

**ANDREW YOUNG SCHOOL OF POLICY STUDIES  
DEPARTMENT OF PUBLIC MANAGEMENT & POLICY  
PAUS 8121: APPLIED RESEARCH METHODS & STATISTICS I  
Spring 2009**

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Class Time: T 4:30-7:00PM  
Class Location: CS 310  
Office Hours: T, 2:00-4:00 PM  
and by appointment

NOTE: I am flexible regarding appointments, but please call or e-mail ahead except during office hours

### **COURSE OBJECTIVES**

By the end of this course, students should be able to:

- Pose research questions related to public management and policy
- Differentiate types of measurement and construct data
- Compute and interpret descriptive statistics correctly
- Use inferential statistics to develop hypotheses, perform appropriate statistical tests, and describe the results correctly
- Use statistical software to analyze data
- Communicate the results of statistical analyses clearly and accurately

### **TARGET AUDIENCE**

This course is designed for students entering the MPA and MPP programs. It is a requirement for the MPA and MPP degrees and advanced coursework in field specializations. This course is numbers-oriented. Although you do not have to be a math whiz, the course involves a considerable amount of number crunching. You should be familiar with basic algebra and be fluent with mathematical order of operations. You will use a calculator, Excel, and SPSS in some homework assignments and on exams. Assignments and exams will require you to describe what your statistical analysis means in managerial and policymaking terms.

### **COURSE OVERVIEW**

The purpose of this course is to provide you with a foundation in basic statistics, which will prepare you for PAUS 8131: Applied Research Methods & Statistics II. The topics to be covered include descriptive statistics, probability theory, sampling, statistical inference, and an introduction to regression analysis. The objective is to get you comfortable with the tools of statistics and how they are applied in a public policy/management setting. **This is a rigorous course, requiring several hours of work per week at a minimum.**

Although the principal objective of the course is understanding statistics, a secondary objective is becoming familiar with the use of computers in carrying out numerical computations. You will be expected to learn SPSS, a statistical software program widely used to perform computations for large datasets. Your knowledge of statistics and ability to use SPSS will be assessed in a final project to be completed as a final exam. To help you learn SPSS, I have incorporated computer modules into some lectures. Ultimately, however, you are responsible for learning SPSS and completing the final project. SPSS is available in all campus computer labs.

Although you will use SPSS for the final project, it is important that you also be able to carry out simple computations with a calculator since problem sets and examinations will require some computations by hand. For problem sets and exams, hand-calculated problems will involve a small number of observations or intermediate results from computer output for you to interpret and use for further analysis. Please bring a calculator to each class and exams.

As you will see by the end of the course, an understanding of the use of statistics is critical for anyone working in a public policy/management. The goals of this course are for you to become comfortable using statistics to describe public sector issues and to be competent in performing basic statistical tests to make decisions.

<b><u>Course Assessment:</u></b>	<b><u>Relative Weight</u></b>
Class Participation & Problem Sets	15%
Exam I (February 17th)	20%
Exam II (April 21st)	30%
Final Project (April 28th)	35%

## **CLASS ATTENDANCE & PARTICIPATION**

You are expected to attend class. You will sign in at the beginning of class using a roster that I will distribute each class. If you cannot attend class, please consult uLearn for lecture notes. Occasionally I will give a quiz at the beginning of class. If you miss a quiz, you will receive a zero. There are no make-up quizzes. Quiz grades count towards the class participation portion of your grade.

Although there is a significant lecture component of this course, I try to make classes as interactive as possible. To aid discussion, **you are expected to read the assigned text prior to class.** To encourage your attendance and participation in class, I use this portion of your grade to “boost” your final assessment. If your performance on exams and the final project puts you on the border of two grades, your class participation will determine if you receive the higher grade.

## **PROBLEM SETS**

These assignments will count as 15% of your final grade and will be graded pass/fail. The assignments are due on the date listed on the syllabus, and **will not be accepted late.** Electronic answer keys will be posted on the uLearn immediately after problem sets are due. The problems are assigned primarily to give you a chance to master statistical concepts prior to the exams. While I strongly encourage you to work with other students, you should first do the problems on your own to make sure that you can do them on the exam. We will discuss some of the most difficult problems in class; however, it is up to you to seek help if you are having trouble with any of the material. You may see me during my office hours for extra help, or we can set up a time outside of my office hours if you have a conflict with those times. If you would like references for a personal tutor, please let me know.

## **EXAMS**

This course includes two exams. The exams will be given in class and **there will be no make-up exams.** The exams will not be cumulative except for the fact that statistical concepts themselves tend to be cumulative. The first exam covers sections I & II of the course outline and composes 20% of your grade; the second exam covers sections III & IV and counts for 30% of your grade.

## FINAL PROJECT

The final project is an opportunity to demonstrate your mastery of the skills in this course in the context that you are most likely to use them—a written memo. It will require that you use most, if not all, of the statistics you learn throughout the semester to analyze a public policy problem. Since you will have a majority of the semester to work on this project, my expectations for its accuracy, content, and clarity are high. It also counts for the largest portion of your grade (35%). In the first, in-class SPSS lab, you will be given a dataset and problem to analyze for this project. The instructions for the project will require a final memo detailing your analysis of the problem in **no more than three, 1.5 line-spaced pages (NOT including supporting figures and tables)**. It will be due by the end of your University scheduled final exam period on **April 28<sup>th</sup> at 7:00PM**.

The due date for your final project closely follows your second exam. Therefore, it is necessary to start your analysis, table and figure making, and synthesis of the data **early in the semester**. As you learn new skills in lecture and lab, you should immediately apply them to your final project. You may work with other students to analyze the dataset, but you must turn in your own memo and supporting documentation. There is no one right answer to this project, but there are many wrong answers. **Do not share your final memo or tables/figures with other students prior to its due date.**

## TEXTBOOKS

**David Moore, and George McCabe (M&M), Introduction to the Practice of Statistics, 5th Edition, (New York: W.H. Freeman and Company, 2006)**. This textbook is required for the course. There is a student CD that comes with the book and has some additional datasets used in the text. These can provide extra SPSS practice. In addition, the book comes with a Study Guide. It provides answers to selected problems and overviews of each chapter. You might want to buy it with several other students to share. Finally, there is a website for the book which has access to datasets, chapter summaries, supplemental problems, and applets that are discussed in the text. You should register with the publisher to use the website: <http://bcs.whfreeman.com/ips5e>

**William Zinsser, On Writing Well. (New York: HarperCollins Publishers, 2001)**. You may order this online through your favorite bookseller. It is not a required text, but it is HIGHLY (no, EMPHATICALLY) recommended. Everyone—no matter what his/her writing ability—can benefit from reading this book about how to write with clarity and economy. Your final project will be a test of your statistical skills AND your writing ability. No amount of brilliant statistics will save a poorly written memo from receiving a low grade. If you cannot communicate the results of your statistical analysis in clear, direct language, you will not do well on the final project.

## LECTURE NOTES

Most lectures will be available as PowerPoint slides, which can be downloaded from uLearn by 5:00PM the day before each class (at the latest). **You should read the lecture slides before each class**. You may also print them out for taking notes in class. My posted lecture slides, however, are no substitute for coming to class and **reading the textbook**. Excessive absences will be reflected in your class participation grade.

## **uLEARN**

This course will be managed through uLearn, an internet-based information display system. **uLearn will be the primary means of communication for this course.** You will find the course syllabus, assignments, class lecture notes, course announcements, discussion board, etc. on the uLearn site. Please make sure you use the email address associated with the uLearn system so that you will receive my messages for the class. If you are not familiar with uLearn, please go to <http://www2.gsu.edu/~wwwvst/using/index.html>. Please take some time to learn how to use this system and get familiar with its contents early in the semester.

## **STATEMENT ON ACADEMIC HONESTY**

I expect students to abide by the academic rules and regulations established by Georgia State University. Standards of academic conduct are set forth in the *Georgia State University Graduate Catalog 2007-08*, p.48. See [http://www.gsu.edu/images/Downloadables/catalog\\_grad\\_07-08.pdf](http://www.gsu.edu/images/Downloadables/catalog_grad_07-08.pdf) for more details. By registering for this course, you acknowledge your awareness of the Academic Honesty code, and you must become familiar with your rights and responsibilities as defined by the code. **Any violation of the University's academic honesty policy will result in an F for the course.**

## **SPECIAL ACCOMMODATIONS**

If you have any condition, such as a physical or mental disability, which will make it difficult for you to carry out the work as outlined above or which will require extra time on examinations, please notify me in the first two weeks of the course so that we may make appropriate arrangements.

## **GRADES**

Grades will be assigned according to the following criteria:

**A (92.5-100)      Excellent:** Exceptional work for a graduate student. Work at this level is unusually thorough, well reasoned, creative, methodologically sophisticated, and well written. Work is of exceptional, professional quality.

**A- (90-92.49)      Very Good:** Very strong work for a graduate student. Work at this level shows signs of creativity, is thorough and well-reasoned, indicates strong understanding of appropriate methodological or analytical approaches, and meets professional standards.

**B+/B (82.5-89.99)      Good:** Sound work for a graduate student; well-reasoned and thorough, methodologically sound. This is the graduate student grade that indicates the student has fully accomplished the basic objectives of the course.

**B-/C+ (77.5-82.49)      Adequate:** Competent work for a graduate student even though some weaknesses are evident. Demonstrates competency in the key course objectives but indicates that understanding of some important issues is less than complete. Methodological or analytical approaches used are adequate but student has not been thorough or has shown other weaknesses or limitations.

**C/C- (70-77.49)      **Borderline:**** Weak work for a graduate student; \meets the minimal expectations for a graduate student in the course. Understanding of salient issues is somewhat incomplete. Methodological or analytical work performed in the course is minimally adequate. Overall performance, if consistent in graduate courses, would not suffice to sustain graduate status in “good standing.”

**D (60-69.99)      **Deficient:**** Inadequate work for a graduate student; does not meet the minimal expectations for a graduate student in the course. Work is inadequately developed or flawed by numerous errors and misunderstanding of important issues. Methodological or analytical work performed is weak and fails to demonstrate knowledge or technical competence expected of graduate students.

**F (<60)      **Failure:**** Work fails to meet even minimal expectations for course credit for a graduate student. Performance has been consistently weak in methodology and understanding, with serious limits in many areas. Weaknesses or limits are pervasive.



### III. Probability Theory and Sampling

February 24      **Lecture 6: Probability Theory**  
M&M, Ch. 4, Section 4.1, 4.2, 4.5

**Probability Distributions**  
M&M, Ch. 1, Section 1.3; Ch. 4, Section 4.3, 4.4; Ch. 5,  
Section 5.2

**Problem Set #3**      DUE ON MARCH 17<sup>th</sup> AT THE BEGINNING OF  
CLASS

March 3      **NO CLASS: SPRING BREAK**

March 10      **Lecture 7:** Confidence Intervals and Tests of Significance  
M&M, Ch. 6

### IV. Inferential Statistics

March 17, 24      **Lecture 8:** Inferential Statistics--Hypothesis Testing  
M&M, Ch. 7, 8

**Problem Set #4**      DUE ON MARCH 31<sup>st</sup> AT THE BEGINNING OF  
CLASS

March 31, April 7      **Lecture 9:** Other Hypothesis Tests/Statistics  
M&M, Ch. 9

April 14      **Lecture 10:** Inference for Regression  
M&M, Ch. 10

**Problem Set #5**      DUE ON APRIL 20<sup>th</sup> BY 5:00PM

April 20      **OPTIONAL: Exam II Review**  
5:30 – 7:00PM: Exact Location TBA

April 21      **\*\*\*\* Exam II (In class) \*\*\*\***  
5:30 – 7:00PM: Exact Location TBA

April 28      **FINAL PROJECT DUE BY 7:00 PM**