

7310
Design and Analysis in Education II

Meeting Time: 4:00 to 7:45 Mondays
Room: Haley Center
Instructor: Margaret E. Ross
4018 Haley Center
(334) 844-3084
rossmal@auburn.edu (the first 1 = one)
Office Hours: Wednesday Mornings and by Appointment

Goal of the Course

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 derivation 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.

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.
- 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.

Learning Methods

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

Recommended Resources

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.

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

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

Student Assessment

Three Tests	60% (15% test 1, and 20% test 2, 25% test 3)
Proposal	30% (see next page of syllabus for more information)
Presentation	5%
Assignments	5%

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, which is **9 cents per page**. You can work in pairs on lab assignments and turn in one lab assignment per pair if you wish. You cannot make up more than two lab assignments.

Proposal and Presentations

The following is the outline that will be used for this assignment. You will turn in your paper (NO MORE THAN 5 to 7 pages double spaced EXCLUDING cover page and references) and present the research in round table session format. YOU MUST USE A DESIGN THAT UTILIZES AN ANALYSIS TAUGHT IN THIS CLASS.

Use the following major sections:

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

- Short introduction of the problem/issue addressed
- Hypothesis or research question - written first but presented at the end of the literature section
- Approximately 1 page

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)?
- 1 to ½ pages

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?
- Approximately 1 page

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

- State results in words
- Discuss Limitations
- Approximately ½ page

Grading Scale

A:	90 – 100%
B:	80 – 89%
C:	70 – 79%
D:	60 – 69%
F:	below 60%

Late Assignments Policy

- Assignments turned in late will receive a 2% 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.

Attendance Policy

- I will start class on time so if you are late you will need to get notes from another student
- I will allow only one lab make-up. If you miss more classes you will not be able to earn the points for the lab.
- You must attend at least 9 of the 11 summer sessions. If more classes are missed, a grade of incomplete will be assigned.

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.

Tentative Schedule**Week**

Introduction to the Course
Research interests
Review of least squares
Variance and Covariance
Review of hypothesis testing basics and Conceptual/Visual presentation of correlation and line of best fit
Calculation of correlation
Coefficient of Determination (r^2)

Week 2

Line of Best Fit
Bivariate regression (continuous IV variable)
 R^2 and r^2
Test preparation

Week 3

TEST 1

Week 4

Correlated Predictors (IVs)

Uncorrelated Predictors (IVs)

Part and Partial

Regression with three or more continuous independent variables (predictors)

Methods of Entering Data

Week 5

Covariance

Test Preparation

Week 6

TEST 2

Discussion of Proposals/Consultations

Week 7

Assumptions

Theoretical Issues

Practical Issues

Ratio of cases to IV

Outliers

Multicollinearity

Shrinkage

Homoscedasticity

Analysis of Residuals

Review of ANOVA using the General Linear Model

The General Linear Model and Regression

Regression with categorical independent variables and coding

Week 8

Regression with categorical and continuous variables

Curvilinear Regression

Introduction to Factor Analysis

Validity

Reliability

Week 9

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

Logistic Regression

Preparation for Test

Week 10

TEST 3

Week 11

Roundtable Sessions