

1. **ERMA 8320**
Design and Analysis in Education III
3 credit hours
Prerequisite: ERMA 7300 Design and Analysis in Education I
ERMA 7310 Design and Analysis in Education II
 2. **Semester**
Meeting Time: Weekly schedule of modules listed under tentative schedule
Room: Distance
Instructor: Margaret E. Ross
4018 Haley Center
(334) 844-3084
rossma1@auburn.edu (the first 1 = one)
Office Hours: Monday 10:00 am – 4:00 pm
Tuesday 1:00 pm – 4:00 pm
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3. Resources

Mertler, Craig A. and Vannatta, Rachel A. (2010). Advanced and Multivariate Statistical Methods: Practical Application and Interpretation. Pyrczak Publishing, Los Angeles.

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

4. Course Description

This course is designed to provide students the understanding of statistical methods pertaining to the design and analysis of educational research. Various Multivariate techniques will be presented, including Canonical and Discriminate Regression, Logistic Regression and Loglinear Regression, Path Analysis and Factor Analysis, Multivariate Analysis of Variance, and Hierarchical Linear Modeling. 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.

5. Course Objectives

Students will:

- Gain an understanding of multivariate procedures.
- Apply knowledge of multivariate procedures by analyzing research problems and making decisions about the appropriate use of these procedures.
- Apply knowledge of multivariate analyses using SPSS. (Technology)
- Apply knowledge of multivariate 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

Overview of Multivariate Statistics
Large Scale Data Sets

Week 2

ANOVA
Regression
Large Scale Data Sets

Week 3

Data Screening
Matrix Algebra
MANOVA with 2 and 3 groups
Hotellings T squared

Week 4

Maximum Likelihood
MANOVA ...factorial
Factorial MANOVA article
Discriminate and ANOVA as follow-up
Canonical Regression

Week 5

Study Guide for Test
Find Proctor for Test

Week 6

Test (will need proctor)

Week 7

Exploratory Factor Analysis
Path Analysis
Confirmatory factor analysis

Week 8

Logistic regression
Log linear
Introduction to Hierarchical Linear Modeling

Week 9

Hierarchical Linear Modeling
Introduction and Notation

Week 10

Hierarchical Linear Modeling
Models

Week 11

Hierarchical Linear Modeling

Week 12

Review for Test
Will need proctor
Projects Due

Week 13
Test (proctor needed)

Week 14
Power Point Presentation with voice-over

7. Course Requirements/Evaluation

Learning Methods

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

Student Assessment

Two Tests	60% (30% each)
Project Paper	25%
Project presentation/submission plan/Power Point	10%
Assignments/labs (see late policy)	05%

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 are completing analyses on your own.
- Lab will double as an assignment. In this case, you will need to have the output printed.

Proposal and Presentations

The following is the outline that will be used for this assignment. You must use statistical design taught in this class.

Use the following major sections:

Introduction 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

- 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

- 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%
B:	80 – 89%
C:	70 – 79%
D:	60 – 69%
F:	below 60%

8. Class Policy Statements

Late Assignments Policy

- Assignments turned in late will receive a 3% reduction in earned points per day up to the point that the assignment is not accepted. Assignments will not be accepted after the 7th day beyond the due date. 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 special accommodations in class, as provided for by the American Disabilities Act, should arrange a confidential meeting with the instructor during office hours the first week of classes - or as soon as possible if accommodations are needed immediately. You must bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have these forms but need accommodations, make an appointment with the Program for Students with Disabilities, 1244 Haley Center, 844-2096.