

Political Science 6002, Advanced Quantitative Analysis

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Hours: 2:00-4:00 T & Th and by appointment

Course Page: <http://www.poli-sci.utah.edu/~burbank>

Fall Semester 2006

T & Th 12:25-1:45

HPRN 242

Multivariate statistical techniques are widely used in political science and the social sciences. In this course, we seek to develop an understanding of some commonly used multivariate models. We begin by reviewing bivariate and multivariate linear regression and proceed to examine some common extensions of multiple regression. In the second part of this course, we examine techniques for use with categorical dependent variables. We conclude by examining two analytical techniques, factor analysis and path analysis, that form the basis for techniques such as structural equation models.

We have several objectives for this course: (1) to understand how and why various multivariate techniques are used in social research in order to be able to read a broader range of social science research; (2) to use multivariate techniques properly to analyze data of substantive interest in our own research; (3) to learn more about how to locate sources of social data and learn to use software to prepare data for analysis; (4) to explain and present data, analysis, and results in a manner appropriate for professional presentation such as a conference paper or publication; and, (5) to develop a sufficient basis of knowledge of multivariate statistics to be able to learn other related statistical techniques as necessary.

The prerequisite for this course is Political Science 6001, Quantitative Analysis in Political Science, or an equivalent course. For PhD students in political science, this course satisfies the requirement for an advanced quantitative methods course for those whose major fields is American politics or public administration. This course also satisfies the requirement for an advanced methods course for students pursuing an MS in political science.

Course Requirements and Texts

This course involves in-class exposition of statistics, the interpretation of statistical results, and the use of computer software to obtain statistical results. Students are expected to attend class and complete the assigned reading. Course grades will be based on the following:

- (1) exercises (300 points);
- (2) research paper (500 points total)
 - a. proposal [50 points]
 - b. oral presentation of research [100 points]
 - c. final paper [350 points]
- (3) final examination (200 points).

The following texts will be used in this course and are available in the bookstore:

Berry, William D., and Stanley Feldman. 1985. *Multiple Regression in Practice*. Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-50. Thousand Oaks, CA: Sage.

Menard, Scott. 2002. *Applied Logistic Regression Analysis*. 2nd ed. Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-106. Thousand Oaks, CA: Sage.

Einspruch, Eric L. 2005. *An Introductory Guide to SPSS for Windows*. 2nd ed. Thousand Oaks, CA: Sage.

COURSE OUTLINE

WEEK 1, August 24: Introduction

WEEK 2, August 29 and 31: Using SPSS for data analysis

READ: Einspruch, Chapters 1, 2, 3, and 4

Note: Class meets in computer lab in OSH 273

WEEK 3, September 5 and 7: Using SPSS for data analysis

READ: Einspruch, Chapters 5, 6, 7, and 8

Note: Class meets in computer lab in OSH 273

WEEK 4, September 12 and 14: Review of Bivariate Regression and Multiple Regression

READ: Berry and Feldman, pp. 9-18

WEEK 5, September 19 and 21: Multiple Regression Diagnostics and Extensions

READ: Berry and Feldman, pp. 18-50

WEEK 6, September 26 and 28: Multiple Regression, continued

READ: Berry and Feldman, pp. 51-89

Exercise 1 Assigned

WEEK 7, October 3: Some Preliminaries: Matrix Algebra, Logarithms

READ: Elazar Pedhazur. 1982. "Appendix: Matrix Algebra." In *Multiple Regression in Behavioral Research*, 2nd ed, pp. 773-783. New York: Holt, Rinehart and Winston.

Fall Break: No Class on Thursday, October 5

WEEK 8, October 10 and 12: Introduction to Logistic Regression

READ: Menard, pp. 1-41

WEEK 9, October 17 and 19: Logistic Regression, continued

READ: Menard, pp. 41-63 and 67-91

Exercise 2 Assigned

WEEK 10, October 24 and 26: Multinomial Logistic Regression

READ: Menard, pp. 91-102

WEEK 11, October 31 and November 2: Factor Analysis: A Brief Introduction

Recommended: Jae-On Kim and Charles W. Mueller. 1978. *Introduction to Factor Analysis*. Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-013. Beverly Hills, CA: Sage.

WEEK 12, November 7 and 9: Introduction to Causal Modeling -- Path Analysis
READ: Elazar Pedhazur. 1982. "Path Analysis." In *Multiple Regression in Behavioral Research*, 2nd ed, pp. 577-633. New York: Holt, Rinehart and Winston. [Reserve]
Exercise 3 Assigned

WEEK 13, November 14 and 16: Causal Modeling, continued

WEEK 14, November 21: Summary
Thanksgiving Break: No Class on Thursday, November 23

WEEK 15, November 28 and 30: Research Paper Presentations

WEEK 16, December 5 and 7: Research Paper Presentations

**** Paper Due: Friday, December 8, 12 noon ****

***** Final Examination Due: Thursday, December 14, 12 noon *****

Statement on Academic Honesty: All students in this course are expected to meet the standards of academic honesty. These standards require, among other things, that all exercises, papers, and examinations that you submit in this course be your own work. Any work you submit should be the product of your individual effort and not the work of others. Work submitted for this course must not have been submitted in a previous course nor may it be submitted in any course taken concurrently without the knowledge and approval of the instructor of each class. An act of academic misconduct is a violation of the university's regulations regarding student conduct. As such, an act of academic misconduct may result in a failing grade for an assignment or a failing grade for a course. An act of academic misconduct may result in a recommendation to university officials for additional disciplinary action. The following definition is from the university's Code of Student Rights and Responsibilities (Policy 8-10, Rev 6, February 2006): "'Academic misconduct' includes, but is not limited to, cheating, misrepresenting one's work, inappropriately collaborating, plagiarism, and fabrication or falsification of information. . . . It also includes facilitating academic misconduct by intentionally helping or attempting to help another to commit an act of academic misconduct." Definitions of these terms as well as information regarding your rights and responsibilities as a student are available in the university's policy manual <<http://www.admin.utah.edu/ppmanual/8/8-10.html>>.

Equal Access: The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.

Schedule Changes: The schedule of examinations, assignments, or due dates may need to be changed based upon events during the semester. If changes need to be made, advance notification will be made in class.

Grading Distribution: The following distribution will be used in this course.

A	94% and above
A-	90% - 93%
B+	88% - 89%
B	83% - 87%
B-	80% - 82%
C+	78% - 79%
C	73% - 77%
C-	70% - 72%
D+	68% - 69%
D	63% - 67%
D-	60% - 62%
E	59% and below