AUBURN UNIVERSITY
SYLLABUS

I. **Course Number:** ERMA 7310/7316
Course Name: Design and Analysis in Education II
Credit Hours: 3 Semester Credit Hours
Prerequisite: ERMA 7300 , 7306 or Equivalent
Professor: David M. Shannon
4028 Haley Center, 4-3071, 4-3072 (FAX)
shanndm@auburn.edu
Office Hours: Wednesdays 8-11AM, 3-4PM, and by appointment

2. Date Syllabus Revised: January 2014

3. Texts

Ross, M. E. & Shannon, D. M. (2010). Applied Quantitative methods in Education. Dubuque, IA: Kendall/Hunt Publishing Company. Available from publisher at:
http://www.kendallhunt.com/store-product.aspx?id=30930

Additional Resource text:

- Pedhauzer, E. J. (1997). *Multiple Regression in Behavioral Research* (3rd edition). Orlando, FL: Harcourt Brace & Company. Wadsworth Publishing; # ISBN-10: 0030728312 & # ISBN-13: 978-0030728310

Recommended Software:

- **SPSS Graduate Pack.** SPSS is loaded on several computer labs on campus (LRC, Wallace, etc.) Please contact Auburn University campus Bookstore at 334-844-1692 or AUBookstore@auburn.edu to order your copy. You also have the option to purchase it on-line at www.journeyed.com or lease a copy for 6 or 12 months at www.e-academy.com.

Other Resources:

- Grimm, L. G. & Yarnold, P. R. (Eds.). (1995). *Reading and Understanding Multivariate Statistics*. Washington, DC: American Psychological Association.
- Shannon, D. M. & Davenport, M. (2001). *Using SPSS to Solve Statistical Problems: A self-instruction guide.* Columbus, OH: Merrill/Prentice Hall.
- Huck. (2007). *Reading research and Statistics* (5th edition). Boston, MAS: Pearson Education. ISBN # 0-205-38081-6

4. Course Description:

This course is a study of bivariate and multiple correlation and regression analysis with continuous and categorical variables, trend analysis, analysis of covariance, logistic regression, and path analysis. Measurement and design issues will be addressed as they impact these analytical procedures. In addition, the use of statistical software - Statistical Package for the Social Sciences (SPSS) will be heavily integrated with course content.

5. Course Objectives:

Upon completion of this course, the student will be able to:

1. Identify different types of research designs and variables found in published articles
2. Describe the strengths and limitations of different correlational research designs
3. Identify applications of a wide variety of correlation and regression procedures
4. Explain the least squares concept in correlation and regression analysis
5. Describe differences and applications of stepwise, simultaneous, and hierarchical multiple regression using examples from educational research
6. Apply regression analysis to educational research problems involving quantitative, qualitative, and a mixture of both quantitative and qualitative independent variables
7. Determine the statistical power associated with a variety of correlation and regression applications
8. Solve educational research problems using correlation and regression analysis
9. Make accurate interpretations of statistical findings from correlation and regression analysis
10. Use data analysis software (SPSS) to solve statistical problems
11. Review published research literature to examine the application of measurement, design, and analysis procedures
12. Prepare a written summary of data analysis results in APA format

6. Course Content and Readings

Meeting Dates: **January 8, 15, 22, 29**
February 5, 12, (19), 26
March 5, (12), 19, 26
April 2, 9, 16, 23

Topic(s)	Readings/Assignments
Introduction – Correlation and Regression Analysis • Covariance and Correlation • SPSS **X**Y Scatterplot	• Ross/Shannon – Ch. 10 Pedhauzer, Ch. 1 Grimm & Yarnold, Ch. 1 Huck, Ch. 1, 3 Shannon & Davenport Ch. 12, 13, 14
Bivariate Correlation and Regression SPSS – Intro. Correlation Regression	• Ross/Shannon – Ch. 10 Pedhauzer, Ch. 2 Huck, Ch. 3, 9 Shannon & Davenport Ch. 21 **Assignment #1**
Introduction to Multiple Regression • Assumptions and Residuals • Two Independent Variables	• Ross/Shannon – Ch. 11 Pedhauzer, Ch. 3 & 5 Grimm & Yarnold, Ch. 2 Huck, Ch. 16 Shannon & Davenport Ch. 22
Multiple Regression • Partial and Semi-partial Correlation • Three or more IV's	• Ross/Shannon – Ch. 12 Pedhauzer, Ch. 7, 8, 9 Huck, Ch. 16 **Assignment #2**
Using Categorical Independent Variables in Regression • Categorical Predictors and Coding • ANOVA Designs	• Pedhauzer, Ch. 10,11,12 Shannon & Davenport Ch. 23 **Assignment #3**
Using Regression for Analysis of CoVariance (ANCOVA)	• Ross/Shannon – Ch. 13 Pedhauzer, Ch. 14 & 15 Huck, Ch. 15 **Assignment #4**
Curvilinear Regression • Curvilinear Relationships • SPSS - Curve Regression	• Ross/Shannon – Ch 15 Pedhauzer, Ch. 13
Logistic Regression • SPSS –Logistic Regression – one IV • SPSS - Logistic Regression – Multiple IVs	• Ross/Shannon – Ch 17 Pedhauzer, Ch. 17 Grimm & Yarnold, Ch. 7 Huck, Ch. 16
OtherTopics • Mediator and Moderator Variables • Path Analysis	Readings posted on course website.

7. Course Requirements:

A. Attend all class sessions and participate in class discussions and activities
B. Complete all announced and unannounced quizzes
C. Complete all examinations
D. Complete all homework exercises

8. Grading and Evaluation Procedures:

	Percentage of Final Grade
Assignments	25%
Quizzes	35%
Examinations	40%

Students missing more than 20% of course meetings will have their final grade reduced by one letter grade.

Any assignment presented or turned in late will be penalized 5% for each day past the assignment deadline. Assignments more than 2 weeks overdue will not be accepted

The following grading scale will be used:

90% to 100% = A
80% to 89.99% = B
70% to 79.99% = C
60% to 69.99% = D
Below 60% = F

Homework Assignments (25%)

There will be 3-5 homework assignments throughout the semester. These assignments will focus primarily on the application of statistical software to perform procedures addressed in class. I will always illustrate an application prior to requiring of you for homework. We will illustrate and use SPSS in class. SPSS is loaded on several computer labs on campus (LRC, Wallace, etc..) and is available for purchase at a student rate. If you have access to a different software and can use it to accomplish the same outcome, great.

Quizzes (35%)

There will be approximately 3 quizzes over the duration of the semester. These quizzes will cover the concepts explored in class. These are to be completed without the assistance on any resources.

Examinations (40%)

There will be two examinations. These exams will be take-home and you will have one week to complete them. You are encouraged to use materials from class (handouts, readings, etc..) as you work on these exams.

9. Class Policy Statements:

A. All portions of the class attendance policy apply to this class. https://sites.auburn.edu/admin/universitypolicies/Policies/PolicyonClassAttendance.pdf.

B. All portions of the Auburn University Honesty Code will apply to this class. - https://sites.auburn.edu/admin/universitypolicies/Policies/AcademicHonestyCode.pdf

In addition, each student will be required to read and sign the following Honor Pledge when submitting class quizzes and exams.

Honor Pledge – On my honor as a student, I have neither given nor received assistance on this assignment.

C. Students who need special accommodations should make an appointment to discuss the Accommodation Memo within the first 2 weeks of class. If you do not have an Accommodation Memo, please contact the Office of Accessibility 1228 Haley Center, (334) 844-2096. https://fp.auburn.edu/disability/

D. The Computer classrooms have a no food and drink policy. There is an exception for bottled water, which should remain sealed when not being consumed. If laptops are present, bottled water should be kept away from laptops. This policy is to ensure the room remains free from liquid stains and food crumbs that result in room repairs or the expense of spraying for roaches. With the room being a technology room, it falls under OIT policy and violators can lose campus computer privileges (e-mail & Internet access) if not adhering to this policy. If accommodations are needed, please inform the LRC staff. Thank you for your cooperation.