**Syllabus**

**Course Number:** ERMA 8330

**Course Title:** Nonparametric Statistics

**Semester:** Summer, 2025

**Credit Hours:** 3 credit hours

**Prerequisites:** ERMA 7300

**Meeting Time:** Tuesdays & Thursdays 4:00~8:00 PM

**Instructor:** Chih-Hsuan Wang

 Educ 3330

 wangchi@auburn.edu

**Office Hours:**  Email to make an appointment.

**Date Syllabus Prepared:** May 2025

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**Texts:**

There is no required textbook.

**Recommended:**

Corder, G. W., & Goreman, D. I. (2014). *Nonparametric Statistics: A Step-by-Step Approach (2nd ed.)*. Wiley, Hoboken, New Jersey. (ISBN: 978-1118840313)

Siegel, S. & Castellan, N. J. Jr. (1988). *Nonparametric Statistics for the Behavioral Sciences* *(2nd ed.)*. McGraw-Hill, Inc., New York. (ISBN: 978-0070573574)

Shannon, D. M. & Davenport M. A. (2000). *Using SPSS to Solve Statistical Problems: A Self-Instructional Guide*. Merrill Prentice Hall, Upper Saddle River, New Jersey. (ISBN: 978-0132675765)

American Psychology Association (2019)*. Publication Manual of the American Psychological Association (7th ed.)*. Washington D.C., American Psychological Association. (ISBN: 978-1433832161)

**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 formats. You can access our class Zoom room through the 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 coursework 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 Standard Pack, NOT 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 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/> )
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:**

This course is designed to provide students with an understanding of nonparametric statistical methods pertaining to design and analysis in educational research. Parametric statistics will be reviewed, and parallel nonparametric statistics will be compared to the characteristics and uses of the parametric statistics. This course emphasizes conceptual understanding and application as well as calculations of nonparametric statistics.

**Course Objectives:**

Students will:

* Gain an understanding of nonparametric statistical procedures.
* Apply knowledge of nonparametric statistics by analyzing research problems and making decisions about the appropriate use of nonparametric procedures.
* Apply knowledge of nonparametric statistics using SPSS and/or hand calculations to determine significance.
* Apply knowledge of inferential statistics by interpreting the results of statistical analyses.
* Interpret the results of the analyses in terms of the research hypothesis.

**Course Requirements:**

* Attend all class sessions and participate in class activities.
* Complete all lab assignments.
* Review and summarize one research article and provide feedback to 3 reviewed articles.

**Grading and Evaluation Procedures:**

Review two articles 80 points

 Labs 120 points

 Total possible points 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** | ***180 points and above, and excellent attendance and participation*** |
| **B** | ***160~179 points and at least good attendance and participation*** |
| **C** | **140~159 points** |
| **D** | **120~139 points** |
| **F** | **<120 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 two or more class meetings will have their final grade reduced by one letter grade.

* Review two articles (40 points each \* 2)
1. You are expected to locate **two academic research articles**, each of which employs a **different nonparametric statistical procedure** for data analysis.

Potential nonparametric statistical procedures include:

* Wilcoxon Signed Ranks Test
* McNemar Test
* Mann-Whitney U Test
* Kruskal-Wallis H Test
* Kolmogorov-Smirnov Test
* Friedman Test
1. You are expected to include the reference of the article at the top of your submission (APA format).
2. You need to write and post a summary of the article. Here is the content required for your summary:
	1. What is the purpose of the study?
	2. Summary of the literature review.
	3. Identify independent & dependent variables in the study.
	4. Describe the methods. Who are the participants? Discuss the sampling procedures and the sampling method.
	5. What measures/instruments were used? Find & discuss evidence concerning the reliability and validity of instruments/investigation.
	6. Identify the type/design of the study. Be as specific as you can.
	7. How was data analyzed? Identify a statistical technique used. Summarize the findings of the study.
	8. What conclusions do the authors draw? What are the implications of the research?
	9. Evaluate the strengths and limitations of the article: Find and discuss three things you believe the authors did well in their research and explain why. Find one flaw in the research and explain why you think it is a problem.
	10. What is your reaction to the article? How credible, interesting, meaningful, and applicable are the results? Evaluate the contribution of this study to your field.
* Labs (20 points each \* 6 = 120 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.

1. Lab #1: Binomial & Chi-Square Goodness-of-fit Tests
2. Lab #2: Fisher Exact & Chi-Square Independence Tests
3. Lab #3: McNemar & Kolmogorov-Smirnov Tests
4. Lab #4: Mann-Whitney U & Kruskal-Wallis H-Tests
5. Lab #5: Wilcoxon Signed Ranks & Friedman Tests
6. Lab #6: Association/Correlation

**Class Policy Statements**

***Email and Communication***

1. **Email Communication**: All email correspondence must be conducted through the Auburn University TigerMail system. Please use your official university email address when contacting me, and I will do the same. I will respond to emails within 48 hours, excluding weekends and holidays.
2. **Course Materials and Announcements**: PowerPoint slides and announcements will be posted on Canvas at the beginning of each week. You are responsible for checking Canvas regularly to stay updated on course materials and deadlines.
3. **Assignment Submission and Grading**: All assignments must be submitted via Canvas. I will provide grades and feedback through Canvas; however, please note that official grades are also maintained in a secure record outside the platform.
4. **Individual Support**: If you need additional help, you are welcome to visit during office hours, contact me by email, or request a Zoom appointment.

***Class Attendance***

While points are not attached to attendance directly, active participantion and consistent attendance are essential for meaningful engagement with course topics. Strong attendance is expected in order to earn an A in the course and to receive credit for class activities or other in-class participation-based tasks. Students may make up missed participation points for up to two class sessions in the event of school- or work-related obligations, illness, or emergencies. It is the student’s responsibility to communicate with the instructor and make appropriate arrangement to complete any missed work.

***Assignment Policy***

1. All assignments must be submitted/uploaded to Canvas in either Word (.doc/.docx) or PDF format.
2. All coursework must be typed; handwritten submissions will not be accepted.
3. To ensure compatibility and maintain security, assignments will **not** be accepted via email, email attachments, flash drives, or any other external media. **All graded work must be submitted through Canvas.**

***Late Assignments Policy***

1. Late assignments will incur a 5% deduction in earned points for each day past the deadline. Exceptions will only be considered in cases of documented emergencies.
2. Assignments submitted more than two weeks after the due date will not be accepted.
3. Except for assignments that specifically require handwritten calculations, all work must be typed. Handwritten submissions will not be graded. If an assignment is initially submitted in handwritten form and later re-submitted in typed format, a late penalty will apply based on the date the typed version is received.

***Incompletes and Withdrawals***

Grades related to incomplete coursework or withdrawal from the course will be assigned in strict accordance with Auburn University policies, as outlined in the Auburn University Bulletin. Students who wish to drop the course may do so without a grade assignment by the 10th class day. Withdrawals occurring between the 10th class day and mid-semester will result in a grade of **W** (Withdrawn–Passing) on the transcript. After this period, withdrawal will be granted only under exceptional circumstances and must be approved by the Dean of the College of Education.

Please note that the University’s **Incomplete (IN)** grade policy is in effect. To request an IN grade, students must complete and submit the official form to the instructor **prior to final grade submission**. If this form is not submitted, a final grade will be calculated with a score of zero (0) for any missing coursework. To be eligible for an IN grade, a student must have completed and passed more than half of all assigned coursework and/or exams for the semester.

* ***Academic Misconduct***
1. **Academic Honesty**

The Department of Educational Foundations, Leadership, and Technology (EFLT) adheres to Auburn University’s policies on academic integrity and misconduct. Academic misconduct includes, but is not limited to: plagiarism; receiving or providing unauthorized assistance during examinations; submitting another individual's work as your own; using another’s words or ideas without proper citation; sharing unauthorized materials containing examination questions or answers; and altering or attempting to alter assigned grades.

In accordance with the University’s Student Academic Honesty Code, students found in violation may be subject to a range of sanctions. For detailed information regarding academic misconduct and students’ rights and responsibilities, please refer to the current edition of the Tiger Cub.

1. **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***
1. Students requiring special accommodations in accordance with the Americans with Disabilities Act (ADA) are encouraged to arrange a confidential meeting with the instructor during office hours within the first week of classes—or as soon as possible if accommodations are needed immediately. If you are unable to attend during regular office hours, alternative meeting times can be arranged.
2. To schedule a meeting, please contact me via email. Please bring a copy of your Accommodation Memo and the Instructor Verification Form to this meeting.
3. If you have not yet obtained these documents but require accommodations, please contact the Program for Students with Disabilities located in 1228 Haley Center at 844-2096 (V/TT) to make an appointment.

**Tentative Course Content and Schedule**

|  |  |  |
| --- | --- | --- |
| **Date** | **Topic(s)** | **Assignment Due** |
| 5/20 | Introduction One sample Categorical Data * Binomial Test
* Chi-square Goodness-of-Fit Test
 | Lab #1Due on Sunday, 5/25 |
| 5/22 | 2 Independent Samples Categorical Data* Fisher Exact Test
* Chi-Square Independence Test
 | Lab #2Due on Sunday, 5/25 |
| 5/27 | 2 Related Samples Categorical DataMcNemar Test |  |
| 5/29 | One sample Ordinal Data* Kolmogorov-Smirnov Test
 | Lab #3Due on Sunday, 6/01 |
| 6/03 | 2 Independent Samples Ordinal Data* Mann-Whitney U test
* Kolmogorov-Smirnov Two-Sample Test
 |  |
| 6/05 | 2+ Independent Samples Ordinal Data* Kruskal-Wallis H-Test
 | Lab #4Due on Sunday, 6/08 |
| 6/10 | 2 Related Samples* Wilcoxon Signed Ranks Test
 |  |
| 6/12 | 2+ Related Samples Ordinal Data* Friedman Test
 | Lab #5Due on Sunday, 6/15 |
| 6/17 | Association/Correlation* Phi Coefficient
* Point Biserial
* Spearman
* Kendall
 | Lab #6Dues on Sunday, 6/22 |
| 6/19 | **Juneteenth Holiday - No Classes** | Article Summary #1 Due on 6/22 |
| 6/24 | No Meeting | Article Summary #2 Due on 6/24 |

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