**1. ERMA 7310 Design and Analysis I**

3 credit hours

**2. Instructor**

Instructor: Joni M. Lakin

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Office Hours: Monday 2pm-4pm and by appointment.

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| Teaching Assistants: | |  |  | | --- | --- | | Graham Morris gwm0007@.auburn.edu  4013 Haley Center  Hours: Tues 10AM-12, 3-5PM  Fridays by appointment | Kseniya Zhuzha kzz0006@auburn.edu  Office hours in LRC (3430)  Hours: Wed 10AM-12, 2-4PM  Tues, Wed, Thurs by appointment | |

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**3. Resources**

Required: Ross, M. E. & Shannon, D. M. (2008). *Applied quantitative methods in education*. Kendall/Hunt Publishing Company. [A copy of this text will be on hold at the LRC in Haley Center.] **[R&S]**

Optional: Salkind, N.J. (2010). *Statistics for people who (think they) hate statistics* (4th edition). Thousand Oaks, CA: Sage. ISBN 9781412971027 [A copy of this text will be on hold at the MAIN library.]

Optional: Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using SPSS (5th ed.)*. Open University Press. [A copy of this text will be on hold at the MAIN library.]

**4. Course Description**

Knowledge of the concepts and application of quantitative analytical methods is critical to the producers and consumers of educational research. The focus of this class will be to increase your knowledge of statistical research methods, improve your skills as a communicator of quantitative research results, and refine your skills as a critical consumer of quantitative research.

The specific content of this course will include: 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, we will make extensive use of statistical software, particularly the Statistical Package for the Social Sciences (SPSS).

**Teaching Assistants:** TAs are available to help you review Design I content and the use of SPSS, if needed. They are also available to review this course’s content. They do not provide weekly/frequent tutoring to individual students.

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

**Writing style:** My field currently uses *APA 6th edition* for writing style. All students must use *APA 6th edition* for statistical reporting and table/figure formatting. If your field does not use APA, you may use your field’s style guide for citing references. Any style must be consistently applied. Please consult the APA 6th edition guide or this excellent reference for more guidance: <https://owl.english.purdue.edu/owl/resource/560/01/>

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

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| Week 1 (8/22) | Review of hypothesis testing and correlations | **In class: SPSS review activity** |
| Week 2 (8/29) | Review continues: OLS, R2, correlations  Correlations with categorical variables | R&S pp. 133-143 |
| **Labor Day: No class 9/5** | | |
| Week 3 (9/12) | Simple regression  Comparison of regression and ANOVA | Field Ch. 7 (Canvas) pp. 197-209  R&S pp. 143-148  **“Exercises for Chapter 10” due (start of class)** |
| Week 4  (9/19) | Multiple regression and Interactions  Model building  Variable entry choices | Field Ch. 7 (Canvas) pp. 209-241  R&S Ch. 11  **“Exercises for Chapter 11” due (start of class)**  *Take home test 1 distributed* |
| Week 5 (9/26) | Multiple regression continued  Part and partial correlations  Dummy coding | Field Ch. 7 (Canvas) pp. 253-260  R&S Ch. 12  **Take home 1 due (start of class)** |
| Week 6 (10/3) | Collinearity and other data problems  Statistics for detecting | Field Ch. 7 (Canvas) pp. 241-252  R&S Ch. 14  **“Exercises for Chapter 12” due (start of class)** |
| Week 7 (10/10) | Dr. Lakin away  Work on Mid-term Project with TA support | R&S Ch. 15  **“Exercises for Chapter 14” due** |
| Week 8  (10/17) | *Mid-term Project*  Content—Curvilinear regression | **Mid-term short paper due (start of class)** |
| Week 9 (10/24) | Path Analysis | **“Exercises for Chapter 15” due (start of class)**  *Take home test 2 distributed* |
| Week 10 (10/31) | Logistic regression  *Halloween costumes optional* | R&S Ch. 17  **Take home 2 due (start of class)** |
| Week 11 (11/7) | Analysis of Covariance (ANCOVA) | **“Exercises for Chapter “17” due (start of class)** |
| Week 12 (11/14) | Catch up on content  Work on final project |  |
| **Thanksgiving: No class 11/21** | | |
| Week 13 (11/28) | In-class presentations of final project | **All final project components due (start of class)**  *Take home test 3 distributed* |
| Finals | No class meeting | **Take home 3 due Dec. 7th (Wed., 11:59pm)** |

**7. Course Requirements and Evaluation**

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

*Student Assessment*

Quizzes , take home tests 60%

Homework, In-class Activities 15%

Mid-term project 10%

Final projects 15%

You MUST be in class to earn in-class activity points. Make up opportunities only possible for university-excused absences.

***All work MUST be submitted on Canvas.* If you complete work by hand, you must scan and submit it on Canvas. *It must be legible and well-organized.* When appropriate, you must show your work for full credit.**

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

**8. Class Policy Statements**

*Attendance Policy*

* Excellent attendance is expected, but not required. If you miss class, you will need to get notes from another student.
* If you miss an in-class assignment, it can only be made up if you have a university-approved excuse for the absence.
* I will start class on time, so if you are late you will need to get notes from another student.

*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 university-approved absences or emergencies.

*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 or the Dean of the Graduate School.

Note that the 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)*

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