**Syllabus**

**Course Number:** ERMA 7310

**Course Title:** Design and Analysis in Education II

**Semester:** Spring 2023

**Credit Hours:** 3 credit hours

**Prerequisites:** ERMA 7300 Design and Analysis in Education I

**Meeting Time:** Mondays 5:00~7:50 pm

**Instructor:** Chih-hsuan Wang

4010 Haley

wangchi@auburn.edu

**Office Hour:**  Virtual or Wednesday 10-12, please make an appointment

**Date Syllabus Updated:** December 2022

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**Texts:**

Ross, M. E., & Shannon, D. M. (2011). *Applied Quantitative methods in Education (2nd ed.)*. Dubuque, IA: Kendall/Hunt Publishing Company.

**Recommended Reading:**

American Psychology Association (2020)*. Publication Manual of the American Psychological Association (7th ed.)*. Washington D.C., American Psychological Association.

Gravetter, F. J. & Wallnau, L. B. (2017). *Statistics for the Behavioral Sciences* *(9th ed.).* Belmont, CA: Wadsworth.

Huck. (2012). *Reading research and Statistics (6th ed.).* Boston, MAS: Pearson Education.

Knapp, H. (2014). *Introductory Statistics Using SPSS*. Thousand Oaks, CA: Sage.

Shannon and Davenport (2001). *Using SPSS to Solve Statistical Problems*. Columbus, OH: Merrill/Prentice Hall.

**IMPORTANT:**

1. All course materials (syllabus, PPTs, lab assignments and data files, rubrics…etc.) will be available on Canvas. Check the Canvas site weekly for announcements, assignments, and information before each class. I am not going to provide hard copies.
2. Our class will be delivered in both F2F and Online format. You can access our class Zoom room through Canvas class page or just join the Zoom room type in Zoom ID # (TBA).
3. If you enroll in the F2F class, you are expected to be either in the class or Zoom in synchronously. If you enroll in the Distance class, you are encouraged to join us synchronously, but you can also complete your course work asynchronously.
4. I will not accept the work completed by hand unless it is the only way to do it.

**Required Computer Software and Skills:**

1. Access to high speed internet through smart mobile devices or computers.
2. SPSS version 27/28/29 (at least **Grad Pack** **Standard**).
	1. You can purchase/rent the SPSS Standard Grad Pack from these distributors listed on the IBM website:

<https://www.ibm.com/us-en/marketplace/spss-statistics-gradpack/details>

* 1. There are several vendors in the SPSS website. Their prices are varied. You can try to find the best deal among those vendors.
	2. Or you can access the SPSS virtually through the internet. You need to use VPN to be able to access the virtual lab. Remember that when you are in the virtual lab, you are NOT using your own computer. Do NOT save anything in the computer or on desktop. Instead, you need to email the files or save them in thumb drives.
1. You can use other statistical software/package, such as SAS, R, STATA, or Python, to complete your work. However, I only introduce SPSS in our class.
2. Microsoft Office Word.
3. PDF file creator (e.g. Adobe Acrobat).
4. Online Learning Platform (Canvas) basic skills: open, download, and upload documents, review documents and video clips online, and **review instructor feedback on the Canvas. (More student resources for Canvas can be found here:** <http://wp.auburn.edu/biggio/canvas/student-help/> )
5. Zoom application. You can install it in your computers, tablets or smartphones. This is for participating virtual office hours.

**Other Prerequisite Skills:**

 Students taking this class are expected to be able to perform the following basic skills **at the beginning** of the class:

1. **Computer basic skills**: open, save, copy-paste, use track changes, make tables and create the Word and PDF documents.
2. **Online learning platform basic skills**: open, download, and upload documents, review documents and video clips online, and **review instructor feedback on the Canvas. (More student resources for Canvas can be found here:** <http://wp.auburn.edu/biggio/canvas/student-help/> )

**Course Description:**

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

**Course Objectives**:

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

* 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.
* use SPSS to analyze data by correlation and regression statistical procedures.
* interpret the results of correlation and regression statistical procedures in terms of the research hypothesis.
* review published research literature to examine the application of measurement, design, and analysis procedures.
* prepare a written summary of data analysis results in APA format

**Course Requirements:**

* Attend all class sessions and participate in class discussions and activities
* Complete all examinations
* Complete all computer exercises
* Complete a final project.

**Grading and Evaluation Procedures:**

Examinations (100 pts \* 2) 200 pts

 Class Activity (5 pts \* 7) 35 pts

Lab Assignments (20 pts \* 5) 100 pts

Final Project 50 pts

Total Possible Points 385 pts

* 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.
* You can check your grade for each assignment you submitted in the Canvas. However, I keep the official grades in an Excel file and will calculate your final grade using Excel or SPSS.

**Grading Scale:**

|  |  |
| --- | --- |
| **Grade** | **Points** |
| **A** | ***345+ points and excellent attendance and participation*** |
| **B** | ***305 ~ 344 points and at least good attendance and participation*** |
| **C** | **265 ~ 304 points** |
| **D** | **230 ~ 264 points** |
| **F** | **< 230 points** |

* Class Attendance (weekly Canvas login record)

Points are not attached to attendance directly. However, in order to explore topics effectively, attendance and class participation are essential. Excellent class attendance is required to earn an A and to earn lab or other PPT activities points. If you need to be absent for school or work related requirements, illness, or an emergency, you are allowed to make up points for no more than two classes. Students are responsible for initiating arrangements for missed work.

* Examinations (100 pts \* 2)

There will be two examinations. These exams will be taken home. You can use all resources you can find to complete the exams. However, the work needs to be your own work.

**The final exam is optional.** If you already have an A (at least 210 points) before the final **and** you already submitted the Bonus Lab (Lab #6), you can decide if you want to complete the final exam or not. If you decide NOT to take the final exam, your final exam grade will be assigned as 100.

* Class Activities (5 pts \* 7)

Class activities are designed to introduce you to use of SPSS in classes. I will walk with you step-by-step to analyze data in the class using the class activity dataset. Due to time restraints, it is NOT intended to provide you with enough practice to memorize procedures.

* Lab Assignments (20 pts \* 5)

Lab assignments are designed to introduce you to the use of SPSS to complete analyses taught in classes. Due to time restraints, it is NOT intended to provide you with enough practice to memorize procedures. You should have reference books to help you complete analyses via SPSS when you are completing analyses on your own.

* Final Project (50 pts)

The following is the outline that will be used for this assignment. You will turn in your paper (4 to 6 pages double spaced excluding cover page and references) at the end of the semester. You must use a **correlation / regression design / ANCOVA** taught in this class to analyze data and report results to answer your research questions. If you do not use a correlation / regression design, I will not accept the paper. The paper is to be written in APA style. **Keep in mind that this paper is NOT an article critique**.

***Use the following major sections:***

*Introduction Section of 1 to 1 ½ pages (use title at top of page and DO NOT use "introduction" as a heading, the following information should be included in this major section)*

• Argument of worth or purpose of the study

• Literature - Integrated by themes/points made

• Hypothesis or research question - written first but presented at the end of the literature section

*Methodology Section (Methodology is the major heading and participants, measures, and procedures are all subheadings - information to include is in parentheses)*

• 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 Section (Results is the major heading and no subheadings are needed, the following information should be included in this major section) –* If you don’t have data, make it up.

• Are **all** appropriate statistics clearly stated in APA style?

• Are tables or graphs appropriately used?

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

• State results in words

• Discuss Limitations, including statistical assumptions

**Class Policy Statements**

* ***Email and Communication***
* All communication through emails needs to be via Auburn Tiger Email system. In other words, you need to use your university email address to send me emails, and I will do the same. Emails will be responded **within 48 hours** **excludes weekends and holidays.**
* All PPTs and announcements will be posted in the Canvas at the beginning of each week. You are responsible to check the Canvas every week.
* All assignments need to be uploaded in the Canvas. I will grade your assignments in the Canvas. **You can check your grade and my feedback for each assignment in the Canvas as well.** However, I keep your official grades in my Excel file.
* If you need individual help, you can reach me during the office hours, email, or make an appointment (request Zoom meeting).
* ***Class Attendance*** (weekly Canvas login record)

Points are not attached to attendance directly. However, in order to explore topics effectively, attendance and class participation are essential. Excellent class attendance is required to earn an A and to earn lab or other PPT activities points. If you need to be absent for school or work-related requirements, illness, or an emergency, you are allowed to make up points for no more than two classes. Students are responsible for initiating arrangements for missed work.

* ***Assignment Policy***
* Due to the potential incompatibility of word processing programs and formats, and the potential for the transmission of viruses, absolutely no work for the course will be accepted as an E-mail and/or as an E-mail attachment, or on a disk etc. All graded work must be printed off by you and delivered to me in hard copy format or submitted through Canvas.
* All work submitted for the course must be typed.
* ***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.
* Assignments more than 2 weeks overdue will not be accepted.
* 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 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. To be eligible for a grade of IN, the student must have completed and have passed more than half of all class assignments/exams for semester.
* ***Academic Misconduct***

**Academic Honesty**

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.

**Plagiarism**

For more information, see:

<http://www.collegeboard.com/student/plan/college-success/10314.html>

<http://owl.english.purdue.edu/owl/resource/589/01/>

<http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml>

* ***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. 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. 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, 1228 Haley Center, 844 2096 (V/TT).

**Tentative Course Content and Schedule**

| Week | Date | Reading & Class activities | Activity (5 pts each)Due on Wednesday | Assignment (20 pts)Due on Sundays |
| --- | --- | --- | --- | --- |
| 1 | 1/16 | MLK Holiday — No Meeting |  |  |
| 2 | 1/23 | SyllabusIntroductionReview of Hypothesis Testing |  |  |
| 3 | 1/30 | Correlation* Review of Least Squares
* Variance and Covariance
* Calculation of Correlation

Coefficient of Determination (r2) | Activity #1 Due 2/1 | Lab #1 Due 2/5 |
| 4 | 2/06 | Simple Linear RegressionPart and Partial Correlation | Activity #2 Due 2/8 | Lab #2 Due 2/12 |
| 5 | 2/13 | Multiple Linear Regression | Activity #3 Due 2/15 |  |
| 6 | 2/20 | Multiple Linear Regression Method of Entering Data |  |  |
| 7 | 2/27 | Checking Assumptions | Activity #4 Due 3/1 | Lab #3 Due 3/5 |
| 8 | 3/06 | Spring Break |
| 9 | 3/13 | Midterm Exam Due on Sunday, 3/19 |
| 10 | 3/20 | Analysis of Covariance (ANCOVA) |  |  |
| 11 | 3/27 | Analysis of Covariance (ANCOVA) | Activity #5 Due 3/29 | Lab #4 Due 4/2 |
| 12 | 4/03 | Curvilinear Regression | Activity #6 Due 4/5 | Lab #5 Due 4/9 |
| 13 | 4/10 | Logistic Regression | Activity #7 Due 4/12 | Lab #6 Bonus dueDue 4/16 |
| 14 | 4/17 | Final Exam Due on Sunday, 4/23 (Optional if you have earned at least 210 points before the final) |
| 15 | 4/24 | Final Paper Due on Sunday, 4/30 |

NOTE: This is a tentative syllabus. Any changes will be announced in class. Students are responsible for being aware of the changes made.