**1. ERMA 7300 Design and Analysis I**

3 credit hours

**2. Instructor**

Instructor: Joni M. Lakin

4072 Haley Center

(334) 844-4930

joni.lakin@auburn.edu

Office Hours: By appointment.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3. Resources**

Required: Salkind, N.J. (2016). *Statistics for people who (think they) hate statistics* (6th edition). Thousand Oaks, CA: Sage. ISBN 9781412971027 [Earlier editions OK but page numbers and chapter numbers change.]

Recommended: Pallant, J. (2060). *SPSS survival manual: A step by step guide to data analysis using SPSS (6th ed.)*. Open University Press.

**4. Course Description**

Knowledge of the concepts and application of quantitative analytical methods is critical to the producers and consumers of educational research. This course is designed to provide students the understanding of statistical methods pertaining to the design and analysis of experiments in educational research. Basic methods of descriptive and inferential analysis will be reviewed including chi-square, t-tests, between and within subjects ANOVA, mixed ANOVAs and hierarchical designs as they are used in educational research.

**5. Course Objectives**

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

* explain the process of hypothesis testing and apply to research problems
* identify different types of research designs found in published articles
* describe the strengths and limitations of different research designs
* identify applications of a wide variety of statistical procedures
* solve educational research problems using statistical tests of significance
* make accurate interpretations of statistical findings
* use data analysis software (SPSS) to solve statistical problems

**Note: We will be using the Canvas learning management system for this course. Check the Canvas site weekly for announcements and handouts for class.**

**We will be primarily using Zoom (auburn.zoom.us) for our online interactions. Please ensure it is compatible with your computer.**

**6. Tentative Course Content and Schedule Readings and Assignments due**

|  |  |  |
| --- | --- | --- |
| Module 1 (8/20-26) | Class overview  Brief introduction to Canvas  Introduction to Research Design |  |
| Module 2 (8/27-9/2) | Research Design cont’d  Descriptive statistics | Salkind Ch 1-4  Optional: Pallant Ch 6-7, Salkind Appendix A  **Homework #1 due** (all homework worksheets on Canvas) |
| Module 3 (9/3-9/9) | Hypothesis testing | Salkind Ch 7-9  **Homework #2 due** |
| Module 4  (9/10-16) | Hypothesis testing with one-sample designs (z-test and one-sample t-test) | Salkind Ch.10  Optional: Pallant Ch 17  **Homework #3 due**  *Quiz 1 Ch. 1-4 distributed* |
| Module 5 (9/17-23) | Hypothesis testing with two means (t-test and ANOVA) | Salkind Ch. 11-12  **Quiz 1 due** |
| Module 6 (9/24-30) | One-way ANOVA with more than two groups | Salkind Ch. 13  Optional: Pallant Ch 18  **Homework #4 due** |
| Module 7 (10/1-7) | One-way ANOVA with more than two groups cont’d | **Homework #5 due**  *Quiz 2 distributed* |
| Module 8  (10/8-14) | Content review/Catch up, if needed  *Work on in-class midterm project*  **10/11-12 Fall break**  *Yes, I set deadlines during the break. I figured some of you want this time to catch up on assignments. You are free to submit everything by Wed. and enjoy your break!* | **Midterm project due**  **Quiz 2 due** |
| Module 9 (10/15-21) | Overview of remaining designs  Two-way ANOVA | Field Ch. 12 [SKIP 12.16 and 12.18] (PDF on Canvas)  Salkind Ch 14  Optional: Pallant Ch 19 |
| Module 10 (10/22-28) | Two-way ANOVA cont’d | **Homework #6 due** |
| Module 11 (10/20-11/4) | Repeated measures and within-subjects ANOVA | Field Ch. 13 (PDF on Canvas)  Review Salkind Ch.12  Optional: Pallant Ch. 20 |
| Module 12 (11/5-11) | Mixed Designs ANOVA  *Time to work on final project* | Field Ch. 14 (PDF on Canvas)  Salkind Ch. 18  **Homework #7 due** |
| Module 13 (11/12-18) | Non-parametric tests (Binomial, Chi-square)  ***Dr. Lakin away at conference most of week (can respond to emails)*** | Salkind Ch 17  Optional: Pallant Ch 16 |
| 11/19-25 | **Thanksgiving** |  |
| Module 14 (11/26-12/2) | **Class presentations** | **Homework #8 due**  **All components of project due**  *Quiz 3 distributed* (all Chs.) |
| Finals |  | **Take home quiz due** |

**7. Course Requirements and Evaluation**

*Learning Methods:* Lectures, discussions, readings, class exercises and projects.

*Student Assessment*

Quizzes 45%

Homework, in-class 35%

Projects, Presentations 20%

When appropriate, you must show your work for full credit.

***All work MUST be submitted on Canvas. If you complete work by hand, you must scan and submit it on Canvas. There are easy to use apps for your phone that scan and create PDFs.***

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

**8. Class Policy Statements**

*Attendance Policy*

* It is in your best interest to attend class live. However, if you need to watch it on your own, it is up to you to ensure that you have learned the content fully.

*Late Assignments Policy*

* Assignments turned in late will receive a 5% reduction in earned points per day. The only exception will be in the case of emergency and University approved excuses.
* 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.

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 in 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 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).

*Copyright and Course Materials (adapted from http://www.president.umd.edu/legal/commercial.html)*

My lectures and course materials, including power point presentations, tests, outlines, and similar materials, are protected by copyright. I am the exclusive owner of copyright to those materials I create. You may take notes and make copies of course materials for your own use. You may not and may not allow others to reproduce or distribute lecture notes and course materials *publicly* (whether or not a fee is charged) without my express written consent. Similarly, you own copyright to your original papers and exam essays. If I am interested in posting your answers or papers on the course web site, I will ask for your written permission. As part of this course, you may provide written lecture materials for other students. Your consent to post those to the course website is implied. Any other use (by me or other students) will require your permission.