

ERSH 8320
Applied Correlation and Regression Methods in Education, Spring 2008
Syllabus

Contact Information

Instructor

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Teaching Assistant

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Instructor Office Hours

Wednesday, 2pm - 4pm; and by appointment.

Teaching Assistant Office Hours

Monday, 2:30pm - 6pm; Thursday, 3:30pm – 6:30pm; and by appointment.

Course Goals

This course is intended to be an *applied* statistics course, meaning all statistical topics will be taught in an application-centered manner. I have two goals for students of this course:

- (1) To become knowledgeable consumers of the statistical methods presented in this course.
- (2) To be able to properly obtain and use the statistical methods presented in this course.

It is my philosophy that becoming knowledgeable about applied regression techniques does not require your understanding or recitation of intricate mathematical proof. Rather, becoming knowledgeable revolves around the fundamental properties of each method:

- The situational appropriateness and motivation.
- The inferences that can be made from the technique.
- Methods of obtaining statistical estimates (including statistical computing).
- Knowledge of the underlying assumptions (and how to test if these are violated).

To reach these goals, lectures will feature many examples, and students will have frequent opportunities to practice what has been taught.

Textbook

Pedhazur, E. (1997). Multiple Regression in Behavioral Research, Third Edition Wadsworth.

Course Information

All necessary information will be posted on WebCT. Lectures, Homework, and Handouts will all be posted in the WebCT site.

Course announcements will be made available via WebCT email. This email is different than your regular email and will need to be checked through WebCT.

Statistical Computing

In this course we will make use of SPSS as a statistical package. SPSS is an easy-to-use package that will be adequate for the material presented in this course. Of course, if you are already familiar with another package, you may use that package. Be advised that all examples and solutions will feature SPSS, and we cannot provide you any help with any other package.

SPSS is available to you in three ways:

1. You can purchase SPSS through MSD at <http://www.msd.uga.edu/>
2. Most Aderhold labs have SPSS installed on all computers; for a list of labs and hours visit <http://www.coe.uga.edu/oit/instruction/labclass/labfaqs.html>

Course Structure

Homework

This course will feature frequent (approximately one per week) homework assignments to allow for sufficient practice of the principles discussed each week. Students are allowed and encouraged to collaborate with each other on homework assignments, however, each student must turn in an *original* piece of work. Each problem you give an answer to will be graded on a 3-point scale, with deductions for non-needed computer output (basically, submit only what was used in making conclusions).

| Points | Expectation |
|--------|--|
| 3 | Answer is correct and concise. You demonstrate you know the content area |
| 2 | Effort is made, but answer has some errors. You show you are on the right track and trying. |
| 1 | Minimal effort for the problem. Do not know the concepts. Way too much computer output (if applicable) |
| 0 | No answer given |

The points received divided by the total points possible will be your homework percentage for any given week. Each week's homework will count the same weight toward your final grade (i.e. weighted averages will be used). No late homework will be accepted (unless prior permission is given for an excusable reason). Your lowest homework grade for the course will be dropped and changed to 100%.

Tests

There will be two tests: a midterm and a final (that is comprehensive over the whole course). Both tests will be of the take-home variety, with approximately one week given to complete each.

Course Grading System

The final grade will be determined based on the weighted average using the following weights:

| | |
|----------|-----|
| Homework | 30% |
| Midterm | 35% |
| Final | 35% |

Course grades will be determined by the weighted average of the homework, midterm, and final exam grades, and will be given according to the scale below (pluses and minuses will be given for the differing thirds of a grade category). I reserve the right to round grades upward in the event I misjudge the difficulty of the course, but grades will never be rounded downward. My goal is for everyone to succeed in this course, learn the material, and receive an A.

| | | | | |
|------------|---------|---------|--------|-----------|
| A | B | C | D | F |
| 85% - 100% | 70%-84% | 60%-70% | 50-60% | Below 50% |

Tentative Course Schedule (subject to change as necessary)

| <u>Date</u> | <u>Topic</u> | <u>Chapter</u> |
|----------------|--|----------------|
| Jan. 7,9,14 | Introduction/Basic Concepts | 1 |
| Jan 14 | Simple Linear Regression | 2 |
| Jan. 16 | Regression Diagnostics | 3 |
| Jan. 21 | No Class | |
| Jan. 23 | SPSS | |
| Jan. 28 | Introduction to Multiple Regression Analysis (MRA) | 5 |
| Jan. 30 | Matrix Algebra and Applications to MRA | 6/Appendix. A |
| Feb. 4 | Data Set Examples | |
| Feb. 6 | Partial/Semipartial Correlation | 7 |
| Feb. 11,13 | Prediction | 8 |
| Feb. 18 | Variance Partitioning | 9 |
| Feb. 20 | Analysis of Effects | 10 |
| Feb. 25,27 | Carryover or Data Set Examples | |
| Feb. 27 | SPSS - Midterm Exam Handed Out | |
| Mar. 5 | Midterm Exam Due by Midnight | |
| Mar. 10,12 | Spring Break | |
| Mar. 17,19 | Categorical Independent Variables | 11 |
| Mar. 24 | Multiple Categorical Independent Variables | 12 |
| Mar. 26 | SPSS | |
| Mar. 31 | Curvilinear Regression | 13 |
| Apr. 2 | Mixed-type Independent Variables | 14 |
| Apr. 7,9 | ANCOVA | 15 |
| Apr. 14,16 | Elements of Multilevel Analysis | 16 |
| Apr. 21 | Introduction to Logistic Regression | 17 |
| Apr. 23 | SPSS -Final Exam Handed Out | |
| May 2 | Final Exam Due by Midnight | |