

## POLITICAL SCIENCE DATA ANALYSIS

Florida State University

POS 5737  
Fall, 2009  
Office Hours, Monday  
9:00 – 11:00 a.m. or by appointment

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Statistics is a branch of mathematics that deals with the analysis and interpretation of data collected from the world around us. As such, statistics is a vital tool for the study of social (as well as physical) phenomena. For political scientists, who seek to know about the causes and consequences of political arrangements or events, statistical analysis allows us to answer these questions in a systematic fashion. This course introduces students to the two main functions of statistical methods in political science: 1) the use of data to generate *descriptions* or summaries of political phenomena, facilitating comparisons across space and time, and 2) the use of available data to draw *inferences* about the broader political world. As we shall see, these inferences are necessarily uncertain, so we will use the known properties of probability theory to assess the level of confidence associated with our inferences. To understand the more advanced methods introduced later in the political methodology course sequence, it is vital to develop a strong background in these topics.

This course is designed to provide students with the knowledge needed to both *understand* and *engage* in the craft of political research. Accordingly, students will not only complete “paper and pencil” exercises requiring calculations and interpretation of statistical results but will also develop a base proficiency in the use of statistical computer software (Stata 10) to analyze political data. Computer topics will be introduced in laboratory sessions led by the course teaching assistant, Daniel Milton. The syllabus includes a tentative schedule for computer instruction. Students should keep Fridays from 1:30-2:30 free in order to accommodate the lab sessions.

### REQUIREMENTS:

Students are expected to attend all class sessions and read all assigned reading prior to the class session for which the material is assigned. The material presented in this class is cumulative, and it will be extremely difficult for you to catch up after missing a class.

**Texts:** All students should purchase the following book, which is available at the Florida State University Bookstore :

Freund, John E. 1973. *Introduction to Probability*. Mineola, NY: Dover Publications, Inc.

Stata Corp. 2003. *Getting Started with Stata for Windows*. College Station, TX: Stata Press.

Wonnacott, Thomas H., and Ronald J. Wonnacott. 1990. *Introductory Statistics for Business and Economics*, 4<sup>th</sup> ed. New York: John Wiley and Sons.

Some additional readings may be suggested during the course of the semester and provided on Blackboard.

### Assignments and Grading:

Homework assignments will be given regularly (on a near weekly basis). Most of these assignments will be pencil and paper exercises. *I expect students to work on these assignments individually.* I recognize that group study is alluring, but you must be able to derive answers on your own if you expect this course to benefit you in the long run (and on the examinations). Group work makes it difficult for me to assess when and about which topics you—as an individual—need additional assistance. If you have questions, please seek assistance from me or the course teaching assistant, Daniel Milton. Homework is essential for understanding this material. By nature, it is time consuming and, at times, difficult. I encourage you to start assignments early so as to allow yourself sufficient time in case problems arise.

There will be two examinations in this course: a midterm and final examination. The final examination will be cumulative

Your course grade will be determined as follows:

Homework Assignments	50%
Midterm Examination	20%
Final Examination	20%
Class Participation	10%

Homework assignments and examinations will be graded on the following scale:

	B+ = 89 – 87	C+ = 79 – 77	D+ = 69 – 67	
A = 100 – 93	B = 86 – 83	C = 76 – 73	D = 66 – 63	F = 59 – 0
A- = 92 – 90	B- = 82 – 80	C- = 72 – 70	D- = 62 – 60	

Students will be given a 0 for participation if absent from class without being previously excused.

Students expecting to pursue a Ph.D. need to be aware of the rules about grades in the methods sequence. You will need to earn a minimum grade of B in this course to satisfy the requirements for a Ph.D. Students receiving a B- can continue in the methods sequence and then retake this course in the following year. Students receiving a C+ or lower may not continue in the methods sequence until they retake this course and raise their grade.

Undoubtedly, some of you will find the material in this class difficult to grasp. The textbooks, lectures, and assignments have been compiled to make understanding statistics an *easier* task. Yet you should not fool yourself by thinking that this course will be *easy*. This course is very demanding, both of your time and brain power. I will be happy to meet with you during office hours, or by appointment, if the material confuses you. This course is sometimes hard, plain and simple, and, unfortunately, no amount of complaining will make it better—seeking out your professor, T.A., and working hard *will* make it better though.

**All assignments and exams are to be completed on the assigned dates. No make-up exams or**

**incompletes will be given for this class, except under the most extreme circumstances.**

### **POLICY ON ACADEMIC HONESTY**

All students are responsible for maintaining the highest standards of honesty and integrity in every phase of their academic careers. The penalties for academic dishonesty are severe and ignorance is not an acceptable defense. All academic work must meet the standards contained in the Academic Honor Code, published in the *Florida State University Bulletin* and *The Graduate Handbook*. Students are responsible for informing themselves about those standards before performing academic work. Students who are suspected of violating the principles of academic honesty will be reported to the Graduate Director.

### **STUDENTS WITH DISABILITIES**

Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; (2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class. For more information about services available to FSU students with disabilities, contact the Student Disability Resource Center, 97 Woodward Ave. South (Student Services Bldg.), 850-644-9566, or on the web at <http://www.disabilitycenter.fsu.edu/>

### **OFFICE HOURS AND AVAILABILITY**

If at any time you feel confused by the material or simply want to discuss your academic progress, please feel free to seek my help during office hours or by appointment. My formal office hours are Monday from 9:00 to 11:00 a.m. If you need to contact me outside of office hours, email is probably the best way to do so. I check my email regularly and will respond as quickly as possible.

### **REQUIRED READINGS**

Week 1      The Language of Science

- Wonnacott and Wonnacott, Chapter 1

#### **Laboratory Practicum I – Introduction to Stata**

- *Getting Started with Stata*, Chapters 2-6

Week 2      Univariate and Descriptive Statistics

- Wonnacott and Wonnacott, Chapter 2

#### **Laboratory Practicum II – Data Management**

- *Getting Started with Stata*, Chapters 7-13
- Data Importation Exercises (Importing Delimited and Fixed Data; Merging)

Week 3      Probability

- Alpha Chiang, Selections on Set Theory (Available on Blackboard)
- Wonnacott and Wonnacott, Chapter 3
- Freund, Chapters 1-6

**Laboratory Practicum III – Descriptive Statistics and Graphical Displays of Data**

- *Getting Started with Stata*, Chapters 15-17, and 20
- Generating Violin Plots

Week 4      Probability Distributions I

- Wonnacott and Wonnacott, Chapter 4
- Freund, Chapters 7 and 8

Week 5      Probability Distributions II

- Wonnacott and Wonnacott, Chapter 4 and 5

**Laboratory Practicum IV – Simulation of Probability Distributions**

Week 6      Sampling Theory

- Wonnacott and Wonnacott, Chapter 6

**Laboratory Practicum V – Simulation of the Central Limit Theorem**

Week 7      **MIDTERM EXAMINATION**

Week 8      Statistical Inference: Point Estimation

- Wonnacott and Wonnacott, Chapter 7

Week 9      Statistical Inference: Confidence Intervals

- Wonnacott and Wonnacott, Chapter 8

Week 10     Statistical Inference: Hypothesis Testing

- Wonnacott and Wonnacott, Chapter 9

**Laboratory Practicum VI – Difference of Means, Proportions, and t-tests**

Week 11 Relationships between Categorical Variables: Contingency Tables and Chi-Square

- Wonnacott and Wonnacott, Chapter 17

**Laboratory Practicum VII – Contingency Tables and Chi-Square**

Week 12 Correlation and Bivariate Regression

- Wonnacott and Wonnacott, Chapter 12 and 15 (Selections)

Week 13 Multiple Regression

- Readings to be Determined

**Laboratory Practicum VIII – Multiple Regression**

- Read and Begin Replication of Octavio Amorim Neto and Gary W. Cox. 1997.  
“Electoral Institutions, Cleavage Structures, and the Number of Parties.”  
*American Journal of Political Science* 41 (January): 149-174.

Week 14 *Thanksgiving Break !!!*

Week 15 Multiple Regression

- Readings to be Determined

**WEDNESDAY, DECEMBER 9, 2009 @ 9:00 P.M. – FINAL EXAMINATION**