**ERSH 6300: Applied Statistical Methods in Education**
**Fall Semester 2005, TR 9:30A-10:45A**

Instructor: Gregory Palardy, Ph. D.
Office/e-mail: 325A Aderhold hall, gpalardy@uga.edu
Office hours: TR 10:45-11:30A and 3:15-4:00P or by appointment

## Course Description

*From Graduate Bulletin*: "Techniques for describing and summarizing data for educational research studies. Applications of the standard normal distribution and the use and interpretation of standard scores. Inferential statistics for one and two population studies including means, proportions, and correlations. Prerequisite: ERSH 4200/6200

The course will present an introduction to statistics that emphasizes working with data and statistical concepts. The content of the course and the textbook (Moore, 2003) are divided into three parts:

1. Understanding data
2. Understanding statistical inference
3. Applications of statistical inferences

The course requirements include daily readings and homework problems from the textbook, computer exercises, and three examinations.

## Textbooks

### *Required*

Moore, D. S. (2003). The Basic Practice of Statistics (3rd ed.). New York: W. H. Freeman and Company.

### *Optional*

Green, S. B., & Salkind, N. J. (2003). Using SPSS for Windows and Macintosh: Analyzing and Understanding Data (3rd ed.). Upper Saddle River, NJ: Prentice Hall.

Huck, S.W. (2003). Reading Statistics and Research (4th ed.). New York: Longman.

Stanovich. K. E. (2003). How to Think Straight About Psychology (7th ed.). Allyn & Bacon.

**Comments on Learning Statistics:** You may agree that statistics can be difficult. Approaching this course with the following orientation will facilitate your learning.

- **It's not math, but it's like math**. The statistics we learn in this class do not require an understanding of advance math. But learning this material is similar to learning mathematics in that it must be practiced and repeated exposure is important if not essential. One has to read the text repeatedly, work on exercises, analyze different problems, and experience different analytic situations in order to absorb the information. *So, don't wait until the last minute to study for tests or work on assignments!*

- **It's similar to learning a foreign language**. Statistics uses a lot of symbols like Greek letters, subscripts, and sometimes superscripts, which makes it similar to learning a foreign language. Think of the symbols as a foreign language vocabulary that you must learn in order to understand the equations. A good first step in understanding a statistical equation is to read it aloud.
- **It's progressive**. Topics tend to build on each other. So make sure your confusions get addressed as we go or they will serve as barriers to future learning.

## Assignments, Examinations, and Grades

Homework problems and questions as well as computer assignment will be given regularly and each student is expected to complete the exercises independently. All assignments must be completed and turned in on time. All work should be well organized and neat. It is vital to your success in this course that you spend time working on these assignments. Only a subset of the assigned problems will be collected, however. Those problems will be collected only three times during the semester, just before each exam.

There will be three exams during the semester including midterms on September 27th and November 1rd, and a final examination on December 15th (Thursday, 8:00 am). The examinations will be administered in class and exam items may include computations, short answer, and multiple choice questions derived from homework problems and in-class material. While examinations are not cumulative, the nature of the material is. So be aware that while I won't specifically ask questions on material from previous tests, you may need to make use of that information to answer questions on the present test. For each exam you may use one 8.5 x 11 "cheat sheet" with notes and formulas on it. Grades will be based on completion of the homework assignments (20%), on computer exercises (20%), and on the three examinations (20% each). Borderline grades will be determined based on class participation.

The grading scale is:

A = Excellent = above 90%

B = Good = between 80% and 90%

C = Fair = between 70% and 80%

D = Poor = between 60% and 70%

F = Failing = below 60%

## Attendance

Attendance is extremely important. In the past, students who have missed class experienced difficulty. When a student misses class, he or she misses an opportunity to check understanding of the concepts being developed in the course and to ask appropriate questions. For these reasons attendance is required. Students who accumulate more than 3 absences during the semester may be dropped from the class. If a student arrives more than 10 minutes late it will count as a half absence. If a student is more than a half hour late it counts as a full absence.

**Academic Honesty**

It is the student's responsibility to be familiar with the University of Georgia's policy on academic honesty as published in the booklet, *A Culture of Honesty: Policy on Academic Honesty*. This document is available on-line at [http://www.uga.edu/ovpi/]. Click on the *Academic Honesty* to view it. The University policy and regulations regarding academic honesty will be followed in this class.

**Course Meeting Schedule**

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| August 18: | Introduction and Chapter 1. Picturing distributions with graphs |
| August 23: | Computer Lab 1, Intro to SPSS |
| August 25: | Chapter 2. Describing distributions with numbers |
| August 30: | Computer Lab 2, Descriptive statistics |
| September 1: | Chapter 3. Normal distributions |
| September 6: | Chapter 4. Scatterplots and correlation |
| September 8: | Chapter 5. Regression |
| September 13: | Computer Lab 3, Scatterplots, correlations, and regression |
| September 15: | Catch up day |
| September 20: | Chapter 7. Producing data: sampling |
| September 22: | Review |
| September 27**:** | **Midterm 1: Chapters 1-5, 7** |
| September 29: | Chapter 8. Producing data: experiments |
| October 4: | Chapter 9. Introducing probability |
| October 6: | Chapter 10. Sampling distributions |
| October 11: | Chapter 13. Confidence intervals |
| October 13: | Chapter 14. Test of significance |
| October 18: | Chapter 15. Inference in practice |
| October 20: | Catch up day |
| October 25: | Review |
| October 27: | Spring Break (no class) |
| November 1: | **Midterm 2, Chapters 8, 9, 10, 13-15** |
| November 3**:** | Chapter 16. Inference about one mean |
| November 8: | No class (I will be attending a conference) |
| November 10: | Chapter 17. Comparing two means |
| November 15: | Computer lab 4 |
| November 17: | Chapter 18. Inference about one proportion |
| November 22: | Computer lab 5 |
| November 24: | No Class (Thanksgiving) |
| November 29: | Chapter 19. Comparing two proportions |
| December 1: | Catch up day |
| December 6: | No class (University is on a Friday schedule) |
| December 8**:** | Review |

**December 15 (8 am): Final Exam, Chapters 16-19**

Note: This schedule may change depending on how we progress

**We will meet in room 618 of Aderhold Hall on computer lab days.**