Introduction to Quantitative Political Methodology
PS 572-001
Fall 2013

Course Time: TTh 2-3:15pm
Location: Tuesdays: Thomas Poe Cooper 101
       Thursdays: Computer Lab, 15th floor POT

Instructor: Dr. Clayton Thyne
Office Hours: Tu 10am-noon; Th 3:20-4:30pm (or by appointment); 1625 POT
Email: clayton.thyne@uky.edu
Phone: 859-257-6958 (office); 859-396-6871 (cell)

TA: Yu Ouyang
Office Hours: MW 2-3pm (or by appointment); 1602 POT
Email: you222@uky.edu

Learning Objectives
The purpose of this course is to introduce students to basic quantitative concepts and techniques as commonly applied in social science research. Although it is primarily oriented toward preparing graduate students in Political Science and Sociology for methodological training within the disciplines – and therefore reflects the needs of academic professionals – it also is a useful way for the most advanced undergraduate concentrators in the social sciences to learn hands-on research skills. We will begin with some basic techniques such as 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 social science methodology at the graduate level.
   b) Theories behind the analytical approaches used in Political Science and Sociology disciplinary research.
   c) How to perform quantitative analysis using the software and statistical methods published in social science journals.

Required Text (Available at UK Bookstore)
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
(2) *Stata Reference Manual Extract.* Stata Press (Available from Stata website)

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 11.0 (or later) for Windows. This software is available in both the PSCI and SOC computer labs, which is accessible 24 hours a day, 7 days a week (although you can’t get into the building after 11pm or before 6am).

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 (Room 2, Alumni Gym, 257-2754, email address jkarnes@email.uky.edu) for coordination of campus disability services available to students with disabilities.

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 deceptive. 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.
## COURSE SCHEDULE

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<tr>
<th>Date/topic</th>
<th>Prior to Class…</th>
<th>Assignment due…</th>
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<tr>
<td>08/29 (Th): Syllabus review, course expectations</td>
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| 09/03 (Tu): The Nature of Statistics and Descriptive Stats | *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_1so&feature=BFa&list=PLA58DD58DF39B727A  
*Watch “Descriptive Statistics Part 2” at: http://www.youtube.com/watch?v=DFlbFv1VN0U&feature=BFa&list=PLAB61A8CC9BBCB9A5 | - |
| 09/05 (Th): The Nature of Statistics and Descriptive Statistics (continued) | *Watch “Stata Basics, Part 1” tutorial on Blackboard  
*Watch “Stata Basics, Part 2” tutorial on Blackboard | - |
| 09/10 (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=htOTjLOPWbU&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 |
| 09/12 (Th): Probability (continued) | - | - |
| 09/17 (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=yn9pQQmJUE&feature=BFa&list=PLA58DD58DF39B727A | Turn in “Homework 2” at the beginning of class |
| 09/19 (Th): Probability Distributions (continued) | - | - |
| 09/24 (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_fxitnT1jo&feature=topics | Turn in “Homework 3” at the beginning of class |
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<th>Date/topic</th>
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<tr>
<td>09/26 (Th): Two Random Variables (continued)</td>
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<td>09/26-09/30: Exam #1 over WW Chp. 1-5</td>
<td>This will be a 24 hour, take-home exam. The exam window opens at 5pm on 09/26 and the exam must be completed by noon on 09/30. You can take the exam during any 24hr period during this window. Turn your materials into my mailbox in POT 1615.</td>
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| 10/01 (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](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](http://www.youtube.com/watch?v=mD56-raCdGg&feature=BFa&list=PLA58DD58DF39B727A) | Turn in “Homework 4” at the beginning of class |
| 10/03 (Th): Sampling and Point Estimation (continued) | - | - |
| 10/08 (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](http://www.youtube.com/watch?v=6YUnxK_FuXo)  
*Watch “Hypothesis test for difference of means” at: [http://www.youtube.com/watch?v=N984XGLjQfs](http://www.youtube.com/watch?v=N984XGLjQfs)  
*Watch “Z-statistics vs. T-statistics” at: [http://www.youtube.com/watch?v=5ABpqVSx33I&feature=relmfu](http://www.youtube.com/watch?v=5ABpqVSx33I&feature=relmfu)  
*Watch “Chapter 8: Hypothesis testing” at: [http://www.youtube.com/watch?v=HzmJ88eSVE&feature=BFa&list=PLA58DD58DF39B727A](http://www.youtube.com/watch?v=HzmJ88eSVE&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](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=iz1sfnelcNA&feature=plcp](http://www.youtube.com/watch?v=iz1sfnelcNA&feature=plcp) | Turn in “Homework 5” at the beginning of class |
| 10/10 (Th): Confidence Intervals and Hypothesis Testing (continued) | - | - |
| 10/15 (Tu): Analysis of Variance (ANOVA) | Be prepared for Chp. 10 (read the chapter; watch the lecture)  
Watch “How to calculate Anova” at: [http://www.youtube.com/watch?v=pMmJeHvWOn8](http://www.youtube.com/watch?v=pMmJeHvWOn8) | Turn in “Homework 6” at the beginning of class |
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<tr>
<td>10/17 (Th): Analysis of Variance (continued)</td>
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<td>10/17-10-21: Exam #2 over WW Chp. 6-10</td>
<td>This will be a 24 hour, take-home exam. The exam window opens at 5pm on 10/17 and the exam must be completed by noon on 10/21. You can take the exam during any 24hr period during this window. Turn your materials into my mailbox in POT 1615.</td>
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<td>10/22 (Tu): Extensions of WW</td>
<td>We’ll be covering info that WW missed. There is no chapter to read. Be sure to watch the lecture on Blackboard.</td>
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<td>10/24 (Th): Extensions of WW (continued)</td>
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<td>10/29 (Tu): Fitting a Line</td>
<td>*Be prepared for WW Chp. 11 (read the chapter; watch the lecture)  *Watch “Chapter 10: Regression” at: <a href="http://www.youtube.com/watch?v=MIqyiGvrUXE&amp;feature=related">http://www.youtube.com/watch?v=MIqyiGvrUXE&amp;feature=related</a>  *Watch “Regression 1: What is regression?” at: <a href="http://www.youtube.com/watch?v=aq8VU5KLmkY">http://www.youtube.com/watch?v=aq8VU5KLmkY</a></td>
<td>Turn in “Homework 7” at the beginning of class</td>
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<td>10/31 (Th): Fitting a Line (continued)</td>
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<td>11/05 (Tu): Simple Regression</td>
<td>*Be prepared for WW Chp. 12 (read the chapter; watch the lecture)  *Watch “Gauss-Markov assumptions part 1” at: <a href="http://www.youtube.com/watch?v=NjTpHS5xLP8">http://www.youtube.com/watch?v=NjTpHS5xLP8</a>  *Watch “Gauss-Markov assumptions part 2” at: <a href="http://www.youtube.com/watch?v=ti9h-Au8LQw">http://www.youtube.com/watch?v=ti9h-Au8LQw</a></td>
<td>Turn in “Homework 8” at the beginning of class</td>
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<td>11/07 (Th): Simple Regression (continued)</td>
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<td>11/12 (Tu): Unusual and Influential Data</td>
<td>*We’ll be covering info that WW missed. There is no chapter to read. Be sure to watch the lecture on Blackboard.</td>
<td>Turn in “Homework 9” at the beginning of class</td>
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<td>11/14 (Th): Unusual and Influential Data (continued)</td>
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<td>11/19 (Tu): Multiple Regression</td>
<td>*Be prepared for WW Chp. 13 (read the chapter; watch the lecture)  *Watch “4 3 Lecture 8a Introduction to Multiple Regression 2322” at: <a href="http://www.youtube.com/watch?v=Ek4bIe-DuMA">http://www.youtube.com/watch?v=Ek4bIe-DuMA</a>  *Watch “STATA Tutorials: Multiple Linear Regression” at: <a href="http://www.youtube.com/watch?v=NbSfQ0n-Gss">http://www.youtube.com/watch?v=NbSfQ0n-Gss</a></td>
<td>Turn in “Homework 10” at the beginning of class</td>
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<td>11/21 (Th): Multiple Regression (continued)</td>
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<td>11/26 (Tu): Review, Catch-up</td>
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<td>Turn in “Homework 11” at the beginning of class</td>
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| 12/03 (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=MAAsZVPb0F-c](http://www.youtube.com/watch?v=MAAsZVPb0F-c)  
*Watch “Multiple Regression – Dummy variables and interactions – example in Excel” at: [http://www.youtube.com/watch?v=H07l1zgM-cw](http://www.youtube.com/watch?v=H07l1zgM-cw) | - |
| 12/05 (Th): Regression Extensions (continued) | -               | -               |
| 12/10 (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](http://www.youtube.com/watch?v=lng4ZgConCM)  
*Watch “Adjusted R squared” at: [http://www.youtube.com/watch?v=8W2fGkU5LYU](http://www.youtube.com/watch?v=8W2fGkU5LYU) | Turn in “Homework 12” at the beginning of class |
| 12/12 (Th): Correlation (continued) | -               | -               |
| 12/16-12/19: Final Exam          | *This will be a 24 hour, take-home exam. The exam window opens at 6am on 12/16 and the exam must be completed by noon on 12/19. You can take the exam during any 24hr period during this window. Turn your materials into my mailbox in POT 1615. | - |