

1. ERMA 7306-001

Design and Analysis in Education I

3 credit hours

2. Semester Spring 2013 (201320)

Instructor: Robin T. Taylor

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Virtual Hours: To Be Determined

3. Resources

Textbooks: Ross, M. E. & Shannon, D. M. (2008). *Applied Quantitative Methods in Education*. Dubuque, IA: Kendall Hunt Publishing Company.

Gravetter, F. J. & Wallnau, L. B. (2011). *Essentials of Statistics for the Behavioral Sciences*. (7th ed.). Belmont, CA: Wadsworth, Cengage Learning.

Computer Software: SPSS Version 20, PDF file creator (e.g. Adobe Acrobat)

4. Course Description

This course is designed to provide students understanding of statistical methods pertaining to the design and analysis of experiments in educational research. Descriptive statistics will be reviewed and inferential statistics used to analyze the relationship between one or more categorical variables and a continuous variable will be studied. This course emphasizes the conceptual application of statistics with little emphasis placed on the mathematical derivation of the formulas. Emphasis will be placed on conceptual understanding of t-test and ANOVA designs, correctly identifying the proper statistical test, and interpreting the output using SPSS for Windows.

5. Course Objectives

Students will:

- Gain an understanding of inferential statistics.
- Apply knowledge of inferential statistics by analyzing research problems and making decisions about the appropriate use of inferential procedures.
- Apply knowledge of inferential statistics using SPSS to determine significance.
- Apply knowledge of inferential statistics by interpreting results of statistical analyses.
- Interpret the results of the analyses in terms of the research hypothesis.

6. Tentative Course Content and Schedule

Class 1 (Week Jan 09 – Jan 11)

Introduction to course as distance education (CANVAS, Google Hangout, SPSS software, Computer Recommendations, etc.)

Overview of course requirements and assignment completion

- **Assignment 1 – Respond to all components of e-mail by Monday, January 14.**

Class 2 (Week Jan 14 – Jan 18)

Introduction to statistics - overview of terminology

Introduction to research design

- **Assignment 2 – Due Tuesday, January 22.**

Class 3 (Week Jan 21 – Jan 25)

Graphical / Visual representation of data

Measures of central tendency

Measures of variability

- **Assignment 3 – Due Monday, January 28.**

Outline of course project

Project rubric

Project deadlines

Class 4 (Week Jan 28 – Feb 01)

Validity and reliability

Internal/External validity

- **Assignment 4 – Due Monday, February 04.**

Class 5 (Week Feb 04 – Feb 08)

Data distributions

Introduction of hypothesis testing (t-test and ANOVA designs)

- **Assignment 5 – Due Monday, February 11.**

Class 6 (Week Feb 11 – Feb 15)

Take Home Exam 1 – Due Monday, December 18 by 5 pm CST

Class 7 (Week Feb 18 – Feb 22)

One-sample t-test

Z-test and hypothesis testing (an eight step approach)

- **Assignment 6 – Due Monday, February 25**

Class 8 (Week Feb 25 – March 01)

Independent samples t-test

One-way ANOVA with two levels

- **Assignment 7 – Due Monday, March 04**

Class 9 (Week March 04 – March 08)

One-way ANOVA with 3 or more groups

Planned comparisons (follow-up)

Post-hoc comparisons

- **Assignment 8 – Due Monday, March 18**
- **Article Review 1 – Due Monday, March 18**

Class 10 (Week March 11 – March 15)

NO CLASSES – AUBURN UNIVERSITY SPRING BREAK

Class 11 (Week March 18 – March 22)

Two-way ANOVA/Three-way ANOVA

Follow-up analyses to multi-way ANOVA (simple effects, interaction contrasts)

- **Assignment 9 – Due Monday, March 25**

Class 12 (Week March 25 – March 29)

Take Home Exam 2 – Due Monday, April 01 by 5 pm CST

Class 13 (Week April 01 – April 05)

Paired sample t-test

Within subjects designs

- **Assignment 10 – Due Monday, April 08**

Class 14 (Week April 08 – April 12)

Mixed designs

- **Assignment 11 – Due Monday, April 15**
- **Article Review 2 – Due Wednesday, April 24**

Class 15 (Week April 15 – April 19)

Chi square

Binomial

Regression

- **Assignment 11 – Due Monday, April 22**

PROJECT DUE BY MIDNIGHT FRIDAY, APRIL 19

Class 16 (Week April 22 – April 26)

FINAL EXAM DUE BY NOON WEDNESDAY, MAY 01, 2013

7. Course Requirements and Evaluation

Learning Methods:

Lecture Presentations

Lectures will be created using Panopto recorder and can be accessed through Canvas. Weekly online meetings using Canvas conference and/or Google Hangout will be available to clarify questions concerning lectures, readings, assignments, and/or use of SPSS software. Day and time of this meeting will be determined according to class availability.

Course Assignments

Throughout the semester, students will be required to complete course assignments based on text readings and lectures. These assignments will be turned in weekly and will constitute 10% of your total grade.

Research Article Reviews

Students will be asked to review two research articles throughout the semester. These reviews constitute 10% of your total grade. These reviews will be used to ensure that you can 1) identify components of the research and 2) critique the appropriateness of research findings according to evidence provided within the research article. A rubric for how reviews will be graded and assessed will be provided.

Authentic Project

Students will be provided a large SPSS dataset and be given a set of research questions in which you will use data analyses techniques presented in the class to summarize findings from the data set provided. Details about project requirements and a grading rubric will be provided soon with rolling due dates. The project constitutes 35% of your total grade.

Examinations

Three take home exams will be given over the course of the semester, constituting 45% of your total grade (15% each). Students will be given a week to complete each take-home test. Students are responsible for upholding the Student Academic Honesty Code.

If difficulties arise or issues are encountered after the any of the take-home exams, the decision of offering the take home exams may change and students will then be responsible for facilitating a proctor to take your subsequent exams.

Student Assessment:

Exam 1	15%
Exam 2	15%
Exam 3	15%
Project	35%
Article Reviews	10%
Assignments	10%

Grading Scale:

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

8. Class Policy Statements

Participation:

Continuous interaction will be a priority of the course. Discussion boards, chat rooms, e-mail and other electronic means will be used on a regular basis as a requirement for all course correspondence and will be conducted via the Canvas system. Students will need to have a current computer and access to the Internet via their own Internet Service Provider.

Technology:

Distance students are responsible for knowing how to access the electronic classroom tools and features via the Canvas system and for trouble-shooting and maintaining their own equipment. Any questions regarding Canvas should be directed to IMG (844-5181 or IMG@auburn.edu). All students will need to have access to SPSS software – requests for one copy of the software may be made through the Learning Resource Center.

Distance students should have a microphone/headset to use to communicate through the Canvas system.

All students are expected to check TigerMail and Canvas communications regularly. Students are responsible for reading and responding to messages from the instructor in a timely professional manner.

Attendance/Absences:

Although attendance is not required, students share a significant responsibility to keep up with all readings, course lectures, and assignments. Students will be held responsible for all content covered in the text and lectures and will be expected to participate in on-line discussions.

Late Assignments Policy:

All students will be required to submit assignments through Canvas. All assignments must be submitted by the due dates indicated and they must be submitted in the required format to receive credit. Late assignments will have points deducted (2% reduction in earned points per day). Incompletes will not be given except in cases of documented illness.

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 15th class day with no grade assignment. However, note that dropping the course between January 16th through January 30th will result in a \$100 drop fee. From the 15th class day to mid-quarter (January 31 – February 28) 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.

Note that a new incomplete grade (IN) policy is in effect. The new policy requires that students complete a form requesting that an IN grade be assigned. If this form is not completed and given to the instructor of the class, a grade will be assigned with a score of zero (0) for work that has not been completed and turned in by the time the instructor reports grades.

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.

Professionalism

As faculty, staff, and students interact in professional settings, they are expected to demonstrate professional behaviors as defined in the College's conceptual framework. These professional commitments or dispositions are listed below:

- Engage in responsible and ethical professional practices
- Contribute to collaborative learning communities
- Demonstrate a commitment to diversity
- Model and nurture intellectual vitality