**Syllabus**

**Course Number:** ERMA 2400

**Course Title:** Applied Quantitative Data Analysis in Education and Health Professions

**Semester:** Fall 2023

**Credit Hours:** 3 credit hours

**Prerequisites:** N/A

**Meeting Time:** Tuesdays & Thursdays 9:30~10:15 am at Haley R3430

**Instructor:** Chih-hsuan Wang, Ph.D. ([wangchi@auburn.edu](mailto:wangchi@auburn.edu))

Jianwei Dong, MPS ([jzd0077@auburn.edu](mailto:jzd0077@auburn.edu))

4010 Haley

**Office Hour:** Wang: Virtual or Tuesdays, 12-2 pm, please make an appointment.

Dong: F2F Mondays, 10-12, Tuesdays, and Thursdays, 11-3, and make an appointment.

**Date Syllabus Updated:** August 2023

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**Texts:**

Gravetter, F. J. & Wallnau, L. B. (2016). *Statistics for the Behavioral Sciences* *(10th ed.).* Cengage Learning. (ISBN: 9781305504912)

Salkind, N. J. (2015). Excel Statistics: A Quick Guide (3rd ed.). Sage Publications, Inc. (ISBN: 978-1483374048)

**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 F2F.

**Required Computer Software and Skills:**

1. Access to high-speed internet through smart mobile devices or computers.
2. Microsoft Office Excel.
3. Microsoft Office Word.
4. PDF file creator (e.g. Adobe Acrobat).
5. 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/) **)**
6. Zoom application. You can install it on your computers, tablets, or smartphones. This is for participating in virtual office hours if needed.

**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 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 undergraduate students who are interested in education, counseling, school psychology, or health professions with data management, data analysis reasoning, and data-based decision-making skills.

**Course Objectives**:

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

* Identify and apply appropriate measures of reliability and validity.
* Organize, summarize, and present the characteristics of the data.
* Identify and apply appropriate data analysis methods.
* Answer research problems using statistical tests of significance.
* Make accurate interpretations of statistical findings.
* Use data analysis software to answer questions and solve real-life problems.

**Course Requirements:**

* Attend all class sessions and participate in class discussions and activities.
* Complete **all** assignments.
* Complete **all** examinations.

**Grading and Evaluation Procedures:**

Assignments (40 pts X 5) 200 pts

Exams (100 pts X 3) 300 pts

Total Possible Points 500 pts

* We will have some bonus points class practices. Each will be 2 bonus points. You will need to be **in the class** and **complete the practice** to earn the extra points. Late or make-up submission is not available.
* Any assignment presented or turned in late will be penalized 5 points 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 on the Canvas. However, I keep the official grades in an Excel file and will calculate your final grade using Excel.

**Grading Scale:**

|  |  |
| --- | --- |
| **Grade** | **Points** |
| **A** | ***450+ points and excellent attendance and participation*** |
| **B** | ***400 ~ 449 points and at least good attendance and participation*** |
| **C** | **350 ~ 399 points** |
| **D** | **300 ~ 349 points** |
| **F** | **< 300 points** |

* 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 class practice bonus points.** If you need to be absent for school or work related requirements, illness, or an emergency, you will need to email instructor(s) in advance. Students are responsible for initiating arrangements for missed work.

* Examinations (100 pts X 3)

There will be three examinations. These exams will be in class. 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 360+ points) 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.

* Assignments (40 pts \* 5)

Assignments are designed to introduce you to the use of data analysis software 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 assignments.

**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 on the Canvas at the beginning of each week. You are responsible to check the Canvas every week.
* All assignments need to be uploaded on the Canvas. I will grade your assignments on the Canvas. **You can check your grade and my feedback for each assignment on 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, or make an appointment (request Zoom meeting).
* ***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 submitted through Canvas.
* All work submitted for the course must be typed.
* ***Electronic Device Usage Policy***
* To ensure an optimal learning environment, please turn off or switch your mobile phones to either "airplane" or "do not disturb" mode during class sessions. This will help to minimize disruptions and create a focused atmosphere conducive to effective learning and engagement.
* ***Incompletes and Withdrawals***
* Grades associated with incomplete course work or withdrawal from class will be assigned in strict conformity to the 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 the 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 accommodation, make an appointment with the Program for Students with Disabilities, 1228 Haley Center, 844 2096 (V/TT).

**Tentative Course Content and Schedule**

| Week | Date | Tuesdays | Thursdays |
| --- | --- | --- | --- |
| 1 | 8/17 | --- | Syllabus and Class Policy |
| 2 | 8/22, 24 | Introduction | Introduction |
| 3 | 8/29, 31 | Measurement, Reliability, & Validity | Measurement, Reliability, & Validity |
| 4 | 9/05, 07 | Data Management  \*Assignment #1 Due at 9:30 AM | Data Visualization |
| 5 | 9/12, 14 | Descriptive Data Analysis | Descriptive Data Analysis |
| 6 | 9/19, 21 | \*Probability & Distribution  Assignment #2 Due at 9:30 AM | Probability & Distribution |
| 7 | 9/26, 28 | Exam I | Hypothesis Testing & One-Sample z-Test |
| 8 | 10/03, 05 | Hypothesis Testing & One-Sample z-Test | One-Sample t-Test |
| 9 | 10/10, 12 | Independent Samples Comparison  \*Assignment #3 Due at 9:30 AM | Independent Samples Comparison |
| 10 | 10/17, 19 | Paired Samples Comparison | Paired Samples Comparison |
| 11 | 10/24, 26 | One-way ANOVA | One-way ANOVA |
| 12 | 10/31, 11/02 | One-way ANOVA | Review  \*Assignment #4 Due at 9:30 AM |
| 13 | 11/07, 09 | Exam II | Correlation |
| 14 | 11/14, 16 | Simple Regression | Simple Regression |
| 15 | 11/21, 23 | Happy Thanksgiving | |
| 16 | 11/28, 30 | Chi-Square Test  \*Assignment #5 Due at 9:30 AM | Chi-Square Test |
| 17 | 12/05 | Final Exam (8:00-10:00 AM) | |

\*Assignments are due at 9:30 AM before the class

#1: Identify an appropriate measure for the topic of interest, reliability, and validity

#2: Descriptive data analysis and data visualization

#3: Testing for the difference (one-sample z- and t-test)

#4: Testing for the difference (independent and paired t-tests, one-way ANOVA, & non-parametric tests)

#5: Testing for association (correlation & regression)

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