**ERMA 7300 Syllabus**

**Course Number:** ERMA 7300 Distance

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

**Semester:** Summer, 2023

**Credit Hours:** 3 credit hours

**Prerequisites:** ERMA7200 or Equivalent

**Meeting Time:** Class videos will be available at the beginning of each week

**Instructor:** Chih-Hsuan Wang

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**Office Hour:**  You can make an appointment and request a Zoom meeting

**Date Syllabus Prepared:** May 2023

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**Texts:**

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

Gravetter, F. J. & Wallnau, L. B. (2016). *Statistics for the Behavioral Sciences* *(10th ed.).* Cengage Learning. (ISBN: 978-1305504912)

**Recommended Reading:**

American Psychology Association (2020)*. Publication Manual of the American Psychological Association (7th ed.)*. American Psychological Association. (ISBN: 978-1433832161)

Field, A. (2017). *Discovering Statistics Using IBM SPSS Statistics (5th ed.)*. Sage. (ISBN: 978-1526436566)

Field, A., Miles, J., & Field, A. (2012). *Discovering Statistics Using R*. Sage. (ISBN: 978-1446200469)

Huck, S. W. (2012). *Reading Statistics and Research (6th ed.).* Pearson Education. (ISBN: 978-0132178631)

Shannon, D. M., & Davenport, M. A. (2001). *Using SPSS to Solve Statistical Problems*. Merrill/Prentice Hall.

**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 the Grad Standard Pack**, NOT the Base Pack**).
   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 on 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 on the computer or the desktop. Instead, you need to email the files or save them on thumb drives.

1. You can use other statistical software/packages, 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/**](http://wp.auburn.edu/biggio/canvas/student-help/) **)**
5. Zoom application. You can install it on your computers, tablets, or smartphones. This is for participating in 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 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 Canvas. (More student resources for Canvas can be found here:** <http://wp.auburn.edu/biggio/canvas/student-help/> )

**Course Description:**

Basic methods of descriptive and inferential analysis include z-test, t-tests, between and within-subjects ANOVA, and mixed-design ANOVAs as they are utilized in educational research.

**Course Objectives**:

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

* explain the process of hypothesis testing and apply it to research problems.
* identify different types of research designs and variables 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.
* 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.
* Review published research literature to examine applications of course content.

**Grading and Evaluation Procedures:**

Examinations (100 pts X 2) 200 points

Labs (20 pts X 5) 100 points

Bonus Lab (20 pts) 20 points

Total possible points 320 points

* Students missing three or more class meetings will have their final grade reduced by one letter grade.
* 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** | **Percentage** |
| **A** | ***270 points and above, and excellent attendance and participation*** |
| **B** | ***240~269 points and at least good attendance and participation*** |
| **C** | **210~239 points** |
| **D** | **180~209 points** |
| **F** | **<180 points** |

* Class Attendance

In order to explore topics effectively, attendance and class participation are essential. You are expected to attend class and participate in the group discussion. Students missing three or more class meetings will have their final grade reduced by one letter grade.

* Examinations (100 points each)

There will be two examinations. These exams will be in-class or take-home. You can have a one-page front-and-back cheat sheet for the exams if it is an in-class exam. If it is a take-home exam, you can use all resources you can find. However, the work needs to be your own work. **The final exam is optional,** if you already have an A (at least 180 points) AND submit the bonus lab before the final, 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.

* Labs (20 points each \* 5 + bonus lab 20 points)

Labs are 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 you complete analyses via SPSS when completing assignments on your own.

* Lab #1: Descriptive Statistics
* Lab #2: One-Sample z- and t-tests
* Lab #3: Two & Related Samples t-tests
* Lab #4: One-way ANOVA
* Lab #5: Factorial ANOVA
* Bonus Lab: Repeated-Measure and Mixed-Design ANOVAs

**Class Policy Statements**

* ***Email and Communication***
* All communication through emails needs to be via the 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 office hours, email me, or make an appointment (request a Zoom meeting).
* ***Class Attendance***

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 activity 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***
* Assignments need to be submitted/uploaded on Canvas in Word or PDF format.
* All work submitted for the course must be typed.
* 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 uploaded onto Canvas.
* ***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 an 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. A 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 coursework or withdrawal from class will be assigned in strict conformity with 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 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. To be eligible for a grade of IN, the student must have completed and passed more than half of all class assignments/exams for the 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, and 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 | Due Dates |
| --- | --- | --- | --- |
| 1 | 5/17 | Syllabus & Introduction  Introduction to Statistics |  |
| 2 | 5/22 | Frequency Distribution  Central Tendency & Variability  Reading: Ross and Shannon, Chapter 1~3  z-score  Normal Distribution  Probability | Lab #1  By Sunday, 5/28, 11:59 pm |
| 3 | 5/29 | Hypothesis Testing  Reading: Ross and Shannon, Chapter 15 |  |
| 4 | 6/5 | One Sample Test: z-test and t-test  Reading: Ross and Shannon, Chapter 4 | Lab #2  By Sunday, 6/11, 11:59 pm |
| 5 | 6/12 | Two & Related Samples t-Tests  Reading: Ross and Shannon, Chapter 5 | Lab #3  By Sunday, 6/18 11:59 pm |
| 6 | 6/19 | Exam I | Exam I  By Sun, 6/25, 11:59 pm |
| 7 | 6/26 | One-way ANOVA with Two Levels  Reading: Ross and Shannon, Chapter 6 | Lab #4  By Sunday, 6/25, 11:59 pm |
| 8 | 7/3 | Factorial ANOVA  Reading: Ross and Shannon, Chapter 7 | Lab #5  By Sunsay, 7/2, 11:59 pm |
| 9 | 7/10 | Within Subjects Designs  Reading: Ross and Shannon, Chapter 8 |  |
| 10 | 7/17 | Mixed Design  Reading: Ross and Shannon, Chapter 9 | Bonus Lab  By Sunday, 7/16, 11:59 pm |
| 11 | 7/24 | Exam II | Exam II  By Sunday, 7/30, 11:59 pm |

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