Data Analysis II – (POLS 501)

Spring 2014

(This syllabus is current as of January 14, 2014, but is subject to change.)

Instructor: Dr. Noah Kaplan
Class: Tuesday and Thursday, 3:30 – 5:00 pm, BSB 1171
Office: 1122B BSB, ext. 6-5156
E-mail: njkaplan@uic.edu
Office Hours: Tuesdays and Thursdays, 11:00 am – Noon and by appointment.

TA: Meggan Trevey
Office Hours: Thursdays 1:30-3:30 pm, and by appointment.
E-mail: mtreve3@uic.edu.

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. Class will regularly meet in the computer lab BSB 4133. I will announce beforehand if we are to meet the following class in BSB 4133. Students *must* attend no matter where we meet (i.e., whether we meet in BSB 1171 or BSB 4133, attendance is required).

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 13 for $189, of for Stata/SE 13 for $395 (or you can also purchase a one year license of State/SE 13 for $235); for further information, see http://www.stata.com/order/new/edu/gradplan.html). To determine which version of Stata best suites your needs, see: http://www.stata.com/products/which-stata-is-right-for-me/. You do **not** need to own the software; it just gives you the convenience of working at home and/or on a laptop. Stata is in the political science graduate student lab and in the computer lab we will be using during the semester (BSB 4133)

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. 4th (individual paper)
- Paper #2 – Re-estimate the multivariate model testing and correcting for heteroskedasticity (20%)
  Due Feb. 18th (individual paper)
- Paper #3 – Dichotomous Dependent Variable Analysis (20%)
  Due March 11th (individual paper)
- Paper #4 – Non-recursive Analysis (15%)
  Due April 8th (paper by group of 2)
- Paper #5 – Time Series Analysis (20%)
  Due May 8th (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.

Academic Etiquette: Do not carry on side conversations or read the newspaper during class. Doing so is disrespectful to me and your classmates, and I will ask you to leave the room. **Turn OFF all cell phones before class begins**.

Cheating and Plagiarism: I do not tolerate plagiarizing or cheating of any kind. Such behavior will result in **failing** the course and other disciplinary action. Cheating and plagiarism in this class will be punished to the maximum extent possible. Any violation may result in expulsion from the University. All students are expected to observe the University of Illinois at Chicago's rules against cheating and plagiarism. See the section on "Academic Integrity/Academic Dishonesty" in the University of Illinois at Chicago's Undergraduate Student Academic Policy Guide 2009-20011 (http://www.uic.edu/depts/oaa/SMAAPP/guide.pdf) for a full statement regarding UIC's rules against cheating and plagiarism. The relevant regulations and procedures can be found at
http://www.uic.edu/depts/dos/docs/StudentDisciplinaryPolicy0809withpagenumbersandc

ov.pdf. The department of political science provides a full definition of plagiarism and guidelines on how to avoid plagiarism at: http://www.uic.edu/depts/pols/Plagiarism1.pdf. 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 see http://www.uic.edu/index.html/disability.shtml and then follow-up with me as appropriate.

Quantitative Methods II – Political Science 501

COURSE OUTLINE

Section 1: January 14th through February 13th (first 5 weeks, inclusive)

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. 4th
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. 18th
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. 18th through March 6th (3 weeks)

Models with Dichotomous Dependent Variables
Pampel, entire (also Recommend Aldrich and Nelson)
Gujarati, chapters 14 & 15

Paper #3: Due Tuesday, March 11th
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.

Section 3: March 11th – April 3rd (three weeks, not including spring break)

Simultaneous Models
W. Berry, *Nonrecursive Causal Models* (#37)
Gujarati, chapters 18-20

Paper #4: Due Tuesday, April 8th
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.

Spring Break, Monday, March 24th – Friday, March 28th.

Section 4: April 8th – May 1st (four weeks)

Autocorrelation and Brief Introduction to Time Series
Gujarati, chapters 12, 17
C. Ostrom, *Time Series Analysis* (#9)

Paper #5: Due Thursday, May 8th
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, May 1st.

THE LAST PAPER IS DUE BY 4 pm, Thursday, May 8th.