

NORTH CAROLINA CENTRAL UNIVERSITY

School of Education

COURSE SYLLABUS

EDGR 5910 0L1

Introduction to Statistical Methods in Education

Spring 2016

3 Credit Hours

Instructor:	Dr. Wynetta Lee, Professor
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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 WebEx or phone meeting then email me to set up an appointment. This will help me to coordinate student visits and/or meetings. Email is the best way to contact me. When contacting me via email your email subject line should be relevant to your email content. Use "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." In addition to your inquiry, you should include your email address, a phone number and several times you are available. If you contact me by phone, leave a CLEAR message regarding the nature of your call. Include your email address, a phone number and several times you are available and 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 right to amend the syllabus is reserved. The course is delivered through NCCU's Blackboard (Bb) system and students are required to log on to the system in order to fulfill various assignments during the semester (e.g., submit assignments, obtain handouts). **NOTE: assignments WILL NOT be accepted via email.** See instructions on Bb access at the end of the syllabus. If you have questions about your Bb account, call the IT department at 919-530-7676.

Course Materials

Required Text Book Bundle

Gravetter, F.J. & Wallnau, L.G. (2013). *Statistics for Behavioral Sciences* (9th edition) by Wadsworth, Cengage Brain (the Text + Aplia Access Card, ISBN 1133395716).

Students **MUST** buy either the e-book + *Aplia* bundle **OR** the physical textbook + *Aplia* bundle. The physical textbook with *Aplia* is available in the university bookstore. ***Students must register for an account with Aplia within 24 hours of the start of the course.*** Registration instructions are available in the Course Information tab in Bb.

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.

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. Design research studies using the t, r, and chi-square statistics.
5. Analyze data using the computer software and make data based decisions.

Assignments

Chapter Quizzes (70%) – Students are scheduled to take quizzes weekly, one per chapter. We will use *Aplia*, an online teaching/learning tool, to facilitate digital submission and objective grading. Each chapter quiz will remain open for the week (Monday–Sunday). Students will be able to complete the quiz at multiple sittings and make up to three attempts at each item in the quiz. 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 a quiz that is not attempted at all, or receive partial credit for the quizzes that they began but did not complete. Students will be given a “free pass” to be used either for a missed quiz or a quiz that represents the worst student performance. The instructor will drop the lowest quiz score at the end of the semester and average the remaining quizzes. Students are encouraged to use the free pass for emergencies only. It works best when students submit all quizzes and have the instructor drop the lowest quiz score at the end of the semester. *Only under extenuating circumstances, the instructor will re-open the quizzes at another time after their due dates. For these emergency situations, documentation is required.*

Data Analysis Assignments (10%) – Statistics is used to analyze and interpret data. Building onto the theoretical knowledge learned in the course, students will learn to use and analyze data using computer software. To complete this assignment, students will first learn to access to the software through the NCCU’s Virtual Computer Lab (VCL). Further instructions will be posted to Bb toward the mid-term.

Research Design Term Paper (10%) – At the end of the semester, you will design research on a specific topic using five (5) different statistical procedures: (1) t stats for a single sample, (2) t stats for independent samples, (3) t stats for related samples, (4) Pearson r , and (5) chi-square. For each statistic, you will state the research problem, the null and alternative hypotheses, and the critical region. This will be your capstone assignment and will demonstrate your understanding of statistics and your ability to use it to design research studies. The paper is due to Blackboard at the end of the semester.

Attendance and Participation, (10%) – 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. Course attendance is required and measured through students’ timely reply to the discussion questions. Note that no chapter discussion is required for the chapter on chi-square. 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 messages that are personally and professionally relevant.

Bonus Assignment, (5%) – This bonus assignment is for those students who wish to collect 5 extra points at the end of the semester. It is NOT a requirement. It is simply an option for those students who wish to obtain a better grade at the very end of the semester. More details will be posted in Bb after mid-term.

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

A	89-100%
B	75-88%
C	74-60%
F	59% and below
NW	Non-attendance for two weeks or more until the last day to withdraw from a class
NF	Student stopped attending class without officially withdrawing from the class beyond the last day to withdraw.

**Attendance in this online class requires students to post assignments on their due dates and to participate in weekly discussions on Bb.*

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 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 have had to 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 study a total of nineteen chapters during the entire semester. This means we will complete about one chapter per week; some weeks we will cover two chapters. Each chapter quiz will be kept open for an entire week. The deadline for each quiz will be posted in *Aplia*. A minute after scheduled course assignments, we will begin a new week and a new chapter, and you will not be able to go back and complete any of the previous quizzes.

It is also crucial that you do not miss any more than three 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 and so that the grade that will be dropped will truly be for your worst score—not a missing exam.

Rule 3 – Use the Technology for Online Course Delivery: This course is entirely delivered online in an asynchronous format. We will be using *Bb* and *Aplia* to ease the online delivery and to communicate with one another. It is your responsibility to have an 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 *Aplia* for submitting most of the required coursework. Additionally, *Aplia* will store tutorials and supplemental materials and I encourage you to take advantage of this resource. In addition, we will use *Aplia* gradebook to record and track your progress in the course. This information is available to you in your *Aplia* grade book since all online assessments are graded at the time of their deadlines. I will use these very same scores stored in the *Aplia* grade book to calculate your final grade.

Finally, we will use the Excel and *SPSS* software for data analysis. I have loaded these assignments to *Aplia*. However, 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’s Virtual Computer Lab (VCL) and use it in the data analysis assignments.

Rule 5 – Use the following Bb protocols: Go to the *Bb/Course Info* tab to retrieve the course syllabus and *Aplia* Student Registration. Follow the *Aplia* Student Registration instructions to register *Aplia* within the first 24 hours that the course begins.

I will use the *Bb* to introduce you to the statistical concepts that you are expected to learn in each week. The *Bb/Course Documents* tab will house the essential and supporting course materials. I will post each chapter content week-by-week in a single folder, which will contain a PowerPoint slide show for the chapter and a chapter overview. The *Bb/Discussion Board* is where students 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, is 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.

Student Support Services

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. Please contact the SDS Staff at (919) 530-6325 or email sds@nccu.edu. If you are NEW to SDS, please contact the office for an appointment. If you had accommodations previously, you can resubmit a request by visiting our website at www.nccu.edu/sds and clicking on the **Accommodate Link**. Students are expected to

update their accommodations each semester, preferably during the first 2 weeks of each semester.

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.

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://web.nccu.edu/publicrelations/EmergencyPlan.pdf> 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.

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.

Course Schedule

Week	Topics	Course Activities	Deliverables due by 11:30pm Sunday
Wk 1, 08/15/16	Personal Introductions Pre-course tutorials and practice problems Ch 1, Intro to Statistics Ch 2, Frequency Distributions	<ul style="list-style-type: none"> • Greetings and personal introductions • Introductions to syllabus, Bb, and Aplaia • Read the chapters • Read the ch summary • Practice supp materials <p>Video:</p> <p>Introduction to Statistics https://www.youtube.com/watch?v=oZbH-JxZ3Y8</p> <p>Why You Need to Study Statistics https://www.youtube.com/watch?v=wV0Ks7aS7YI</p> <p>Introduction to Frequency Distribution https://www.youtube.com/watch?v=ukgdDAcIdUE</p>	<ul style="list-style-type: none"> • Personal introductions and greetings • Aplaia registration, tutorials, practice problems • Chapter quizzes to Aplaia • Chapter problems to Aplaia • Chapter discussions to Bb
Wk 2, 08/22/16	Ch 3 Central Tendency	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary • Practice supp materials <p>Video</p> <p>Mean, Median, & Mode - Measures of Central Tendency https://www.youtube.com/watch?v=_dE1zDbFAbQ</p> <p>Average or Central Tendency: Arithmetic Mean, Median, and Mode https://www.youtube.com/watch?v=GrynkZB3E7M</p> <p>Best Measure of Central Tendency https://www.youtube.com/watch?v=XIURkIXeC8E</p>	<ul style="list-style-type: none"> • Chapter quiz to Aplaia • Chapter problems to Aplaia • Chapter discussions to Bb
Wk 3, 08/29/16	Ch 4, Variability	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary • Practice supp materials <p>Video</p>	<ul style="list-style-type: none"> • Chapter quiz to Aplaia • Chapter problems to Aplaia

		<p>Variability (Statistics)</p> <p>https://www.youtube.com/watch?v=ipYaHqutMds</p> <p>Measures of Variability (Variance, Standard Deviation, Range, Mean Absolute Deviation)</p> <p>https://www.youtube.com/watch?v=Cx2tGUze60s</p> <p>Intro to Measures of Variation: Range, Standard Deviation, Variance</p> <p>https://www.youtube.com/watch?v=rStwdZUshY</p>	<ul style="list-style-type: none"> • Chapter discussions to Bb
Wk 4, 09/05/16	Ch 5, z-scores	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary • Practice supp materials <p>Video</p> <p>Z scores - Statistics</p> <p>https://www.youtube.com/watch?v=NY2zWGBXBhU</p>	<ul style="list-style-type: none"> • Chapter quiz to Aplia • Chapter problems to Aplia • Chapter discussions to Bb
Wk 5, 09/12/16	Ch 6, Probability	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary • Practice supp materials <p>Video</p> <p>Probability - Part One : Simple Probability</p> <p>https://www.youtube.com/watch?v=AY3O_qSnbE</p>	<ul style="list-style-type: none"> • Chapter quiz to Aplia • Chapter problems to Aplia • Chapter discussions to Bb
Wk 6, 09/12/16	Ch 7, Distribution of Sampling Means	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary • Practice supp materials 	<ul style="list-style-type: none"> • Chapter quiz to Aplia • Chapter problems to Aplia • Ch discussions to Bb
Wk 7, 09/26/16	Ch 8, Introduction to Hypothesis Testing	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary • Practice supp materials <p>Video</p> <p>Intro to Hypothesis Testing in Statistics</p> <p>https://www.youtube.com/watch?v=VK-</p>	<ul style="list-style-type: none"> • Chapter quiz to Aplia • Chapter problems to Aplia • Chapter discussions

		rnA3-41c	to Bb
Wk 8, 10/03/16	Ch 9, Intro to <i>t</i> Statistic Independent Samples	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary • Practice supp materials <p>Video Independent Samples t-Test https://www.youtube.com/watch?v=jyoO4i8yUag</p>	<ul style="list-style-type: none"> • Chapter quiz to Aplia • Chapter problems to Aplia • Chapter discussions to Bb
Wk 9, 10/10/16	Ch 10, The <i>t</i> -test for two independent samples	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary • Practice supp materials <p>Video Two sample t-test example https://www.youtube.com/watch?v=vV0RtkI2jxU</p>	<ul style="list-style-type: none"> • Chapter quiz to Aplia • Chapter problems to Aplia • Chapter discussions to Bb
Wk 10, 10/17/16	<ul style="list-style-type: none"> • Fall Break 		
Wk 11, 10/24/16	Ch 11, The <i>t</i> -test for two related samples	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary • Access to the NCCU Virtual Computer lab • Orientation to SPSS 	<ul style="list-style-type: none"> • Chapter quiz to Aplia • Chapter discussions to Bb • Orientation to SPSS
Wk 12, 10/31/16	Ch 12, ANOVA Ch 13, Repeated Measures	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary <p>Video Introduction to ANOVA https://www.youtube.com/watch?v=qV-WoquC4dA</p>	<ul style="list-style-type: none"> • Chapter quiz to Aplia • Chapter discussions to Bb • SPSS Assignment 1

Wk 13, 11/7/16	Ch 14, Two Factor ANOVA	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary 	<ul style="list-style-type: none"> • Chapter quiz to Apla • Chapter discussions to Bb • SPSS Assignment 2
Wk 14, 11/14/16	Ch 15, Correlation	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary • Practice chapter problems <p>Video Statistics 101: Understanding Correlation https://www.youtube.com/watch?v=4EXNedimDMs</p>	<ul style="list-style-type: none"> • Chapter quiz to Apla • Chapter discussions to Bb
Wk 15, 11/21/16	Ch 16, Regression Ch 17, Chi- Square	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary • Practice chapter problems <p>Video The Easiest Introduction to Regression Analysis! https://www.youtube.com/watch?v=k_OB1tWX9PM</p> <p>Video Statistics 101: Introduction to the Chi-square Test https://www.youtube.com/watch?v=SvKv375sacA</p>	<ul style="list-style-type: none"> • Chapter quiz to Apla • Chapter discussions to Bb
Wk 16 11/28/16	Ch 18 Binomial Test Ch 19 Choosing the Right Test Last day of class 11/28/16	<ul style="list-style-type: none"> • Read the chapter • View the ch ppt • Read the ch summary • Practice chapter problems 	<ul style="list-style-type: none"> • Chapter quiz to Apla • Chapter discussions to Bb

Wk 17 May 2- May 8			
<ul style="list-style-type: none"> • Complete Assignments • Bonus Assignment, due at 11:30pm on May 01 • Students post final Paper to Bb by noon, November 30 • Instructor posts all grades to <i>Aplia</i> Grade book by noon, May 1 • Instructor posts final grades to the Banner by noon, May 5 			