NORTH CAROLINA CENTRAL UNIVERSITY

School of Education COURSE SYLLABUS

EDGR 5910 0L1 Introduction to Statistical Methods in Education

Fall 2017 3 Credit Hours

Instructor: Dr. Wynetta Lee, Professor Office: 2025 H.M. Michaux Building

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Office Hours: By appointment via WebEx*

* Please make an appointment in advance if you want to meet with me on campus. If you want to coordinate a meeting by WebEx or phone then email your meeting request to me, including preferred days/times for an appointment. This will help me to coordinate student visits/meetings. When contacting me via email put "EDGR 5910:" and then describe the nature of your email in the subject line. For example, the subject line should be: "EDGR5910-Question about Final Paper." Your message should include your inquiry, your email address, your preferred phone number and several times you are available. If you contact me by phone, leave a CLEAR message regarding the nature of your call, your preferred phone number and several times you are available for me to return you call. Allow approximately 48 hours for a response. Note that my response time may be longer Friday through Sunday or over a holiday.

Introduction

Course Description

Introduction to Statistical Methods in Education is a graduate level course in applied statistics relevant to education and social sciences. The course topics will include descriptive statistics, inferential statistics, and research designs as well as data analysis using inferential statistical procedures. Candidates will compile, analyze, and interpret data in a culminating final paper. The course will prepare candidates to use statistical tools for making data based decisions.

Course Expectations

This course is predominately an asynchronous online, learning-centered course where each student is expected to be meaningfully involved in their own learning, and the learning of their classmates, by fostering the intellectual climate through *deep reflection*, *scholarly discourse* and the *timely submission of course requirements* that demonstrate the highest level of Eagle Excellence. Most learning opportunities can be completed at your convenience, but some will be at a scheduled time for all students to participate simultaneously. The course is delivered through NCCU's Blackboard (Bb) system and students are required to log on to the system weekly in order to document attendance/participation and to fulfill various assignments during the semester (e.g., submit assignments, obtain handouts). **NOTE: assignments will not be accepted via email.** Blackboard is accessible through MyEOL. Your username and password for Blackboard and NCCU email are exactly the same. If you have questions about your Bb

account, call the IT department at 919-530-7676. The right to amend the syllabus is reserved.

Course Outcomes

This course is designed to introduce students to the theory and application of statistical procedures in education clustered around the following topics: (1) descriptive statistics such as scales of measurement, central tendency, and standard deviation, (2) sampling, probability, and sampling distributions (3) inferential statistics, tests of significance (z, t, r, Chi-square). Upon completing the course, students are expected to be able to calculate statistical tests, describe the statistical concepts examined in the course, and design and interpret research studies within their professional fields.

Student Learning Outcomes

Upon completing this course, students will be able to

- 1. Describe the meaning of major statistical concepts both verbally and computationally.
- 2. Compute frequencies, central tendency, variability, probability, z-score, t-tests (the one sample, two independent samples, and two related samples), correlations, and chi-square.
- 3. Conduct a hypothesis test using appropriate statistical procedures and understand the limitations of significance testing.
- 4. Align research questions with the appropriate statistical procedure.
- 5. Analyze data using the computer software and make data based decisions.

Course Materials

There are two required texts, one recommended text, and supplemental materials. One required text will guide your learning journey regarding statistical applications to answer specific research questions. Communication is essential if research is to be used and there is an expected writing style for educational and social science researchers. Therefore, one required text and one recommended text will help you to effectively communicate with social scientists and others who will read your work.

Required Texts

Authors: Fredrick J. Gravetter & Larry B. Wallnau.

Title: Statistics for The Behavioral Sciences 10th ed. (LMS Integrated for

MindTap Psychology, 1 term (6months) Printed Access Card)

ISBN: 9781305871762

Author: American Psychological Association (APA)

Title: Publication Manual of the American Psychological Association

ISBN: 9781433805615

Recommended Text

Author: Cheryl Glenn, Loretta Gray

Title: Hodges Harbrace Handbook (w/out Access Code)

ISBN: 9781111346706

Supplemental Materials

Some of the course content will include links to videos and websites that will enhance you learning. These materials will supplement and support (*not supplant*) your readings, reflection and comprehension of statistical concepts.

Assignments

Chapter Homework (50%) – Students are scheduled to homework weekly chapter. We will use *Mindtap*, an online teaching/learning tool, to facilitate digital submission and objective grading. Each assignment will remain open for the week (Monday–Sunday). Students will be able to complete the homework at multiple sittings and make up to three attempts at each item. Students will receive immediate feedback after each attempt and have a chance to correct their mistakes by making the second and/or the third attempt with no penalty. No late submissions will be accepted. Students will earn a "0" for homework that is not attempted at all, or receive partial credit for homework that is started but not completed. *Only under documented extenuating circumstances will the instructor re-open the homework after posted due dates*.

Attendance and Participation (20%) – The instructor will post a set of discussion questions to the Bb Discussion Board in Weeks 2-14. Students' reply to these chapter discussion questions will be counted toward the course attendance and participation grade. Attendance in this online class requires students to post assignments on their due dates and to participate in weekly discussions on Bb. Each posting is worth up to 10 points and students will lose a point for late postings. It is advised that students take these discussion questions as an opportunity to "make sense" of statistics and post scholarly messages that are personally and professionally relevant. In addition to the discussion posts there will be three (3) WebEx sessions. You are invited to join these sessions to ask questions about the course, assignments, etc. The sessions are optional and serve as virtual office hours.

Exams (20%). There will be two exams during the semester: a midterm exam and a final exam. The exams will be based on the chapters covered preceding the exam. Each exam will be 100 points and will be 10% of your final grade.

Statistical Analysis Capstone Project (10%) – The capstone assignment for this course is the development and implementation of a research project. You will design a mini research project on the topic of your choice consisting g the following sections: topic The paper will consist of five sections: (1) introduction to topic, research problem, rationale for the study (2) overview of relevant literature to identify quantifiable variables, research questions, and hypotheses, (3) statistical procedures, (4) data analysis, findings and (4) conclusions and recommendations. You must use each of the following statistical procedures: (1) t stats for a single sample, t stats for independent samples or t stats for related samples as is appropriate, (4) Pearson t, and (5) regression. This assignment will demonstrate your understanding of statistics and your ability to use it to design research

studies. More details will be provided during the semester and students are advised to work on this project over the semester rather than to wait until the end of the semester.

Bonus Assignment 1 Data Analysis Assignments (5 points) – Statistics is used to analyze and interpret data. Building on the theoretical knowledge learned in the course, students will learn to analyze data using computer software. To complete this assignment, students will first learn to access to the software through Eagle Apps (https://eagleapps.nccu.edu). Further instructions for earning bonus points will be posted to Bb toward the mid-term. This is an optional assignment and the additional points will be added to the points earned for homework.

Student Evaluation – Grades will be assigned to students using the following scale.

A	90-100%
В	80-89%
С	70-79%
F	69% and below

Ground Rules for Attending and Participating in Course Activities

Rule 1 – Make the Time Commitment: This online course has been developed so that everyone (even those with the most math anxiety) can master the content. However, you must be willing to take the time and make an effort to complete the course activities and assignments as required. You should expect to spend at least six hours per week reading and reflecting on content, practicing concepts, and completing assignments. A minimum six-hour per week commitment is a realistic expectation. This estimate is based on the minimum number of hours of contact and study time required for a graduate level course delivered face-to-face. For example, if you were to take this course face-to-face, you would spend 3 hours per week sitting in class in addition to an hour or so for commuting to and from home/work, and several more hours for reading the textbook and doing homework. If you do not or cannot make a time commitment and adhere to the course schedule for completing each assignment in a timely manner, then this online course may not be appropriate for you.

Rule 2 – Adhere to the Course Schedule: It is crucial that you stay on task and complete the course assignments as they are scheduled. We will complete about one chapter per week; some weeks we will cover multiple chapters. Each chapter assignment(s) will be kept open for an entire week. The deadline for each quiz will be posted in *Blackboard*.

It is also crucial that you do not miss any more than two pieces of assigned work. Statistical concepts are built onto each other. If you have missed the material in one chapter, you will not be able to understand the next chapter, and soon the rest of the content will become very confusing to you. You will learn statistics and obtain a good grade only when you follow the course activities as they are scheduled. My best advice is

that you do not to miss any assignment so that the grade that will be dropped will truly be for your worst score—not a missing homework assignment.

Rule 3 – Use the Technology for Online Course Delivery: This course is entirely delivered online in an asynchronous format. We will be using Bb for online delivery and to communicate with one another. The homework, quizzes, tutorials and most of the material will be through Mindtap, which you will access through Bb. It is your responsibility to have instant and continuous access to a working computer with Internet connection throughout the course.

Bb will serve as a "virtual" classroom for the course. You should look to Bb for information/requirements updates, assignments, discussions, etc. It should be your first place to look for information about the course.

We will use Mindtap for submitting most of the required coursework, therefore you should make certain that you purchase the access code and follow instructions (in Bb) for registering your code. Mindtap is integrated into Bb so after you register your code, you can login once to access materials in Bb and Mindtap. Tutorials and supplemental materials are available in Mindtap and I encourage you to take advantage of these resources. Mindtap gradebook will record and track your progress in the course and it is integrated with Bb.

Finally, we will use the Excel and *SPSS* software for data analysis. You will need the computer software to complete these assignments. The good news is that you are not required to purchase this software. We will retrieve the software through the NCCU and directions are forthcoming.

Rule 5 – Use the following Bb protocols: Go to the Bb/Course Info tab to retrieve the course syllabus. I will use Bb each week to introduce you to the statistical concepts that you are expected to learn. The Bb/Content tab will house the essential and supporting course materials. I will post each chapter content and materials week-by-week in a single folder. The Bb/Discussion Board is where you will participate in weekly discussions. For each of the chapters, I will create a thread of discussion. To earn all your attendance and participation points, students must give **meaningful** responses to the questions posed that demonstrate mastery of the content, are well written, and free of errors. Proper sources must be cited (in APA style) as appropriate

Rule 6 – Note Important Dates: It is my greatest wish that **all** of you fulfill your commitment to this course. If, however, you are not able to comply with the course requirements, please note important dates regarding withdrawal from the course/institution as posted in the NCCU's Academic Calendar.

NCCU's Policies & Student Support Services

Statement of Inclusion/Non-Discrimination

North Carolina Central University is committed to the principles of affirmative action and non-discrimination. The University welcomes diversity in its student body, its staff, its faculty, and its administration. The University admits, hires, evaluates, promotes, and

rewards on the basis of the needs and relevant performance criteria without regard to race, color, national origin, ethnicity, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran's status, or religion. It actively promotes diversity and respectfulness of each individual.

Student Disability Services

Students with disabilities (physical, learning, psychological, chronic medical, etc.) who would like to request accommodations and services are required to register with the Office of Student Disability Services (SDS) in Suite 120 in the Student Services Building. Students who are new to SDS or who are requesting new accommodations should contact SDS at (919)530-6325 or <a href="mailto:sds_mai

Confidentiality and Mandatory Reporting

All forms of discrimination based on sex, including sexual misconduct, sexual assault, dating violence, domestic violence, and stalking offenses are prohibited under NCCU's Sexual Misconduct Policy (POL 80.07.1). NCCU faculty and instructors are considered to be *responsible employees* and are required to report information regarding sexual misconduct to the University Title IX Coordinator. The Sexual Misconduct Policy can be accessed through NCCU's Policies, Rules and Regulations website at www.nccu.edu/polices/regrieve.cfm?id=450. Any individual may report a violation of the Sexual Misconduct Policy (including a third-party or anonymous report) by contacting the Title IX Coordinator at (919)530-6334 or TitleIX@nccu.edu, or submitting the online form through titleix/index.cfm.

Student Support/Ombudsperson

The Student Ombudsperson is available to assist students in navigating unexpected life events, (e.g. short-term illness/injury, loss of a loved one, personal crises) and guide them to the appropriate University or community resources. Students may also receive assistance with resolving some emergency financial concerns, understanding NCCU policies or general problem-solving strategies. Schedule an appointment by contacting the Student Ombudsperson in the Office of the Dean of Students, G-06 Student Services Building, at (919) 530-7492 or bsimmons@nccu.edu.

Student Support Services for Veteran Students

One of the goals of the faculty and the NCCU Veterans Affairs Office's (VAO) is to provide a welcoming and supportive learning experience for veterans. Specifically, the VAO's primary goal is to provide a smooth transition from military to college life for veterans, service members, and dependents. If you wish, please contact your professor and/or the Director of the VAO during the first weeks of class so that we may support and assist you. During your matriculation, the VAO is here to assist you with the VA

Educational Benefits process and offer overall support to ensure academic progression towards graduation. For more information please contact the VAO at 919-530-5000 or veteransaffairs@nccu.edu.

Class Attendance Policy

Class attendance is expected of students at North Carolina Central University and represents a foundational component of the learning process in both traditional oncampus and online courses. Students should attend all sessions of courses for which they are registered for the entire scheduled period and are responsible for completing all class assignments. Instructors will keep attendance records in all classes. Instructors must clearly state on the syllabus how class attendance will factor into the final grade for the course. Faculty will include a written statement of the attendance guidelines in their course syllabi and will review the guidelines during the first class session. As of Fall 2017 NW and NF attendance grades will no longer be assigned.

If a student misses three consecutive class meetings, or misses more classes than the instructor deems advisable, in addition to entering the information into Grades First, the instructor will report the facts to the student's academic dean for appropriate follow-up. Students who miss class to participate in university-authorized activities are given excused absences for the missed class time. It is the student's responsibility to inform the instructor of such activities at least one week before the authorized absence, and to make up all work as determined by the instructor.

The Incomplete (I) Grade Policy

The Grade of "I" is assigned at the discretion of the instructor when a student who is otherwise passing (completed 75% of course work) has not, *due to circumstances beyond his/her control*, completed all the work in the course. The missing work must be completed according to the written and signed agreement between the instructor and the student within the deadline set by the instructor, not to exceed one year from the end of the semester in which the "I" was assigned. The signed written agreement must be filed in the office of the department chair or dean and a copy must also be placed in the instructor's file at the same time that final grades are due. If the "I" is not removed during the specified time, it will automatically turn into an F or NP.

Academic Integrity

As a center of learning, teaching, and research, North Carolina Central University charges its members including students to maintain patterns of behavior that enable these essential functions.

Academic Dishonesty Defined

Academic dishonesty is defined as any conduct that is intended by the student to obtain for him/her or for others an unfair or false evaluation in connection with any examination or other work for academic credit. Cheating, fabrication, plagiarism, and complicity are examples of conduct that is academically dishonest.

Cheating is the unauthorized use of materials in connection with an examination or other work for academic credit, including, but not limited to:

- The use of books, notes, outlines, etc. during an examination where the instructor has not authorized use of such materials or information;
- Seeking unauthorized materials or information from others in connection with an examination;
- Giving or attempting to give unauthorized assistance to another person in connection with an examination;
- Obtaining or attempting to obtain unauthorized copies of examinations;
- Copying or attempting to copy from the work of another student during an examination;
- Bringing to an examination, or attempting to use during an examination, unauthorized answers which have been prepared prior to the examination; and
- Submitting for evaluation in a course, part or the whole of a work for which credit has been given previously.

Fabrication is the invention, counterfeiting and/or alteration of quoted passages, data, procedures, experiments, sources or other information in connection with any academic exercise.

Plagiarism is the use of the ideas, words, or works of another without attribution when the information provided is not common knowledge either in content or form and includes, but is not limited to:

- Quoting from the published or unpublished work of another without appropriate attribution;
- Paraphrasing or summarizing in one's own work any portion of the published or unpublished materials of another without attribution; and
- Borrowing from another's work, data, and facts which are not in the domain of common knowledge.

Complicity is the giving of assistance or the attempt to give assistance to another for the purpose of perpetrating academic dishonesty.

Adverse Weather

Read http://www.nccu.edu/health-safety/emergency/adverseweather.cfm for the University's policy on adverse weather and follow the instructions as outlined in the University policy. In addition, announcements regarding scheduled delays or the closing of the university due to adverse weather conditions will be broadcast on local radio and television stations. Since travel to class is not necessary, the pace of this course is not likely to be affected by adverse weather.

Course Schedule

Week	Topics	Course Activities	Deliverables due by
			11:30pm Sunday unless otherwise noted
Wk 1, 08/14/17	Personal Introductions Pre-course tutorials and practice problems Ch 1, Intro to Statistics Ch 2, Frequency Distributions	 Greetings and personal introductions Introductions to syllabus, Bb, and Mindtapa Read the chapters View the ch ppt Chapter tutorials Practice chapter problems Video: Introduction to Statistics https://www.youtube.com/watch?v=oZbH-JxZ3Y8 Why You Need to Study Statistics https://www.youtube.com/watch?v=wV0Ks7aS7YI Introduction to Frequency Distribution https://www.youtube.com/watch?v=ukgdDAcIdUE 	 Personal introductions and greetings Mindtap registration, tutorials, practice problems Chapter homework Chapter discussions to Bb
Wk 2, 08/21/17	Ch 3 Central Tendency	 Read the chapter View the ch ppt Chapter tutorials Practice chapter problems Video Mean, Median, & Mode - Measures of Central Tendency https://www.youtube.com/watch?v=dE1zDbF AbQ Average or Central Tendency: Arithmetic Mean, Median, and Mode https://www.youtube.com/watch?v=GrynkZB3 E7M Best Measure of Central Tendency https://www.youtube.com/watch?v=X1URkIXe C8E 	 Chapter homework Chapter discussions to Bb
Wk 3, 08/28/17	Ch 4, Variability	 Read the chapter View the ch ppt Chapter tutorials Practice chapter problems 	 Chapter homework Chapter discussions to Bb WebEx session

		Video	08/29/2017 at 6:30pm-7:00pm
		Variability (Statistics)	
		https://www.youtube.com/watch?v=ipYaHqut Mds Measures of Variability (Variance, Standard Deviation, Range, Mean Absolute Deviation) https://www.youtube.com/watch?v=Cx2tGUze 60s Intro to Measures of Variation: Range, Standard Deviation, Variance	
		https://www.youtube.com/watch?v=rStwdZU_shY	
Wk 4, 09/04/17	Ch 5, z-scores	 Read the chapter View the ch ppt Chapter tutorials Practice chapter problems 	 Chapter homework Chapter discussions to Bb
		Video Z scores - Statistics https://www.youtube.com/watch?v=NY2z WGBXBhU	
Wk 5, 09/11/17	Ch 6, Probability	 Read the chapter View the ch ppt Chapter tutorials Practice chapter problems 	Chapter homework Chapter discussions to Bb
		Probability - Part One : Simple Probability https://www.youtube.com/watch?v=AY30 qsSnbE	
Wk 6, 09/18/17	Ch 7, Distribution of Sampling Means	 Read the chapter View the ch ppt Chapter tutorials Practice chapter problems 	 Chapter quiz to Aplia Chapter problems to Aplia Ch discussions to Bb
Wk 7, 09/25/17	Ch 8, Introduction to Hypothesis Testing	 Read the chapter View the ch ppt Chapter tutorials Practice chapter problems Video Intro to Hypothesis Testing in Statistics	 Chapter homework Chapter discussions to Bb WebEx session 09/25/17 at 7:00pm-7:30pm

		https://www.youtube.com/watch?v=VK-rnA3-41c	
Wk 8, 10/02/17	Ch 9, Intro to t Statistic Independent Samples	 Read the chapter View the ch ppt Chapter tutorials Practice chapter problems Video Independent Samples t-Test https://www.youtube.com/watch?v=jyoO4i 8yUag	Chapter homework Chapter discussions to Bb
Wk 9, 10/09/17	Ch 10, The <i>t</i> -test for two independent samples	 Read the chapter View the ch ppt Chapter tutorials Practice chapter problems Video Two sample t-test example https://www.youtube.com/watch?v=vV0Rt k12jxU 	 Chapter homework Chapter discussions to Bb
Wk 10, 10/16/17	Fall Break	(October 16-17)	
Wk 11, 10/23/17	Ch 11, The <i>t</i> -test for two related samples	 Read the chapter View the ch ppt Chapter tutorials Practice chapter problems Access to the NCCU Eagle Apps Orientation to SPSS 	 Chapter homework Chapter discussions to Bb Orientation to Excell Exam 1
Wk 12, 10/30/17	Ch 12, ANOVA Ch 13, Repeated Measures	 Read the chapter View the ch ppt Chapter tutorials Practice chapter problems ls Video Introduction to ANOVA https://www.youtube.com/watch?v=qV-WoquC4dA	 Chapter homework discussions to Bb Orientation to SPSS WebEx Session 11/01/17 at 7:30pm-8:00pm

Wk 13, 11/06/17	Ch 14, Two Factor ANOVA	Read the chapterView the ch pptChapter tutorials	Chapter homework discussions to Bb
Wk 14, 11/13/17	Ch 15, Correlation	 Read the chapter View the ch ppt Chapter tutorials Practice chapter problems Video Statistics 101: Understanding Correlation https://www.youtube.com/watch?v=4EXN edimDMs	Chapter homework Chapter discussions to Bb
Wk 15, 11/20/17	Ch 16, Regression Ch 17, Chi- Square	 Read the chapter View the ch ppt Chapter tutorials Practice chapter problems Video The Easiest Introduction to Regression Analysis! https://www.youtube.com/watch?v=k_OB1 tWX9PM Video Statistics 101: Introduction to the Chisquare Test https://www.youtube.com/watch?v=SvKv3 75sacA 	 Chapter homework Chapter discussions to Bb Exam 2
Wk 16 11/27/17		Review chapters for exam Review/edit research proposal	 Chapter homework Chapter discussions to Bb Exam 2 Research Proposal due 11/27/2017 at 12:00pm (noon) Bonus Assignment Due 11/27/2017 at 12:00pm (noon)