Introduction to Quantitative Political Methodology
PS 572
Fall 2015

Course Time: TR 8-9:15am
Location: Computer Lab, 15th floor, POT

Instructor: Dr. Clayton Thyne
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Learning Objectives

The purpose of this course is to introduce students to basic quantitative concepts and techniques as commonly applied in political science research. Although it is primarily oriented toward preparing graduate students in Political Science and Sociology for methodological training within the discipline – and therefore reflects the needs of academic professionals – it also is a useful way for the most advanced undergraduate concentrators in social sciences to learn hands-on research skills. We will begin with some basic techniques like cross-tabulation, difference of means, analysis of variance, and others, and conclude with an introduction to correlation and regression analysis. Although you will be expected to demonstrate your understanding of the concepts introduced in this course through the completion of computational exercises, this course will place a heavy emphasis on applying these techniques using statistical software.

Learning Outcomes

At the end of this course, students will have learned:

a) Basic mathematical & statistical skills needed to study Political Methodology at the graduate level.
b) Theories behind the analytical approaches used in Political Science disciplinary research.
c) How to perform quantitative analysis using the software and statistical methods published in Political Science journals.

Required Texts (Available at UK Bookstore)

(1) *Introductory Statistics.* Wonnacott & Wonnacott, Wiley and Sons, 5th Edition. ISBN-10: 0471615188 | ISBN-13: 978-0471615187

Required Materials

Flashdrive. You will turn in all Stata assignments on a flashdrive. Thus, you need to purchase a flashdrive that will be used solely for this course. Please label the flashdrive with your name. The size does not need to be large (1 gig will be plenty).

Recommended/Optional Texts

(1) *Applied Regression*. Michael Lewis-Beck, Sage Publications.
(2) *Stata Reference Manual Extract*. Stata Press (Available from Stata website)
(3) *Statistics with Stata*. Lawrence Hamilton, Duxbury Press. 2005. ISBN-10: 049510972X | ISBN-13: 978-0495109723

Statistical/Computer Skills Needed For This Course

This course assumes no prior training in statistics or advanced mathematics, but does require that you have taken college algebra. It also assumes that students have, or will get, access to a computer that connects to the Internet and that they have basic computer skills such as familiarity with Windows and a word processor. Finally, you must have or get an active email account that you check on a regular basis.

The statistical software used in this course is STATA 13.0 (or later) for Windows. This software is available in the departmental computer lab and is available elsewhere on campus.

Class Format

This course follows the "flipped classroom" model, which means that lectures will be viewed on your own time prior to showing up for class. Instead of lecturing during class, the instructor and TA will aid students in working through assignments that are based on the lecture. This model works only if students come to class prepared. Class time will be divided into two formats. On Tuesdays we will meet in a traditional classroom and work on exercises "by hand." By "by hand," I mean that students will not be using statistical packages. Students will likely find a computer useful for these exercises, however, as Excel is a great tool for doing the work by hand. On Thursdays we will meet in the Sociology computer lab and complete assignments using Stata.

Disabilities/ Medical Conditions

If you have a documented disability that requires academic accommodations, please see me as soon as possible. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Suite 407 of the Multidisciplinary Science Building, 725 Rose Street, 0082, 257-2754, dtbeac1@uky.edu) for coordination of campus disability services available to students with disabilities. We can then collaborate on the best solution.

Missed exams and assignments

Make-up exams (for missed examinations) will only be given for documented excused absences as defined by the University (Senate Rule V.2.4.2) and are scheduled as needed. All missed work will result in a score of zero unless an acceptable written excuse is presented within 48 hours of the due date.

Plagiarism and Cheating

Students are advised to retain all notes and drafts for all work until after they receive their final grade. Students should also be aware that the instructor takes matters of plagiarism and cheating very seriously and is prone to imposing the most severe penalty allowed by university rules, which includes, but is not limited to, issuing an automatic grade of 0.0 for the entire course. All assignments, projects, and exercises completed by students for this class should be the product of the personal efforts of the individual(s) whose name(s) appear on the corresponding assignment. Misrepresenting others' work as one's own in the form of cheating or plagiarism is unethical and will lead to those penalties outlined in the University Senate Rules (6.3.1 & 6.3.2). The Ombud site also has information on plagiarism.

Course Requirements

Reading: For most weeks, the amount of reading is rather light by graduate school standards (in terms of the number of pages). This is deceiving. I expect that it will often take two or three readings to thoroughly comprehend the material (especially from the main text), especially as the semester progresses. Even after reading the material, you still may have questions. It is therefore important that you get started early in the week so that any questions you have can be resolved before class.

Homework Assignments:

Throughout the semester, you will be required to complete two types of assignments. First, you will be asked to complete computational exercises based on the reading for the week. Second, you will be required to complete computer-based exercises using STATA (usually applying the techniques covered in the text). Computational assignments (usually exercises in the textbook) may be NEATLY hand written or done in a spreadsheet (or you may type them). No hand-written work will be accepted for other types of assignments. Late assignments will not be accepted. Be sure to follow the instructions for each assignment on the assignment page. All assignments will be handed out via Blackboard.

Participation:

We regularly review the homework assignments in class and occasionally will work through problems together. You are expected to contribute to these exercises regularly.

Exams:

There will be three exams at the dates listed below in the Course Schedule.

Grading

Exam #1: 20%
Exam #2: 20%
Exam #3: 20%
Homework Assignments: 30%
Attendance/participation: 10%

Students will be graded on a 10-point scale, with 90-100 an A, 80-89 a B, 70-79 a C. Undergraduates receiving a course grade from 60-69 will receive a D. All others receive an E, failing the course.

Date/topic	Prior to class…	Assignment due…
08/27 (Th): Syllabus review, course expectations	-	-
09/01 (Tu): The nature of descriptive statistics	*Be prepared for WW Chp. 1-2 (read the chapters; watch the lectures) *Watch "Types of Data" at: http://www.youtube.com/watch?v=hZxnzfnt5v8&feature=related *Watch "Introduction to Statistics" at: http://www.youtube.com/watch?v=YHXadaW_lso&feature=BFa&list=PLA58DD58DF39B727A *Watch "Descriptive Statistics Part 1" at: http://www.youtube.com/watch?v=8P5WZ6TfuZg&feature=results_video&playnext=1&list=PLAB61A8CC9BBCB9A5 *Watch "Descriptive Statistics Part 2" at: http://www.youtube.com/watch?v=DFlbFv1VN0U&feature=BFa&list=PLAB61A8CC9BBCB9A5	-
09/03 (Th): The nature of descriptive statistics (continued)	*Watch "Stata Basics, Part 1" tutorial on Blackboard *Watch "Stata Basics, Part 2" tutorial on Blackboard	-
09/08 (Tu): Probability	*Be prepared for WW Chp. 3 (read the chapter; watch the lecture) *Watch "Chapter 4: Probability" at: http://www.youtube.com/watch?v=rhOTjLOPWbU&feature=BFa&list=PLA58DD58DF39B727A *Watch "Bayes' Theorem – Explained Like You're Five" at: http://www.youtube.com/watch?v=2Df1sDAyRvQ&feature=related	Turn in "Homework 1" at the beginning of class
09/10 (Th): Probability (continued)	-	-
09/15 (Tu): Probability distributions	*Be prepared for WW Chp. 4 (read the chapter; watch the lecture) *Watch "Chapter 5: Probability Distributions" at: http://www.youtube.com/watch?v=yng9pQQmJUE&feature=BFa&list=PLA58DD58DF39B727A	Turn in "Homework 2" at the beginning of class
09/17 (Th): Probability distributions (continued)	-	-
09/22 (Tu): Two random variables	*Be prepared for WW Chp. 5 (read the chapter; watch the lecture) *Watch "BFIP13 Joint Prob, Cov, and Correlation" at: http://www.youtube.com/watch?v=B_fxitnTIjo&feature=topics	Turn in "Homework 3" at the beginning of class
09/24 (Th): Two random variables (continued)	-	-

Date/topic	Prior to class…	Assignment due…
09/24-09/28: Exam #1 over WW Chp. 1-5	This will be a 24 hour, take-home exam. The exam window opens at 5pm on 09/24 and the exam must be completed by noon on 09/28. You can take the exam during any 24hr period during this window. Turn your materials into my mailbox in POT 1615.	-
09/29 (Tu): Sampling and point estimation	*Be prepared for WW Chp. 6-7 (read the chapter; watch the lecture) *Watch "Chapter 6: Sampling Distributions" at: http://www.youtube.com/watch?v=LfgPmKTdUsE&feature=BFa&list=PLA58DD58DF39B727A Watch "Chapter 7: Estimation" at: http://www.youtube.com/watch?v=mD56-raCdGg&feature=BFa&list=PLA58DD58DF39B727A	Turn in "Homework 4" at the beginning of class
10/01 (Th): Sampling and point estimation (continued)	-	-
10/06 (Tu): Confidence intervals and hypothesis testing	*Be prepared for WW Chp. 8-9 (read the chapters; watch the lectures) *Watch "95% CI for one mean: Worked example" at: http://www.youtube.com/watch?v=6YUnxK_FuXo *Watch "Hypothesis test for difference of means" at: http://www.youtube.com/watch?v=N984XGLjQfs *Watch "Z-statistics vs. T-statistics" at: http://www.youtube.com/watch?v=5ABpqVSx33I&feature=relmfu *Watch "Chapter 8: Hypothesis testing" at: http://www.youtube.com/watch?v=HmMjS88eSVE&feature=BFa&list=PLA58DD58DF39B727A *Watch "How to…for Hypothesis testing" at: http://www.youtube.com/watch?v=B9u_grPccUs&feature=results_video&playnext=1&list=PLC61D70C8D11CA968 *Watch "Learn to understand…Errors" at: http://www.youtube.com/watch?v=iz1sfne1cNA&feature=plcp	Turn in "Homework 5" at the beginning of class
10/08 (Th): Confidence intervals and hypothesis testing (continued)	-	-
10/13 (Tu): Analysis of variance (ANOVA)	*Be prepared for Chp. 10 (read the chapter; watch the lecture) *Watch "Statistics 101: ANOVA, A Visual Introduction" at: https://www.youtube.com/watch?v=0Vj2V2qRU10 *Watch "Statistics 101: One-way ANOVA (Part 1), A Visual Guide" at: https://www.youtube.com/watch?v=JgMFhKi6f6Y *Watch "Statistics 101: One-way ANOVA (Part 2), Understanding the calculation" at: https://www.youtube.com/watch?v=UrRYITjDOww	Turn in "Homework 6" at the beginning of class

Date/topic	Prior to class…	Assignment due…
10/15 (Th): Analysis of variance (ANOVA) (continued)	-	-
10/15-10/19: Exam #2 over WW Chp. 6-10	This will be a 24 hour, take-home exam. The exam window opens at 5pm on 10/15 and the exam must be completed by noon on 10/19. You can take the exam during any 24 period during this window. Turn in your materials into my mailbox in POT 1615.	-
10/20 (Tu): Extensions of WW	We'll be covering info that WW missed. There is no chapter to read. Be sure to watch the lecture on Blackboard.	-
10/22 (Th): Extensions of WW (continued)	-	-
10/27 (Tu): Fitting a line	*Be prepared for WW Chp. 11 (read the chapter; watch the lecture) *Watch "Chapter 10: Regression" at: http://www.youtube.com/watch?v=MIqyiGvrUXE&feature=related *Watch "Regression 1: What is regression?" at: http://www.youtube.com/watch?v=aq8VU5KLmkY	Turn in "Homework 7" at the beginning of class
10/29 (Th): Fitting a line (continued)	-	-
11/03 (Tu): Simple regression	*Be prepared for WW Chp. 12 (read the chapter; watch the lecture) *Watch "Gauss-Markov assumptions part 1" at: http://www.youtube.com/watch?v=NjTpHS5xLP8 *Watch "Gauss-Markov assumptions part 2" at: http://www.youtube.com/watch?v=ti9h-Au8LQw	Turn in "Homework 8" at the beginning of class
11/05 (Th): Simple regression (continued)	-	-
11/10 (Tu): Unusual and influential data	*We'll be covering info that WW missed. There is no chapter to read. Be sure to watch the lecture on Blackboard.	Turn in "Homework 9" at the beginning of class
11/12 (Th): Unusual and influential data (continued)	-	-
11/17 (Tu): Multiple regression	*Be prepared for WW Chp. 13 (read the chapter; watch the lecture) *Watch "4 3 Lecture 8a Introduction to Multiple Regression 2322" at: http://www.youtube.com/watch?v=Ek4bIe-DuMA *Watch "STATA Tutorials: Multiple Linear Regression" at: http://www.youtube.com/watch?v=NbSjQ0n-Gss	Turn in "Homework 10" at the beginning of class

Date/topic	Prior to class…	Assignment due…
11/19 (Th): Multiple regression (continued)	-	-
11/24 (Tu): Review, catch-up	-	-
12/01 (Tu): Regression extensions	*Be prepared for WW Chp. 14 (read the chapter; watch the lecture) *Watch "Multiple regression 3 – dummy variables" at: http://www.youtube.com/watch?v=MAsZVPh0F-c *Watch "Multiple Regression – Dummy variables and interactions – example in Excel" at: http://www.youtube.com/watch?v=H07l1zgM-cw	-
12/03 (Th): Regression extensions (continued)	-	-
12/08 (Tu): Correlation	*Be prepared for WW Chp. 15 (read the chapter; watch the lecture) *Watch "R-Squared or Coefficient of Determination" at: http://www.youtube.com/watch?v=lng4ZgConCM *Watch "Adjusted R squared" at: http://www.youtube.com/watch?v=8W2fGkU5LYU	Turn in "Homework 11" at the beginning of class
12/10 (Th): Correlation (continued)	-	-
12/11-12/16: Final exam	*This will be a 24 hour, take-home exam. The exam window opens at 6am on 12/11 and the exam must be completed by noon on 12/15. You can take the exam during any 24hr period during this window. Turn your materials into my mailbox in POT 1615.	-