**Syllabus**

**Course Number:** ERMA 7306

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

**Semester:** Fall, 2017

**Credit Hours:** 3 credit hours

**Prerequisites:** ERMA7200 or Equivalent

**Meeting Time:** All materials will be on the Canvas, including the PPTs, video clips, assignments, exams, …etc.

**Instructor:** Chih-hsuan Wang

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**Office Hour:**  Monday 12:00~2:00 pm

Thursday 12:00~2:00 pm or

you can send an email to request video conferences

**Date Syllabus Prepared:** August, 2017

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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 (2009)*. Publication Manual of the American Psychological Association (6th ed.)*. Washington D.C., American Psychological Association.

Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics (4th ed.)*. Los Angeles, CA: Sage.

Field, A. (2016). *An Adventure in Statistics—the Reality Enigma*. Los Angeles, CA: Sage.

Gravetter, F. J. & Wallnau, L. B. (2012). *Statistics for the Behavioral Sciences* *(9th ed.).* Belmont, CA: Wadsworth.

Huck, S. W. (2012). *Reading Research and Statistics (6th ed.).* Boston, MA: Pearson Education.

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

Moore, D. S., Notz, W. I. (2014). *Statistics: Concepts and Controversies (2nd ed.)*. New York, NY: W. H. Freeman and Company.

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

**IMPORTANT:**

* **All course materials (syllabus, PPTs, lab assignments, data files, rubrics…etc.) will be available in Canvas. Please check the Canvas before each class. I am not going to provide hard copies.**
* **I will not accept the work completed by hand calculation unless it is the only way to do it.**
* **Required Computer Software:**

1. SPSS version 22/23/24.
   1. You can purchase/rent SPSS Standard Grad Pack from these distributors:

<http://www-03.ibm.com/software/products/en/spss-stats-gradpack>

* 1. **Or you can access SPSS virtually through the internet. The LRC OIT staff will provide instructions to you. You will receive a class email with those instructions.**

1. Microsoft Office Word.
2. PDF file creator (e.g. Adobe Acrobat).

**Course Description:**

Basic methods of descriptive and inferential analysis including chi-square, t-tests, between and within subjects ANOVA, and mixed ANOVAs designs 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 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

Computer Exercises (40 pts X 5) 200 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** | ***360 points and above, and excellent attendance and participation*** |
| **B** | ***320~359 points and at least good attendance and participation*** |
| **C** | **280~319 points** |
| **D** | **240~279 points** |
| **F** | **<240 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 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.

* Computer Exercises (40 points each)

Computer exercises 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 you do are completing analyses on your own.

Sometimes the computer exercises will double as an assignment and must be turned in at the end of the class session. In this case, you will need to have the output printed. You can work in pairs on lab assignments and turn in one lab assignment per pair if you wish.

**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 excluding weekends and holidays.
* All PPTs and announcements will be posted in the Canvas. You are responsible to check the Canvas before you come to the class/at the beginning of each week.
* All assignments need to be uploaded in the Canvas. I will grade your assignments in the Canvas. You can check your grade in the Canvas as well.
* If you need individual help, you can reach me during the office hour, email, or make an appointment.
* ***Class Attendance***

Points are not attached to attendance directly. Excellent class attendance is expected. 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.

* ***Electronic Device Policy (Not applicable for distance students)***

Cell phones should be turned off or to vibrate during class. Cell phone texting and/or reading are not permitted in class. Laptops and tablets in class could only be used for the purpose of the class.

* ***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 uploaded onto Canvas.
* All work submitted for the course must be typed.
* ***Late Assignments Policy***
* Assignments turned in late will receive a 3% reduction in earned points per day. The only exception will be in the case of emergency.
* 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 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 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 | Due Dates |
| --- | --- | --- | --- |
| 1 | 8/21-8/27 | Syllabus & Introduction  Introduction to Statistics |  |
| 2 | 8/28-9/3 | Frequency Distribution  Central Tendency & Variability  Reading: Ross and Shannon, Chapter 1~3 |  |
| 3 | 9/4-9/10 | z-score  Normal Distribution  Probability | Lab #1 Descriptives  By Sun, 9/04, 11:59 pm |
| 4 | 9/11-9/17 | Hypothesis Testing  Reading: Ross and Shannon, Chapter 15 |  |
| 5 | 9/18-9/24 | One Sample Tests: z-test and t-test  Reading: Ross and Shannon, Chapter 4 |  |
| 6 | 9/25-10/1 | Two & Related Samples t-Tests  Reading: Ross and Shannon, Chapter 5 | Lab #2 z and t-tests  By Sun, 9/25, 11:59 pm |
| 7 | 10/2-10/8 | One-way ANOVA with Two Levels  Reading: Ross and Shannon, Chapter 6 |  |
| 8 | 10/9-10/15 | Exam I | Exam I  By Sun, 10/15, 11:59 pm |
| 9 | 10/16-10/22 | One-way ANOVA with Three Levels  Reading: Ross and Shannon, Chapter 6 | Lab #3 One-way ANOVA  By Sun, 10/23, 11:59 pm |
| 10 | 10/23-10/29 | Factorial ANOVA  Reading: Ross and Shannon, Chapter 7 | Lab #4 Factorial ANOVA  By Sun, 10/30, 11:59 pm |
| 11 | 10/30-11/5 | Within Subjects Designs  Reading: Ross and Shannon, Chapter 8 |  |
| 12 | 11/6-11/12 | Mixed Design  Reading: Ross and Shannon, Chapter 9 | Lab #5 Repeated-measure & Mixed-design ANOVA  By Sun, 11/13, 11:59 pm |
| 13 | 11/13-11/19 | Binomial Test & Chi-square Test | Bonus Lab Binomial Test & Chi-square Test  By Sun, 11/20, 11:59 pm |
| 14 | 11/20-11/26 | Thanksgiving Break |  |
| 15 | 11/27-12/3 | Exam II | Exam II  By Sun, 12/03, 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.