

Quantitative Methods II – (Political Science 6481)

Spring 2011

(This syllabus is current as of January 18, 2011, but is subject to change.)

Instructor: Noah Kaplan

Class: Tuesday and Thursday, 10:00 – 11:30 am, McElhinney Hall 104

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Office Hours: Wednesday, 9:30-11:30 am and by appointment

TA: Aaron Diamond

Lab: TBA

Office Hours: TBA

E-mail: adiamond75@yahoo.com

This course will review the principles and basic methods of multivariate analysis used in political science and public policy research. Its purpose is to intensively examine the concept of multivariate regression and provide an understanding of the various problems which can occur in the use of multiple regression analysis.

This course assumes familiarity with the basic concepts of levels of measurement, probability, hypothesis testing, and multiple (OLS) regression. You should be familiar with a statistical software package such as SPSS, SAS or Stata. This course aims at familiarizing you with the underlying assumptions of regression for data analysis so that you will be able to evaluate and undertake quantitative research.

Class and Lab Sessions: The class meets twice a week on Tuesday and Thursday. In addition, students *must* attend the weekly lab session.

Readings and Assignments:

Readings for each section of the course are specified in the attached syllabus. The books for this course are:

Required Texts

- Damodar Gujarati, *Basic Econometrics* (4th ed.). (required)
- Fred Pampel, *Logistic Regression: A Primer* (#132)

Recommended Texts -- All the recommended books are from the series "Quantitative Applications in the Social Sciences" by Sage Publishers. I have not ordered these books. If you wish to purchase these books, you can order them from any bookseller (real or virtual) or you may order them directly from Sage. The URL for Sage is <http://www.sagepub.com>.

- Michael Lewis-Beck, *Applied Regression* (#22)
- Christopher Achen, *Interpreting and Using Regression* (#29)
- J. Aldrich and F. Nelson, *Linear Probability, Logit and Probit Models* (#45)
- James Davis, *The Logic of Causal Order* (#55)
- W. Berry, *Nonrecursive Causal Models* (#37)
- C. Ostrom, *Time Series Analysis* (#9)

Optional/Additional Texts of Potential Use

- Peter Kennedy, *A Guide to Econometrics* (paperback)
- A. H. Studenmund, *Using Econometrics: A Practical Guide*

If you are finding Gujarati difficult to follow, you may wish to consult Kennedy or Studenmund for another perspective/voice on the material.

The course requires the use of computers for most assignments. We will be using a statistical program called Stata.

Hardware and software: We use Stata for Windows extensively in this class; this program is loaded on the computers in 446 PGH, as well as many other computers around the university. You may wish to buy Stata (you can purchase perpetual license of Stata/IC 11 for \$179, or for Stata/SE 11 for \$425 (you can also purchase a one year license of State/SE 11 for \$235); for further information, see <http://www.stata.com/order/new/edu/gradplan.html>). You do **not** need to own the software; it just gives you the convenience of working at home and/or on a laptop.

Teaching Assistant: One Teaching Assistant is associated with this course. The TA will hold weekly office hours and will be available by appointment on an as need basis. Weekly attendance at the lab session is mandatory.

Grading is based on the 5 required papers as follows:

- Paper #1 – OLS analysis of a multivariate model (15%)
Due Feb. 8th (individual paper)
- Paper #2 – Re-estimate the multivariate model testing and correcting for heteroskedasticity (20%)
Due Feb. 22nd (individual paper)
- Paper #3 – Dichotomous Dependent Variable Analysis (20%)
Due March 11th (individual paper)
- Paper #4 – Non-recursive Analysis (15%)
Due April 12th (paper by group of 2)
- Paper #5 – Time Series Analysis (20%)
Due May 3rd (individual paper)
- Class Attendance and Participation (10%)

Note: NO late papers will be accepted.

Lab Assignments: There will be lab assignments the first three or four weeks of the semester. These assignments are intended to help refresh your memory regarding Stata and OLS. You must hand-in the assignments to the TA in lab the following week. For example, the first lab assignment is due in lab the third week of classes (Feb. 1-3). Lab assignments will be posted on the course web page.

Note 1: Weekly assignments sets **MUST** be done by each individual. Assignments must be turned in at the beginning of class on the day that they are due. **NO late work will be accepted.** Graded problems will be returned in lab.

Attendance is taken at the beginning of each class period. If you miss more than two classes, your course grade will be reduced by one letter grade for each additional class you miss.

Cheating and Plagiarism: All students are expected to observe the University of Houston's rules against cheating and plagiarism. See the section on "Academic Honesty" in the University of Houston Studies handbook for a full statement regarding UH's rules against cheating and plagiarism. Any violation may result in expulsion from the University. Cheating and plagiarism in this class will be punished to the maximum extent possible.

ADA Statement: The American with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact UH's Center for Students with Disabilities (CSD) at (713) 743-5400.

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COURSE OUTLINE

Section 1: January 18th through February 17th (first 5 weeks)

Multiple Regression

Gujarati chapters 2-8, 10, 11

Michael Lewis-Beck, *Applied Regression* (#22)

Christopher Achen, *Interpreting and Using Regression* (#29)

Paper #1: Due Tuesday, Feb. 8th

Estimate a model with one or two key independent variables (and the standard seven variables controlling for demographic, socio-economic and political factors), using the data available in the lab, or *using your own data*. Discuss your hypothesis concerning the relationships of interest to you. Report the relevant statistics, and discuss your findings. Test for an interaction, and analyze outliers. Transform variables, if necessary. Include a 200 word abstract. The paper should be approximately 8-10 pages in length.

Paper #2: Due Tuesday, Feb. 22nd

Reestimate the multivariate model, analyze residuals. Test and correct for heteroskedasticity. Compare results with the original model. Include an abstract. The paper should be approximately 10 pages in length.

Section 2: Feb. 22nd through March 10th (3 weeks)

Models with Dichotomous Dependent Variables

Pampel, entire (also Recommend Aldrich and Nelson)

Gujarati, chapters 14 & 15

Paper #3: Due Friday, March 11

Estimate a model for a dichotomous dependent variable using OLS and one of the other methods discussed in the class. Explain why the method you choose is superior to others. Discuss and compare results. Note any substantive discrepancies. Include an abstract. The paper should be approximately 8-10 pages in length.

Spring Break, Monday, March 14th – Friday, March 18th.

Section 3: March 22nd – April 7th (three weeks)

Simultaneous Models

W. Berry, *Nonrecursive Causal Models* (#37)

Gujarati, chapters 18-20

Paper #4: Due April 12th

Estimate a multivariate non-recursive model using your own data. Discuss and compare results with those from OLS. Include an abstract. Please note that the final paper **MUST** be the collaborative work of 2 students (no more, no less). The paper should be 8-10 pages in length.

Section 4: April 12th – April 28th (three weeks)

Autocorrelation and Brief Introduction to Time Series

Gujarati, chapters 12, 17

C. Ostrom, *Time Series Analysis* (#9)

Paper #5: Due May 3rd

Estimate a multivariate time series model using your own data. Discuss and compare results with those from OLS. Include an abstract. The paper should be 8-10 pages in length.

THE LAST DAY OF CLASS IS THURSDAY, APRIL 28th.

THE LAST PAPER IS DUE BY 4 pm, TUESDAY, MAY 3rd.