

Professor Tom Hansford  
Office: COB2 312  
Office Hours: Wednesdays 10:30am-12:30pm  
Phone: 228-4037  
E-mail: thansford@ucmerced.edu

## **POLI 211: Quantitative Analysis of Political Data, II (Spring 2019)**

### **Course Description:**

This course provides an in-depth introduction to ordinary least squares (OLS) regression analysis and its use in political science. This course represents an important first step towards being able to interpret, critique, and conduct regression analyses of political data. Much of the course will focus on the assumptions underlying OLS regression, the implications of violations of these assumptions, and solutions to these violations.

### **Intended Student Learning Outcomes (SLOs):**

At the end of this course, students should:

1. Have a thorough understanding of the assumptions, limitations, extensions, and applications of regression analysis in political science. (corresponds with PLOs 3 and 5)
2. Demonstrate an ability to use the tools of regression analysis to test hypotheses and appropriately model political phenomena. (corresponds with PLOs 3 and 5)

### **General Program Learning Outcomes (PLOs) for the Political Science Graduate Emphasis:**

1. A comprehensive graduate-level understanding of processes, theories, and empirical regularities in the student's major area of emphasis (Political Institutions and Political Economy or Political Cognition and Behavior).
2. A graduate-level understanding of processes, theories, and empirical regularities in the student's minor area of emphasis (Political Institutions and Political Economy or Political Cognition and Behavior).
3. Competency with contemporary social science methods used to conduct rigorous research on political phenomena.
4. Effective scientific communication skills, especially the ability to convey complex concepts and information in a clear and concise manner.
5. The ability to initiate and conduct independent research that makes an original contribution to political science knowledge of a quality that can be published in a peer reviewed outlet.

### **Prerequisite:**

POLI 210 (Quantitative Analysis of Political Data, I) is a prerequisite for this course.

## **Requirements:**

1. There will be homework assignments that require you to apply the concepts and tools learned in class to real political data. In order to complete these homework assignments, you will need access to Stata. These assignments are based on the assumption that you have a working familiarity with this software. These assignments will constitute 45% of your grade for the course.

2. You will write an original research paper in which you identify an interesting research question, provide a theoretical answer to the question you pose, test your theoretical expectations by utilizing OLS regression to analyze relevant data (while demonstrating sensitivity to the assumptions of OLS), and interpret the results. Your paper should be the length of a relatively short article (i.e., 10-20 pages) and should approach the quality of a paper that could be presented at a political science conference. I require that you meet with me to talk with me about your paper topic by the fourth week of the semester. Your paper will represent 45% of your course grade. You will also present your research paper to the class (worth 10% of your course grade).

## **Readings:**

### *Required:*

Gujarati, Damodar N., and Dawn C. Porter. 2008. *Basic Econometrics*. 5<sup>th</sup> Edition. McGraw-Hill.

### *Recommended:*

Angrist, Joshua D., and Jorn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.

Cameron, A. Colin, and Pravin K. Trivedi. 2010. *Microeconometrics Using Stata, Revised Edition*. Stata Press.

Wooldridge, Jeffrey M. 2009. *Introductory Econometrics: A Modern Approach*. 5th ed.

Additional recommended readings are listed below.

## Class Schedule:

### **1/23: Review of the basic two variable OLS model**

#### Required:

Gujarati and Porter, Introduction, Chapters 1 & 2

### **1/30: Estimation and an introduction to multiple regression**

#### Required:

Gujarati and Porter, Chapters 3, 4, and Sections 7.1 - 7.4 of Chapter 7

### **2/6: Hypothesis testing**

#### Required:

Gujarati and Porter, Chapter 5 and Sections 8.1 - 8.6 of Chapter 8

#### Recommended:

Meehl, P.E. 1967. "Theory-Testing in Psychology and Physics: A Methodological Paradox." *Philosophy of Science* 34:103-115.

Gerber, Alan, and Neil Malhotra. 2008. "Do Statistical Reporting Standards Affect What is Published? Publication Bias in Two Leading Political Science Journals." *Quarterly Journal of Political Science* 3(3):313-326.

Benjamin, Daniel J., James O. Berger, Magnus Johannesson, Brian A. Nosek, E. J. Wagenmakers, Richard Berk, Kenneth A. Bollen, et al. 2017. "Redefine Statistical Significance." *Nature Human Behavior*, Forthcoming.

### **2/13: Model fit, predicted values, and residuals**

\*\*\* Assignment 1 is due \*\*\*

#### Required:

Gujarati and Porter, Sections 7.5 - 7.8 of Chapter 7.

**2/20: Model specification I (linearity, dummy variables)**

Required:

Gujarati and Porter, Chapter 9

Recommended:

Hardy, Melissa. 1993. *Regression with Dummy Variables*. Newbury Park, CA: Sage Publications.

**2/27: Model specification II (interaction terms)**

\*\*\* Assignment 2 is due \*\*\*

Required:

Brambor, Thomas, William Roberts Clark, and Matt Golder. 2006. "Understanding Interaction Models: Improving Empirical Analyses." *Political Analysis* 14(1):63-82.

**3/6: Model specification III (omitted variables, picking the "best" model)**

Required:

Gujarati and Porter, Chapter 13.

**3/13: Outliers and selection problems**

\*\*\* Assignment 3 is due \*\*\*

Required:

Bollen, Kenneth, and Robert W. Jackman. 1985. "Regression Diagnostics: An Expository Treatment of Outliers and Influential Cases." *Sociological Methods & Research* 13:510-542.

Recommended:

Choi, Seung-Whan. 2009. "The Effect of Outliers on Regression Analysis: Regime Type and Foreign Direct Investment." *Quarterly Journal of Political Science* 4(2):153-165.

Heckman, James J. 1979. "Sample Selection Bias as a Specification Error." *Econometrica* 47:153-161.

### **3/20: Multicollinearity and heteroscedasticity**

#### Required:

Gujarati and Porter, Chapters 10 and 11.

#### Recommended:

Arceneaux, Kevin, Gregory A. Huber. 2007. "What to Do (and Not Do) with Multicollinearity in State Politics Research." *State Politics & Policy Quarterly* 7(1):81-101.

Franklin, Charles H. 1991. "Eschewing Obfuscation? Campaigns and the Perception of U.S. Senate Incumbents." *American Political Science Review* 85(4):1193-1214.

Long, J. Scott. 2000. "Using Heteroscedasticity Consistent Standard Errors in the Linear Regression Model." *The American Statistician* 54:217-224.

### **3/27: No class – Spring Break**

### **4/3: MPSA**

### **4/10: Autocorrelation**

\*\*\* Assignment 4 is due \*\*\*

#### Required:

Gujarati and Porter, Chapter 12

#### Recommended:

Haining, Robert. 2003. *Spatial Data Analysis: Theory and Practice*. Cambridge: Cambridge University Press.

### **4/17: Time series models**

#### Required:

Gujarati and Porter, Chapters 17 and 21

#### Recommended:

Enders, Walter. 2009. *Applied Econometric Time Series*. 3<sup>rd</sup> Edition. New York: Wiley.

Freeman, John R., John T. Williams, and Tse-min Lin. 1989. "Vector Autoregression and the Study of Politics." *American Journal of Political Science* 33(4):842-877.

Granger, Clive W.J., and Paul Newbold. 1974. "Spurious Regression in Econometrics." *Journal of Econometrics* 2:111-130.

Pevehouse, Jon C., and Jason D. Brozek. 2008. "Time Series Analysis." In *The Oxford Handbook of Political Methodology*, Eds. Janet M. Box-Steffensmeier, Henry E. Brady, and David Collier. New York: Oxford University Press.

#### **4/24: Panel data models**

##### Required:

Gujarati and Porter, Chapter 16.

Beck, Nathaniel, and Jonathan N. Katz. 1995. "What to Do (and Not to Do) with Time-Series-Cross-Section Data." *American Political Science Review* 89:634-647.

Stimson, James A. 1985. "Regression in Space and Time: A Statistical Essay." *American Journal of Political Science* 29:914-947.

##### Recommended:

Beck, Nathaniel. 2008. "Time-Series Cross-Section Methods." In *The Oxford Handbook of Political Methodology*, Eds. Janet M. Box-Steffensmeier, Henry E. Brady, and David Collier. New York: Oxford University Press.

#### **5/1: Intro to MLE and limited dependent variable models**

\*\*\* Assignment 5 is due \*\*\*

##### Required:

Gujarati and Porter, Chapter 15.

##### Recommended:

King, Gary. 1989. *Unifying Political Methodology: The Likelihood Theory of Statistical Inference*. New York: Cambridge University Press.

Long, J. Scott. 1997. *Regression Models for Categorical and Limited Dependent Variables*. Thousand Oaks, CA: Sage Publications.

#### **5/8: Presentations**

#### **TBA: Papers Due**