**1. ERMA 7310/7316**

**Design and Analysis in Education II**

3 credit hours

Prerequisite: FOUN 7310 Design and Analysis in Education I

**2. Fall Semester 2021**

Meeting Time: Wednesdays: 5:00 PM to 7:50 PM

Room: Haley Center 3430

Instructor: Margaret E. Ross

rossma1@.auburn.edu (the first 1 = one)

Office Hours: Wednesdays 4:00 PM to 4:50 PM or by appointment

**3. Resources**

Ross, M. E. & Shannon, D. M. (2008). Applied Quantitative Methods in Education. Kendall/Hunt,

Publishing Company, Dubuque, Iowa.

Publication Manual of the American Psychological Association. Washington D.C., American Psychological

Association.

Also:

[APA Sample Paper // Purdue Writing Lab](https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/apa_sample_paper.html)

**4. Course Description**

This course is designed to provide students the understanding of statistical methods pertaining to the design and analysis of 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.

**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 8/18/21 Chapter 10*

*Introduction to the Course)*

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

IRB discussion

Discussion of project

Project Pairs or Individual

(pairs approximately 10 pages, individual approximately 5 pages)

(extension of previous project – 10 pages)

*Week 2 8/25/21 Chapter 10*

*Overview of Regression Design*

Review of least squares

Variance and Covariance

Calculation of correlation

Coefficient of Determination (r2)

Authentic project variables and correlation

*Week 3 9/1//21 Chapter 10*

*Required Class*

*Review and Introduction to Regression*

Line of Best Fit

Bivariate regression (continuous IV variable)

R2 and r2

Test preparation

*Week 4 9/8/21*

*Required Class*

TEST 1

*Week 5 9/15/21 Chapter 11 and Chapter 12*

*Multiple Correlation and Multiple Regression*

Multiple Correlation - Correlated Predictors (IVs)

Uncorrelated Predictors (IVs)

Part and Partials

Project correlation/regression questions (due next week)

*Week 6 9/22/21 Chapter 11 and Chapter 12*

*Regression with three or more continuous independent variables (predictors)*

Methods of Entering Data

Correlation/regression questions due

Project planning/data analyses

Example papers and APA

*Week 7 9/29/21*

*Required Class*

*Test Preparation*

*Week 8 10/6/21*

*Required Class*

TEST 2

*Week 9 10/13/21 Chapter 14*

*Data Issues*

Assumptions

Theoretical Issues

Practical Issues

Ratio of cases to IV

Outliers

Multicollinearity

Shrinkage

Homoscedasticity

Analysis of Residuals

Project Paper Rubrics Questions

*Week 10 10/20/21 Chapter 13*

*ANOVA and Regression*

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 11 10/27/21*

*Required Class (if project is completed, you can hand it in instead of attend class)*

*Project*

*Week 12 11/3/21 Chapter 15*

*Curvilinear Relationship, Factor Analysis, Logistic Regression*

Curvilinear Regression

Factor Analysis

Validity

Reliability

Project Paper Due to ensure it is returned by 12/1/21 (last day of class)

*Week 13 11/10/21*

*Required Class*

*Preparation for Test*

*Week 14 11/17/21*

*Required Class*

TEST

*Week 15 12/1/21*

*Required Class*

Presentations

**7. Course Requirements/Evaluation**

*Learning Methods*

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

*Student Assessment*

Three Tests 55% (15% test 1, and 20% test 2, 20% test 3)

Project Paper 20%

Presentation 10%

Assignments/labs 15%

*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 complete analyses via SPSS when you are completing analyses on your own.
* Often the lab will double as an assignment for points.

*Attendance*

See dates listed under **Tentative Course Content and Schedule** above.

*Proposal and Presentation*

The following is the outline that will be used for this assignment. 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**

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

**Methodology**

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**

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

**Discussion**

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

* State results in words
* Discuss Limitations

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**

*Class Attendance (see* **Tentative Course Content and Schedule** *above)*

*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.

*Incompletes and Withdrawals*

Grades associated with incomplete course work or withdrawal from class will be assigned in strict conformity to University policy (see Student Policy eHandbook, www.auburn.edu/studentpolicies). 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 Student Policy eHandbook (www.auburn.edu/studentpolicies) 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 electronically submit their approved accommodations through AU Access and to arrange a meeting during office hours the first week of classes, or as soon as possible if accommodations are needed immediately. 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. If you have not established accommodations through the Office of Accessibility, but need accommodations, make an appointment with the Office of Accessibility, 1228 Haley Center, 844-2096 (V/TT)."