

**Political Science 502**  
**Methods of Political Analysis**  
Fall 2008

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University of South Carolina  
MWF 12:20 - 1:10 PM  
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## **Description**

This course provides an introduction to the theory and practice of statistical analysis in political science. Much of the lectures will focus on statistical theory, which is necessary for understanding the methods that quantitative political scientists employ in their research. However, my end goal is not to turn students into statisticians. Instead, it is to aid students in becoming the most effective researchers they can become.

There are no prerequisites for the course other than a willingness to learn, a commitment to reading the course material prior to class, and a dedication to working one's way through the homework assignments and exams. In other words, I do not assume that students enter the course with previous training in statistics, but I do assume that students enter the course with a commitment to learning how to apply statistical analysis in political science research.

Many students enter their first graduate statistics course with some concerns and trepidations. The key to overcoming these concerns is to recognize that the best political scientists are always dedicating themselves to becoming better scholars. The best political scientists, in short, are those who recognize that they have much to learn and dedicate themselves to doing so. The only way to do so is to not be afraid to make mistakes and always be willing to ask questions in order to improve oneself as a scholar. It's important, therefore, to ask questions in class and to come to office hours if you don't understand portions of the material. If you commit yourself to working hard in this course you will get much more out of it and will have taken a critical step toward becoming a strong scholar.

## Learning Outcomes

Upon completion of this course, students should:

- have a solid foundation in probability theory, sampling, and univariate and bivariate quantitative analysis
- understand how and why political scientists apply the above to the study of political phenomena
- understand the logic of null hypothesis testing in political science
- understand point estimation and the formation of confidence intervals

## Texts

There are two assigned texts and one recommended text. All are available at campus bookstores.

The required texts are:

Wonnacott, Thomas H., and Ronald J. Wonnacott. 1990. *Introductory Statistics*, 5th ed. New York: John Wiley and Sons.

Abelson, Robert P. 1995. *Statistics as Principled Argument*. Hillsdale, NJ: Lawrence Erlbaum Associates.

The recommended text is:

Greene, William H. 2003. *Econometric Analysis*, 5th Ed. Upper Saddle River, NJ: Prentice-Hall.

The Wonnacott and Wonnacott text (abbreviated W & W in the readings listed below) will be our primary text. It provides an understandable presentation for students in a first graduate statistics course. The Abelson book (abbreviated AB in the readings below) is a very handy guide for conducting quantitative research in the social sciences. Abelson provides insights into why to study statistical theory as well as a how-to-guide for good practices in quantitative research. The Greene book is a more advanced text on econometrics, and is an excellent resource for scholars conducting quantitative research.

Additional readings will be available, as necessary, on Blackboard.<sup>TM</sup>

## Grading

Grades in this course will be determined as follows:

- Class Participation (10% of the course grade)
- Homework Assignments (30% of the course grade)
- Midterm Exam (30% of the course grade)
- Final Exam (30% of the course grade)

Class participation and attendance are essential for success in the course. Because the material builds on concepts learned earlier in the course, a slow start can hurt considerably later in the semester. As a result, it's essential that you come to lectures prepared by having read the material before class. Clearly, it's very difficult to get class participation points if one does not attend class. Class attendance is a necessary but not sufficient criterion for getting the 10% of the class points based on class participation.

We will have five assignments over the course of the semester. Some assignments will involve pencil and paper while others will involve using statistical software. For the latter assignments, you will be using Stata<sup>TM</sup>, which you will be introduced to in the five lab sessions during the semester. (If you have previous experience with SAS<sup>TM</sup>, S-Plus<sup>TM</sup>, or R, and would prefer to use one of these latter packages, please see me.) Each assignment will count for 6% of your overall course grade. Each assignment will be due at the beginning of class a week from when it is assigned. No credit will be given for late assignments.

Students will also take a midterm and a final exam. These exams will involve both conceptual questions and questions requiring computations. We will be discussing both the midterm and final exams in more detail in class. The midterm exam and the final exam are, as noted above, each worth 30% of your overall course grade.

## Course Schedule

### **Week 1 (August 22nd): Course Introduction**

No readings assigned.

### **Week 2 (August 25th — August 29th): The Nature of Statistics**

Wonnacott and Wonnacott (W & W), Chapter 1

Abelson (AB), Chapter 1

Wednesday, August 27th — Lab Session (003 Gambrell)

Friday, August 29th — *No Class (American Political Science Association Meeting)*

### **Week 3 (September 1st — September 5th): Univariate and Descriptive Statistics**

W & W, Ch. 2

AB, Ch. 8

Monday, September 3rd — *No Class (Labor Day)*

### **Week 4 (September 8th — 12th) Univariate and Descriptives Statistics and Probability 1**

W & W, Ch. 3

Wednesday, September 10th — Lab Session

### **Week 5 (September 15th — 19th) Probability 2**

W & W, Ch. 3

### **Week 6 (September 22nd — 26th) Probability Distributions**

W & W Ch. 4

AB, pp. 17-26

**Week 7 (September 29th – October 3rd) Two Random Variables and Midterm Exam**

W & W, Ch. 5

**FRIDAY, OCTOBER 3RD — MIDTERM EXAM**

**Week 8 (October 6th — 10th) Sampling 1**

W & W, Ch. 6

Wednesday, October 8th — Lab Session

Friday, October 10th — *No Class (Fall Break)*

**Week 9 (October 13th — 17th) Sampling 2**

W & W, Ch. 6

AB, pp. 26-42

**Week 10 (October 20th — 24th) Point Estimation**

W & W, Ch. 7

AB, Ch. 3

**Week 11 (October 27th — October 31st) Confidence Intervals**

W & W, Ch. 8

AB, pp. 52-53

Friday, October 31st — Lab Session

**Week 12 (November 3rd — 7th) Hypothesis Testing 1**

W & W, Ch. 9

AB, Ch. 4

**Week 13 (November 10th — 14th) Hypothesis Testing 2 and Analysis of Variance**

W & W, Ch. 9-10

AB, Ch. 5

Friday, November 14th — Lab Session

**Week 14 (November 17th — 21st) Correlation**

W & W, Ch. 15

**Week 15 (November 24th — November 28th) Chi-Square and Bivariate Regression**

W & W, Ch. 17, 11, & 12

Wednesday, November 26th — Friday, November 28th — *No Class (Thanksgiving Break)*

**Week 16 (December 1st — December 5th) Bivariate Regression**

W & W, Ch. 11-12

Wednesday, December 3th — Lab Session

**THURSDAY, DECEMBER 11: FINAL EXAM**

**9:00 a.m. — 12 p.m.**

**250 Gambrell Hall**