

WOODROW WILSON DEPARTMENT OF POLITICS

PLAD 831
**Advanced Quantitative Applications
in Political Science**
Fall, 2004

Mr. Steven Finkel
100 Cabell
Hours: M 12:30-2:30 and by appt.
Phone: 924-6994

Course Description

This course is the next helping of statistics and research methodology after PLAD710. We will begin with a thorough investigation of regression and the general linear model, and then move on to more advanced techniques such as logit and probit analysis, and models for ordinal and multi-category dependent variables. Students will be exposed to the theory of these methods as well as to practical ways of using them in concrete research situations. There are two main goals of the course: to enable students to read, understand and critique existing quantitative literature in political science; and to have students acquire the skills to conduct original quantitative research in their own substantive field of interest.

Required Texts

Lewis-Beck, *Applied Regression*.
Berry and Feldman, *Multiple Regression in Practice*.
Gujarati, *Basic Econometrics*.
Long, *Regression Models for Categorical and Limited Dependent Variables*.

Recommended Text

Long and Frese, *Regression Models for Categorical Dependent Variables Using Stata (Revised Edition)*

Requirements

Grades will be based on a 20-25 page research paper (45%, including 10% for an oral presentation at the end of the semester), and four homework exercises which relate to specific statistical methods and problems we will discuss (55% altogether). The paper (due December 6) will be a quantitative analysis, using multiple regression or some of the other methods we cover in the course, of data that you will collect or access from social science archives or other sources. Ideally, the paper should have some substantive interest to you or be relevant to your studies in the graduate program. The paper will discuss your basic theoretical framework, your hypotheses, statistical models, results, possible problems with the analysis, and what you may have done to correct or account for these problems. It will conclude with a discussion of the relevance of your findings for the general topic and for future research. I will have much more to say about the paper in class.

The homework exercises will be periodic problems or data sets to analyze and will illustrate aspects of the statistical techniques being covered in class.

Course Outline

- September 6: **Introduction to the Course and Introduction to Stata**
Long and Frese, chapter 2.
- September 13: **Bivariate Regression: Descriptive Statistics**
Lewis-Beck, pp. 1-25.
Gujarati, chapters 1-2, and pp. 58-65, 81-87.
- September 20: **Assumptions of Regression and Hypothesis Testing**
Lewis-Beck, pp. 26-38.
Gujarati, chapter 3, pp. 107-114, and chapter 5.
*******HOMEWORK 1 HANDED OUT*******
- October 1 (Friday): **Introduction to Multiple Regression**

Lewis-Beck, pp. 38-54.
Berry and Feldman, pp. 9-18.
Gujarati, 146-150 and chapter 7 to p.223.
*******HOMEWORK 1 DUE*******

October 4: **Multiple Regression: Estimation and Inference**
Lewis-Beck, pp. 56-58, 63-66.
Berry and Feldman, pp. 18-26.
Gujarati chapter 8 to p.273, and pp. 506-514.
Achen, “Comparing Substantive and Statistical Significance,” and “The Importance of a Variable,” in *Interpreting and Using Regression* (on toolkit web site)

October 18: **Dummy Variable Regression**
Lewis-Beck, pp. 66-73.
Gujarati, chapter 9 and pp.273-279.
Long and Frese, chapter 3, sections 3.1.6-3.1.8.
*******HOMEWORK 2 HANDED OUT*******

October 25: **Non-Linear and Non-Additive Regression Models**
Lewis-Beck, 54-56.
Berry and Feldman, pp. 51-72.
Gujarati, pp. 175-193, 223-229, 280-282.
*******HOMEWORK 2 DUE*******

November 1: **Multicollinearity, Heteroskedasticity, Autocorrelation**
Lewis-Beck, pp. 58-63.
Berry and Feldman, 37-50, 73-88.
Gujarati, chapters 10-12.

November 8: **Introduction to Logit and Probit Models**
Long, chapters 1 and chapter 3 to 52.
Long and Frese, chapter 3 and chapter 4 to section 4.3

November 15: **Estimation and Interpretation of Logit and Probit Models**
Long, chapter 2 (especially 25-33), pp. 52-87, and chapter 4.
Long and Frese, chapter 4, sections 4.3 to end.
*******HOMEWORK 3 HANDED OUT*******

November 22: **Models for Ordinal Dependent Variables**
Long, chapter 5.
Long and Frese, chapter 5.
*******HOMEWORK 3 DUE*******

November 29: **Models for Polytomous Nominal -Level Dependent Variables**
Long, chapter 6.
Long and Frese, chapter 6 to section 6.6.

December 6: **Paper Presentations**
*******PAPERS DUE*******
*******HOMEWORK 4 HANDED OUT*******

*******HOMEWORK 4 DUE MONDAY DECEMBER 13 5:00 PM*******