

## **PS 572-001: Introduction to Quantitative Political Methodology**

**Course Time:** TTh 11:00am-12:15pm

**Location:** Lucille Caudill Little Fine Arts Lib-Rm. 301

**Course Website:** <http://www.uky.edu/~clthyn2>

**Instructor:** Dr. Clayton Thyne

**Office Hours:** TTh 1-2:30pm

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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 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 Political Science 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 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, 5<sup>th</sup> Edition.
- (2) *Statistics with Stata 10*. Lawrence Hamilton, Duxbury Press.
- (3) *A Stata Companion to Political Analysis*. Philip Pollock III, CQ Press.

### Recommended/Optional Texts

- (1) *Applied Regression*. Michael Lewis-Beck, Sage Publications.
- (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 9.0 (or 10.0) for Windows. This software is available in our departmental computer lab, 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

The class sessions for this seminar will involve a few different types of formats. Most of the time this will be the traditional lecture format in which I will present material to the class. On some days, I will demonstrate how to implement the techniques you have learned using STATA. On several occasions, we will also examine how these techniques have been applied in published examples from leading social science journals.

### 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 three 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). Third, you will be required to turn in exercises from Pollack (just tear them out of the workbook). 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.

*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: 25%

Exam #2: 25%

Exam #3: 25%

Homework Assignments: 20%

Participation: 5%

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

### **08/27 (Thurs): Syllabus review, course expectations**

#### **09/01 (Tue): The Nature of Statistics**

- Be prepared to discuss WW Chp. 1
- Be familiar with the Stata commands in Hamilton Chp. 1-2, especially:
  - use, summarize, describe, tabulate, search, browse, edit, compress, generate, set memory, sort, rename, label order, list, if, >, <, <=, >=, ~=, !=, keep, drop, replace, display, merge, save, collapse
  - play around with these using a dataset of your choice, or just download the datasets I've made available at:
    - [http://www.uky.edu/~clthyn2/data\\_set\\_1.dta](http://www.uky.edu/~clthyn2/data_set_1.dta) (an IR example dataset)
    - [http://www.uky.edu/~clthyn2/data\\_set\\_2.dta](http://www.uky.edu/~clthyn2/data_set_2.dta) (an American example)

### **09/03 (Thurs): No class – APSA Conference**

#### **09/08 (Tues): Descriptive Statistics**

- Be prepared for WW Chp. 2
- Turn in Exercises from Pollock chp. 1 (page 17) at the beginning of class
- Be familiar with the Stata commands in Hamilton Chp. 3-4, especially:
  - histogram, graph box, qnorm, graph hbox, stem, sktest, ladder, gladder, qladder

#### **09/10 (Thurs): Descriptive Statistics (continued)**

- Be prepared for WW Chp. 2
- Receive Chp. 1-2 assignment

#### **09/15 (Tue): Probability**

- Be prepared for WW Chp. 3
- Turn in Chp. 1-2 assignment at the beginning of class
- Turn in Exercises from Pollock chp. 2 (pages 35-40) at the beginning of class

#### **09/17 (Thurs): Probability (continued)**

- Be prepared for WW Chp. 3
- Receive Chp. 3 assignment

#### **09/22 (Tues): Probability Distributions**

- Be prepared for WW Chp. 4
- Turn in Chp. 3 assignment at the beginning of class

#### **09/24 (Thurs): Probability Distributions (continued)**

- Be prepared for WW Chp. 4
- Turn in Exercises from Pollock chp. 3 (pages 55-57) at the beginning of class
- Receive Chp. 4 assignment

**09/29 (Tues): Two Random Variables**

- Be prepared for WW Chp. 5
- Turn in Chp. 4 assignment at the beginning of class

**10/01 (Thurs): Two Random Variables (continued)**

- Be prepared for WW Chp. 5
- No assignment (study for your exam)

**10/06 (Tues): Exam #1 over WW Chp. 1-5**

**10/08 (Thurs): Review exam; catch-up**

**10/13 (Tue): Sampling**

- Be prepared for WW Chp. 6

**10/15 (Thurs): Sampling (continued)**

- Be prepared for WW Chp. 6
- Receive Chp. 6 assignment

**10/20 (Tues): Point Estimation**

- Be prepared for WW Chp. 7
- Turn in Chp. 6 assignment at the beginning of class

**10/22 (Thurs): Point Estimation (continued)**

- Be prepared for WW Chp. 7
- Play around with the following Stata commands: `ttest`, `ci`, `drawnorm`, `expand`
- Receive Chp. 7 assignment

**10/27 (Tues): Confidence Intervals**

- Be prepared for WW Chp. 8
- Turn in Chp. 7 assignment at the beginning of class

**10/29 (Thurs): Confidence Intervals (continued)**

- Be prepared for WW Chp. 8
- Receive Chp. 8 assignment

**11/03 (Tues): Hypothesis Testing**

- Be prepared for WW Chp. 9
- Turn in Chp. 8 assignment
- Turn in Exercises from Pollock chp. 6 (pages 116-117) at the beginning of class

**11/05 (Thurs): Hypothesis Testing (continued)**

- Be prepared for WW Chp. 9
- Receive Chp. 9 assignment

**11/10 (Tues): Analysis of Variance (ANOVA)**

- Be prepared for Chp. 10
- Turn in Chp. 9 assignment
- Be familiar with the following Stata commands: ttest, oneway, anova,

**11/12 (Thurs): Analysis of Variance (ANOVA) (continued)**

- Be prepared for Chp. 10
- No assignment (study for your exam)

**11/17 (Tues): Exam #2 over WW Chp. 6-10**

**11/19 (Thurs): No Class – PSS Conference**

**11/24 (Tues): Review exam; catch-up**

**11/26 (Thurs): No Class – Thanksgiving Break**

**12/01 (Tues): Summary and Extension of WW**

- Review chp. 6-10
- We'll be covering info that WW missed; notes to be taken from me

**12/03 (Thurs): Summary and Extension of WW (continued)**

- Review chp. 6-10
- We'll be covering info that WW missed; notes to be taken from me

**12/08 (Tues): Summary and Extension of WW (continued)**

- Review chp. 6-10
- We'll be covering info that WW missed; notes to be taken from me
- Turn in Exercises from Pollock chp. 7 (pages 130-135) at the beginning of class

**12/10 (Thurs): Course review**

- Review chp. 1-10 and notes from 12/01-12/08
- Come in with questions about the final exam; it is cumulative

**12/15 (Tues) at 10:30am: Final Exam covering all course content**