Political Science 501 / CSSS 501	**Professor Peter May**
Advanced Political Research	**221B Smith Hall**
Winter 2005	**pmay@u.washington.edu**
Course meets: Tu, Th 4:30-5:50 pm, 228 MGH	**Lab session: Friday 1:30-3:20 – 220 Smith Hall**

ADVANCED POLITICAL RESEARCH: EMPIRICAL MODELING

Course Description

This course addresses empirical modeling in the social sciences. We will explore various approaches to modeling relationships among data and to representing data structures. The course is aimed at developing an appreciation of tradeoffs involved in constructing empirical models. The exposition will emphasize pragmatic aspects of modeling rather than mathematical derivations of formulas. We will focus on choice of techniques, evaluating models, and understanding empirical research. This is a "hands on" course aimed at enhancing student ability to estimate and interpret empirical models of political and social phenomena.

Students taking this course should be comfortable with basic algebra (e.g., equations, transformations), have a basic understanding of statistical inference (e.g., tests of statistical significance), and be tolerant of statistical packages. In order to provide a common starting point, we will use the first few weeks of the quarter to revisit relevant foundations of social statistics.

Requirements

Grading will be based on class participation, a set of analytical exercises, a mid-term exam, and a final exam. These will be weighted as follows:

Participation	10 percent	On-going
Analytical Exercises	30 percent	On-going
Mid-term Exam	30 percent	Week 5
Final Exam	30 percent	End of quarter

Interpretation Assignments and Analytic Exercises

These are two different activities that are aimed at developing an appreciation of the issues involved in explaining and conducting empirical research. During the quarter I will ask "volunteers" to dig up examples [NB this is technical terminology] of the material we are addressing, particularly as these relate to how different authors discuss choice of statistical approach or interpretation of results. The participation grade will be largely determined by performance as a "volunteer." This will be evaluated on a scale of "stellar contributions" (3.8 to 4.0), "solid contributions" (3.6 to 3.8), "acceptable contributions" (3.4 to 3.6), or "less than desired contributions" (3.3 or below).

The more involved activity is a set of analytic exercises. These require you to undertake data and statistical manipulations. The specifics will be provided for each exercise. These will typically be assigned on Thursdays and due the following Monday by 12 noon. These will typically entail two to three page writeups. There will be a total of eight analytic exercises. Each exercise will be assigned a grade of ✓- (deficient), ✓ (good), or ✓+ (stellar). You will start out with a grade of 3.5 for the exercises. Each ✓+ adds 0.1 point to that base (up to a maximum of 4.0), while

each ✓- reduces the grade by 0.1 point. A grade of ✓ is neutral (i.e., no points added or subtracted). Not turning in an assignment on time results in a 0.2 point loss. This means it is very important to turn assignments and exercises in on time!

Exams

There will be a mid-term exam and a final exam in this course. These will be take-home exams with defined time limits. The exams will emphasize your understanding of key concepts and interpretation of results, rather than ask you to undertake analyses. The dates of the exams are indicated below in the schedule of classes.

Lab and Tutor Support

We are fortunate to have an advanced graduate student, Chris Koski, serving as a lab assistant and tutor for the course. (Thanks to funding provided by CSSS!) Mr. Koski will not have the typical TA role of teaching material and grading assignments. All assignments will be graded by the instructor. Instead, Mr. Koski's role will be to assist in helping with the relevant computer manipulations for assignments, providing tutor assistance, and conducing reviews of material for exams. Given these roles, Mr. Koski is best thought of as a tutor rather than as a traditional TA. He will be conducting regular lab sessions in the Political Science Department Computer Lab (220 Smith Hall). The primary focus of each session will be the assignment that is due the following week. The lab sessions are designated on the syllabus. Mr. Koski will also be holding office hours for drop-in tutoring assistance.

Readings

The following texts are required and are available for purchase at the university bookstore:

> Anthony Walsh and Jane Ollenburger, *Essential Statistics for the Social and Behavioral Sciences,* Prentice-Hall 2001.
>
> Graeme Hutcheson and Nick Sofroniou, *The Multivariate Social Scientist,* Sage Publications 1999.

The syllabus contains several journal articles that illustrate relevant material. Note, that not all of these are selected as exemplars of social science research. Some–instructor-authored publications, aside–serve as examples of less than stellar use or interpretation of empirical models. You are expected to read the supplemental articles. They will be accessible through a password-protected section of the course website, as will be discussed in class.

A key challenge in designing this course is deciding upon an appropriate statistical package. There are tradeoffs between using old standbys like SPSS that are easy to use but have limited flexibility for displaying results and modeling options, and using packages like 'R' that have more advanced features. In order to not make the statistic package become the tail that wags the course content dog, I've opted for use of SPSS. This is available for use in the Political Science Department computer lab. You may also choose to make use of the UW site-license and purchase a personal copy of SPSS at the University Bookstore.

COURSE SCHEDULE

Week 1. Introduction: The Course and Exploratory Data Analysis

(January 4, 6; Lab January 7)

- Course introduction: The exploratory perspective and modeling
- Exploratory Data Analysis and data distributions

W&O text, chapters 3 & 4

Discussion:

Robert McGill, John W. Tukey, and Wayne A. Larsen. 1978. "Variations of Boxplots," *The American Statistician* 32 (1): 12-16.

Exercise #1: Data manipulation and transformations

Week 2. Sampling Distributions, Statistical Tests, and All That

(January 11, 13; Lab January 14)

- Sampling distributions, confidence intervals, and statistical significance
- T-Tests, F-tests, and logic of other statistical tests

W&O text, chapters 5, 6, & 7

Discussion:

C. Richard Hofstetter, Mark Donovan, et al. 1994. "Political Talk Radio: A Stereotype Reconsidered," *Political Research Quarterly* 47 (June): 467-479.

Peter J. May. 1997. "State Regulatory Roles: Choices in the Regulation of Building Safety," *State and Local Government Review* 29 (Spring): 70-80.

Exercise #2: Statistical tests

Week 3. Examining Cross Classifications

(January 18, 20; Lab January 21)

- Analyzing contingency tables – control and elaboration
- Statistical measures for cross classifications

W&O text, chapters 8, 9, & 10

Discussion:

Lisa L. Miller. 2004. "Rethinking Bureaucrats in the Policy Process: Criminal Justice Agents and the National Crime Agenda," *Policy Studies Journal* 32 (4) 569-588.

Peter J. May, Bryan D. Jones, Betsi E. Beem, Emily A. Neff-Sharum, and Melissa K. Poague. 2005. "Policy Coherence and Component-Driven Policymaking: Arctic Policy in Canada and the United States," *Policy Studies Journal* 33 (1): 37-63.

Exercise #3: Working with cross-classifications

Week 4. Statistical Modeling: Basics of Linear Models

(January 25, 27; Lab January 28)

- Correlation and OLS regression – first cut
- Interpreting regression statistics and hypothesis testing
- Limits of R^2
- Effect analysis: standardized variables and other approaches

W&O text, chapter 11

H&S text, chapter 3 [1st half]

Discussion:

David Giacopassi and David R. Forde. 2000. "Broken Windows, Crumpled Fenders, and Crime," *Journal of Criminal Justice* 28: 397-405.

Søren C. Winter and Peter J. May. 2001. "Motivation for Compliance with Environmental Regulations," *Journal of Policy Analysis and Management* 20 (Fall): 675-698.

Exercise #4: OLS regression

Week 5. Model Specification Issues

(February 1, 3 – no lab)

- Thinking about issues that arise in specifying regression models
- Functional form of dependent variable, pooled versus unpooled data, independent variable specification, dummy variables, interaction terms

H&S text, chapter 3 [2nd half]

Discussion:

John M.Quigley. 1990. "Does Rent Control Cause Homelessness?" *Journal of Policy Analysis and Management*, Vol 9 (1): 89-93.

Shaun Bowler and Todd Donovan. 2004. "Measuring the Effect of Direct Democracy on State Policy: Not All Initiatives Are Created Equal," *State Politics and Policy Quarterly* 4 (3): 345-363.

Mid term exam take home assigned due 7 February 12 noon – details to be provided..

Week 6. OLS Assumptions and Pathologies

(February 8, 10; Lab February 11)

- Assumptions and consequences of violation
- Diagnosing problems: functional form, multicollinearity, heteroskedasticity, outliers, measurement unreliability
- Addressing violations of assumptions

H&S text, chapter 2

Discussion:

Markus M. L. Crepaz and Arend Lijphart. 1995. "Linking and Integrating Corporatism and Consensus Democracy: Theory, Concepts and Evidence," *British Journal of Political Science* 25 (2): 218-288.

Stephen Knack and Philip Keefer. 1997. "Does Inequality Harm Growth Only in Democracies? A Replication and Extension" *American Journal of Political Science* 41 (January): 323-332

Exercise #5: Diagnosing and addressing modeling problems

Week 7. OLS Modeling Extensions

(February 15, 17; Lab February 18)

- Interpreting interaction terms
- Recursive models: direct and indirect effects
- Endogenous variables and dual causation

H&S text, chapter 3 [revisit]

Discussion:

John D. Huber, Charles R. Shipan, and Madelaine Pfahler. 2001. "Legislatures and Statutory Control of Bureaucracy," *American Journal of Political Science*. 45(2): 330-345.

Edward Muller and Mitchell Seligson. 1987. "Inequality and Insurgency," *American Political Science Review* 81 (2): 425-452.

Stephen Knack. 2002. "Social Capital and the Quality of Government: Evidence from the States" *American Journal of Political Science* 46 (4): 772-785.

Interpretation #6: Interpretation of interactions or causal order

Exercise #6: More complicated modeling

Week 8. Categorical Dependent Variables

(February 22, 24 Lab February 25)

- Limits to OLS estimation for categorical variables
- Logistic regression – estimation and interpretation, effect analyses
- Extensions

W&O text, chapter 13

H&S text, chapter 4

Discussion:

Peter J. May. 2005. "Regulation and Motivations: Examining Different Approaches," forthcoming *Public Administration Review* 65 (1): 24-37.

Kenneth A. Wink, C. Don Livingston, and James C. Garand. 1996. "Dispositions, Constituencies, and Cross-Pressures: Modeling Roll-Call Voting on the North American Free Trade Agreement in the U.S. House," *Political Research Quarterly* 49 (December): 749-770.

Peter J. May. 1997. "State Regulatory Roles: Choices in the Regulation of Building Safety," *State and Local Government Review* 29 (Spring): 70-80. [from week 2]

Exercise #7: Logistic regression modeling

Week 9. Dimensionality and Scaling -- Factor Analysis and Extensions

(March 1, 3; Lab March 4)

- Thinking about dimensionality and structural representation of data
- Interpreting factor loadings, working with factor scores
- Categorizing observations – cluster analysis

H&S text, chapter 6

Discussion:

Ronald Inglehart and Martin Carballo. 1997. "Does Latin America Exist?" *PS: Political Science and Politics* 30 (March): 34-46.

Peter J. May and Søren Winter. 2000. "Reconsidering Styles of Regulatory Enforcement: Patterns in Danish Agro-Environmental Inspection," *Law and Policy* 22 (April): 143-173.

Thomas M. Guterbock. 1997. "Why Money Magazine's 'Best Places' Keep Changing," *The Public Opinion Quarterly* 61 (2): 339-355.

Exercise #8: Examining data structure

Week 10. Extensions and Course Wrap-up

(March 8 and 10)

- Extensions –Contextual factors, censored data, hierarchical analysis, event count analysis; time series analysis
- Course wrap-up

Take home exam due March 14th 12 noon – details to be provided.