

1. **Foun 7310**
Design and Analysis in Education II
3 credit hours
Prerequisite: FOUN 7300 Design and Analysis in Education I

 2. **Fall Semester, 2008**
Meeting Time: Tuesdays
Room: Haley Center
Instructor: Margaret E. Ross
4018 Haley Center
(334) 844-3084
rossmal@auburn.edu (the first 1 = one)
Office Hours: Tuesday Mornings or by appointment
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3. Texts

Required

Ross, M. E. & Shannon, D. M. (2008). Applied quantitative methods in education. Kendall/Hunt Publishing Company, Dubuque, Iowa.

Recommended

Shannon, D. M. & Davenport M. A. (2000). Using SPSS to solve statistical problems: A self-instructional Guide. Merrill Prentice Hall, Upper Saddle River, New Jersey.

Publication manual of the American Psychological Association (any recent edition). Washington D.C., American Psychological Association.

(also see bibliography at end of syllabus)

4. Course Description

This course is designed to provide students the understanding of statistical methods pertaining to the design and analysis educational research. Descriptive statistics will be reviewed and analyses that assess the strength of relationships between or among variables as well as analyses to predict will be studied. This course emphasizes the conceptual application of statistics with some emphasis placed on the mathematical calculation of the formulas to facilitate understanding of the statistics. A part of the course will be learning SPSS as it pertains to correlation and regression and learning to interpret output.

5. Course Objectives

Students will:

- Gain an understanding of correlation and regression procedures.
- Apply knowledge of correlation and regression procedures by analyzing research problems and making decisions about the appropriate use of these procedures.
- Apply knowledge of correlation and regression statistics using SPSS. (Technology)
- Apply knowledge of correlation and regression procedures by interpreting results of statistical analyses.
- Interpret the results of the analyses in terms of the research hypothesis.

6. Tentative Course Content and Schedule

Week 1 Aug. 19

Reading: Review of hypothesis testing in Chapter 4 if needed

Introduction to the Course

Research interests

Review of hypothesis testing basics and Conceptual/Visual presentation of correlation and line of best fit

Week 2 Aug. 26

Reading: Chapter 10

Review of least squares

Variance and Covariance

Calculation of correlation

Coefficient of Determination (r^2)

Week 3 Sept. 2

Reading: Chapter 10

Line of Best Fit

Bivariate regression (continuous IV variable)

R^2 and r^2

Test preparation

Week 4 Sept. 9

TEST 1

Week 5 Sept. 16

Reading: Chapter 11

Correlated Predictors (IVs)

Uncorrelated Predictors (IVs)

Part and Partials

Week 6 Sept. 23

Reading: Chapter 12

Regression with three or more continuous independent variables (predictors)

Methods of Entering Data

Week 7 Sept. 30

Reading: Chapter 12

Covariance

Test Preparation

Week 8 Oct. 7

TEST 2

Week 9 Oct. 14

Reading: Chapter 14

Assumptions

Theoretical Issues

Practical Issues

Ratio of cases to IV

Outliers

Multicollinearity

Shrinkage

Homoscedasticity

Analysis of Residuals

Week 10 Oct. 21

Reading: Chapter 15

Validity

Reliability

Curvilinear Regression

Discussion of Projects

Week 11 Oct. 28

Reading Chapter 13

Review of ANOVA using the General Linear Model

The General Linear Model and Regression

Regression with categorical independent variables and coding

Regression with categorical and continuous variables

Week 12 Nov. 4

Introduction to Factor Analysis

Logistic Regression

Project Due (Reminder, late papers receive 3% reduction in earned points per day.)

Week 13 Nov. 11

Preparation for Test

Week 14 Nov. 18

TEST 3

Week 15 Nov. 25

No Class: Thanksgiving Break

Week 16 Dec. 2

Roundtable Sessions

7. Course Requirements/Evaluation

Learning Methods

Lectures, discussions, readings, class exercises and lab assignments.

Student Assessment

Three Tests	65% (20% test 1, and 20% test 2, 25% test 3)
Proposal	20% (see next page of syllabus for more information)
Presentation	5%
Assignments	10%

Lab

- Lab is designed to introduce you to the use of SPSS to complete analyses taught in class. Due to time restraints, it is NOT intended to provide you with enough practice to memorize procedures. You should have reference books to help you complete analyses via SPSS when you do are completing analyses on your own.
- Sometimes the lab will double as an assignment and must be turned in at the end of the lab session. In this case, you will need to have the output printed. You can work in pairs on lab assignments and turn in one lab assignment per pair if you wish.

Attendance

Points are not attached to attendance directly. However, excellent class attendance is required to earn an A and to earn lab or other in-class points. I will note absences. If you need to be absent for school or work-related requirements, illness, or an emergency, you are allowed to make up points for no more than two classes. Students are responsible for initiating arrangements for missed work.

Proposal and Presentations

The following is the outline that will be used for this assignment. You will turn in your paper (4 to 6 pages double spaced excluding cover page and references) and present the research in round table session format. You must use a correlation/regression design taught in this class. If you do not use a correlation/regression design, I will not accept the paper.

Use the following major sections:

Introduction Section of 1 to 1 ½ pages (use title at top of page and DO NOT use "introduction" as a heading, the following information should be included in this major section)

- Argument of worth or purpose of the study
- Literature - Integrated by themes/points made
- Hypothesis or research question - written first but presented at the end of the literature section

Methodology Section (Methodology is the major heading and participants, measures, and procedures are all subheadings - information to include is in parentheses)

- Participants (descriptive statistics)
- Measures (Validity and Reliability important here! - describe scale(s), composite scores, how scores are used in the study)
- Procedures (detailed description of what you did step by step, data processing and analysis - how will you analyze the data and why)?

Results Section (Results is the major heading and no subheadings are needed, the following information should be included in this major section)– If you don't have data, make it up.

- Are **all** appropriate statistics clearly stated in APA style?
- Are tables or graphs appropriately used?

Discussion Section (Discussion is the major heading, the following information should be included in this major section)

- State results in words
- Discuss Limitations, including statistical assumptions

A more detailed rubric will be handed out closer to the time the proposal and presentation are due. The paper is to be written in APA style.

Grading Scale

- A: 90 – 100% and excellent class attendance (absent no more than two classes)
- B: 80 – 89% and good class attendance (absent no more than three classes)
- C: 70 – 79%
- D: 60 – 69%
- F: below 60%

8. Class Policy Statements

Class Attendance (see attendance requirements under section 7 above)

Late Assignments Policy

- Assignments turned in late will receive a 3% reduction in earned points per day. The only exception will be in the case of emergency.
- Except for work requiring calculations, all work must be typed or it will not be graded. Late penalty will be applied to work completed in writing and then turned in late in typed format for a grade.

Incompletes and Withdrawals

Grades associated with incomplete course work or withdrawal from class will be assigned in strict conformity to University policy (see Auburn University Bulletin). If you wish to drop this course you may do so by the 10th class day with no grade assignment. From the 10th class day to mid-quarter a W (withdrawn-passing) grade will be recorded in your transcripts. After this period withdrawal from the course will only be granted under unusual circumstances and must be approved by the Dean of the College of Education.

Academic Misconduct

The Department of EFLT recognizes university policy regarding academic misconduct. Violations include, but are not limited to: plagiarism, unauthorized assistance during examinations, submitting another's work product as your own, using another's words as your own without appropriate citation, sharing unauthorized materials with another that contain questions or answers to examinations, altering or attempting to alter assigned grades. In accordance with University policy regarding academic misconduct, students may be subject to several sanctions upon violations of the Student Academic Honesty Code. See the Tiger Cub publication for the current year for specifics regarding academic misconduct as well as student's rights and responsibilities associated with the Code.

Disability Accommodations

Students who need accommodations are asked to arrange a meeting with me as soon as possible. If you have a conflict with my office hours, an alternate time can be arranged. To set up this meeting, please contact me by e-mail. Bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have an Accommodation Memo but need accommodations, make an appointment with The Program for Students with Disabilities, 1244 Haley Center, 844-2096.

Bibliography

The following text books provide excellent overviews of analyses covered in this class. These texts are also useful for further study in statistics and research design and/or as reference books. You might check for later editions of the books.

Gravetter, Frederick J. & Wallnau, Larry B. (2002). Essentials of Statistics for the Behavioral Sciences. Wadsworth.

Keppel, Geoffrey & Zedeck, Sheldon (1998). Data Analysis for Research Designs. W. H. Freeman and Company, New York.

Maxwell, Scott E. & Delaney, Harold D. Designing Experiments and Analyzing Data: A Model Comparison Perspective. Lawrence Erlbaum Associates, Publishers, Mahwah, New Jersey

Meyers, Lawrence S., Gamst, Glenn, Guarino, A. J. (2006). Applied Multivariate Research: Design and Interpretation. Sage Publications.

Pedhazur, E. J., & Schmelkin, L. P. (1991). Measurement, Design, and Analysis: An Integrated Approach (Student Edition). Hillsdale, New Jersey: LEA

Shavelson, Richard (1988). Statistical Reasoning for the Behavioral Sciences. Allyn and Bacon, Inc. Boston.