropriate statistical model for a series of problems and writing up the results. (50%)

3 Required Textbook

- Gujarati, D. (1999). *Essentials of Econometrics*, 2nd ed., New York: McGraw-Hill.

A useful supplemental text is:

- Kennedy, P. (1998). *A Guide to Econometrics*, 4th ed., Cambridge: MIT Press.

I will hand out additional readings in class.

4 Course Outline (Tentative)

- **Week 1.** Introduction and motivation. Introduction to statistics. Using Stata.
- **Week 2.** More statistics. Basic matrix algebra. More Stata.
- **Week 3.** Even more statistics. Properties of estimators.
- **Week 4.** Hypothesis testing.
- **Week 5.** Introduction to ordinary least squares (OLS). Bivariate OLS.
- **Week 6.** Multivariate OLS.
- **Week 7.** OLS with dummy variables and other functional forms. Multicollinearity.
- **Week 8.** OLS pathologies. Heteroskedasticity.
- **Week 9.** OLS pathologies. Autocorrelation.
- **Week 10.** Tie up loose ends.