**NORTH CAROLINA CENTRAL UNIVERSITY
School of Education
Department of Educational Leadership**

*“Preparing Educators for Diverse Cultural Contexts in the 21st Century”
“Communicating to Succeed”*

**COURSE SYLLABUS**

**EDGR 5910 0L1
CRN# 41196**

**Introduction to Statistical Methods in Education
Fall 2013**

**Dr. Deniz Palak**

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| **Class Meeting and Time:** | **Online** |
| **Credit:** | **3 credit hours** |
| **Instructor’s Office:** | **SOE Room 2094** |
| **Instructor’s Phone:** | **919 530 7401** |
| **Instructor’s Email:** | **dpalak@nccu.edu** |
| **Office Hours:** | **Physical Office hours: Tuesdays & Thursdays 1:30-4:30 pm and Fridays 12:00 noon – 1:00 pm** **Virtual: Tuesdays & Thursdays 5:00-7:00 pm** |

**CATALOG DESCRIPTION**Candidates will learn to interpret tests and develop educational measurements using statistics based on the normal probability curve, correlations and measures of variance. Candidates will also learn to evaluate educational research by analyzing data, chi-square, t-tests, and analysis of variance. This course prepares candidates to use statistical tools in conducting action research.

**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 one of the textbook bundles to follow this course: The e-book + *Aplia* bundle or the physical textbook + *Aplia* bundle. The physical textbook bundled with *Aplia* is available in the university bookstore (see the ISBN number above). The e-book bundle is available through the publisher, CengageBrain online. Students must register for an account with *Aplia* within 24 hours the course begins. The registration instructions are housed on Blackboard under the Course Information tab.

 **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, (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, 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 SPSS software and make data based decisions.

**ASSIGNMENTS
Chapter Quizzes (12 chapter quizzes, 40%)** – Students are scheduled to take thirteen quizzes: one per each chapter. We will use *Aplia*, an online teaching/learning tool, to facilitate digital submission and objective grading. Each chapter quiz will remain open for 24 hours. Within the 24-hour period of time, 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 twelve quizzes. Students are encouraged to use the free pass for emergencies only. It works best when students submit all thirteen quizzes and have the instructor drop the lowest quiz score among the thirteen 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.*

**Chapter Problems (6 sets of chapter problems, 20%)** – Students are scheduled to solve eight sets of end of the chapter problems. These problems will come from the first seven chapters that represent the descriptive and foundations of inferential statistics. Similar to the chapter quizzes, end of chapter problems will also be housed in *Aplia* to ease the process of digital submission and objective grading. Students will receive partial or no credit depending on the number of problems they have completed at the point of the deadline. No late assignments are accepted. Another free pass will be given for the chapter problems. The instructor will drop the lowest score obtained from one seven sets and count the remaining 6 best scores toward the final grade.

**Data Analysis Assignments (20%)** – Statistics is used to analyze and interpret data. Building on the theoretical knowledge learned in the course, students will engage in data analysis activities twice during the semester. To complete this assignment you will use the data generated from the pre/post course survey to answer specific research questions using the SPSS software. The instructor will post a video to help students to retrieve and use the software. Students will earn 10 points for each assignment when completed the entire data analysis assignments on time using the SPSS data analysis software.

**Attendance and Participation, (10%)** – The instructor will post a set of discussion questions to the Bb Discussion Board for each week. 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 instructor’s weekly discussion questions. The instructor will mark the due date on each discussion thread. Students will collect a total of 10 points if they reply to the entire content of the 12 of 13 chapter discussion questions on time. For any additional missed postings, students will lose a point. Late replies will count as no submission. It is advised that students take these discussion questions as an opportunity to “make sense” of statistics and post messages that are relevant to their personal and professional lives.

**Research Design Term Paper (10%)** – At the end of the semester, you will be asked to design research in five different ways using (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 of the design type, 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 ability to use it to design research studies. The paper is due to Blackboard at the end of the semester. Students are advised to check their final paper against the checklist on Bb/Course Docs.

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

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| --- | --- |
| A | 89-100 |
| B | 75-88 |
| C | 74-60 |
| F | 59 and below |
| \*I | Work that has not been fully completed |
| NW | Non-attendance\*\* for a one week class period |
| NF | Student stopped attending class without officially dropping the class |

*\*An “I” grade is granted only in exceptional cases. Work must be completed within a year or the course will have to be repeated. \*\*Attendance at an online class means posting assignments on their due dates and participating in weekly discussions on Bb.*

**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 in Suite G20 in the Student Services Building (preferably during the first 2 weeks of the semester). Please contact Kesha Lee, Director at (919)530-6325 or email studentdisabilityservices@nccu.edu. If you are already registered in the office, you will need to return to the office each semester to review your information and receive updated accommodations.

**Ground Rules for Attending and Participating in Course Activities***Rule 1 – Make the Time Commitment:* I have created an online course for everyone (even for the ones with the most math anxiety) to succeed as long you are willing to take the time and effort to complete the course activities as required. On the other side of the coin, if you are unable to make the minimum time commitment – *a minimum of* *6 hours per week* – and adhere to the course schedule for completing each assignment in a timely manner, this online course may not be appropriate for you.

A six-hour per week commitment is a realistic expectation. 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. Therefore, the time commitment required for this online course is based on the minimum number of hours of contact and study time required for a graduate level course delivered face-to-face.

*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 thirteen chapters during the entire semester. This means we will complete about one chapter per week. Each chapter quiz will be kept open for 24 hours. The end-of-the chapter problems will be kept open for an entire week. I will mark the deadline for each chapter quiz and end-of-the chapter problems on *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 chapter problems or 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 meaningless to you. You will learn statistics and obtain a good grade only when you follow the course activities as they are scheduled. I am unable to turn the quizzes and the end-of-the chapter problems on and off after their deadlines regardless of your personal or professional schedules. To avoid conflict in this issue, I have created the free pass system with no penalty. You have one free pass for each of the three sets of graded assignments: one free pass for a quiz and one for a problem set, and one for a Bb posting. Use your free passes when you have to for those unexpected events. My best advise to you not to miss any assignment and keep the free passes for your worst performances

*Rule 3 – Use the Technology for Online Course Delivery*: This course is entirely delivered online. We will be using *Elluminate*, *Bb*, *SPSS*, and *Aplia* to ease the online delivery. It is your responsibility to have an instant and continuous access to a working computer with Internet connection throughout the course. If you anticipate any computer problems, I encourage you to consider taking this course face-to-face.

We will have two live course meetings mediated by *Elluminate*. These meetings will take place in the beginning and in the middle of the semester. All students are required to attend these online live meetings and be ready to present their questions and concerns about the course. Details about live course meetings will be posted to Bb/CourseDocs. The instructor will hold the virtual office hours on *Elluminate*. Students are encouraged to log back on to *Elluminate* during the virtual office hours if they need help with the course activities throughout the semester.

We will use Bb to store/retrieve the course documents, attendance, communication, and collaboration. We will use *Aplia* to solve and submit the end-of-the chapter quizzes and problems. Additionally, *Aplia* will store tutorials and supplemental materials for each of the thirteen chapters. I encourage you to take advantage of these supplementary materials but it is entirely up to you to use them since the grade that you will earn from these practice and or supplementary materials will not be counted toward your final grade in this course.

Your grades for each chapter assignments will be stored in your *Aplia* grade book. Please do not contact the instructor to inquire about your grade in the assigned course requirements. This information is available to you on 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 *SPSS* software for data analysis. You are not required to purchase this software to conduct the data analysis. We will retrieve it using the NCCU’s Virtual Computer lab from our personal computers. I will post a short video as to how to retrieve and use the *SPSS* software.

Use the following course protocols to retrieve course materials and post your answers to the weekly discussions.

1. Go to *Bb/Course Info* tab to retrieve and read the course syllabus, course announcement. Skim the course materials housed in the Bb Course Documents for Chapter 1. Go to the discussion board and introduce yourself and greet at least two others.  If you have any questions and concerns, post them under the thread of “General Discussion” under Pre-Course Greetings and Discussions. I will address these issues in our first live meeting.
2. Also find the *Aplia Student Registration Form* on the *Bb/Course Info* tab. Go to the site as directed and register with *Aplia* within the 24 hours course begins. Everyone must be on *Aplia* by August 20. Orient yourself to *Aplia* and take the first couple of *Math and Graphing* tutorials. Your scores that you obtain from the tutorials and the supplemental materials are not loaded to my grade book. They are simply for you to practice but are not counted toward your final grade.
3. I will also use the *Bb/Course Info* tab to post the links for our two live *Elluminate* sessions. It is expected that students create an account with *Ellumuniate* and set up their computer for receiving and sending audio and video.
4. *Bb/Announcement* tab will bring you the statistical concepts that you are expected to learn in each week. In addition, I will use this space to post aggregated results of the whole class performance on the scheduled assignments weekly. You are not to post anything here.
5. Go to the *Bb/Instructor’s Info*tab to find my business card. Do not hesitate contact me by email at any time during the course if you need individual attention. I will reply to each of your email correspondences within 24 hours.
6. Go to the *Bb/Course Documents* tab to locate the essential and supportingcourse materials. I will post each chapter content week by week in a single folder, which will contain a PowerPoint slide show for the chapter, step-by-step instructions to help you calculate the chapter statistic, and a chapter summary. Additionally, I will post the pre/post survey to the week 1 folder under Course Documents. Each student must complete the survey within the first three days of the semester. We will use this data for our data analysis assignments.
7. Go to the *Bb/Discussion Board* to 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 respond to twelve of the thirteen chapter discussion questions. In addition to the weekly chapter discussion questions, we will have another thread named “General Discussions.” Use this space to engage in conversation with your instructor and your peers and post your concerns and questions.

**Week by Week Course Schedule**

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| **Week** | **Topics** | **Course Activities** | **Deliverables due by 11:45pm Tuesday** |
| Wk 1 Aug19-20 | Personal IntroductionsCourse Introductions | * Greetings and personal introductions
* Introductions to syllabus, Bb, and Aplia
 | * Personal introductions and greetings
* Aplia registrations & tutorials
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| Wk 1, continuedAug21-27 | Ch 1, Intro to Statistics | * ***Live Meeting (August 22)***
* Read the chapter
* View the ch ppt
* Read the ch summary
* Practice supp materials
 | * Chapter quiz to Aplia
* Chapter problems to Aplia
* Ch discussions to Bb
* Pre Course survey
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| Wk 2Aug 28 –Sept 03 | Ch 2,Frequency Distributions | * Read the chapter
* View the ch ppt
* Read the ch summary
* Practice supp materials
 | * Chapter quiz to Aplia
* Chapter problems to Aplia
* Ch discussions to Bb
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| Wk 3Sept 04 –Sept 10 | Ch 3Central Tendency | * Read the chapter
* View the ch ppt
* Read the ch summary
* Practice supp materials
 | * Chapter quiz to Aplia
* Chapter problems to Aplia
* Ch discussions to Bb
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| Wk 4Sept 11 –Sept 17 | Ch 4,Variability  | * Read the chapter
* View the ch ppt
* Read the ch summary
* Practice supp materials
 | * Chapter quiz to Aplia
* Chapter problems to Aplia
* Ch discussions to Bb
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| Wk 5,Sept 18 –Sept 24 | Ch 5, z-scores | * Read the chapter
* View the ch ppt
* Read the ch summary
* Practice supp materials
 | * Chapter quiz to Aplia
* Chapter problems to Aplia
* Ch discussions to Bb
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| Wk 6,Sept 25 –Oct 01 | Ch 6,Probability | * Read the chapter
* View the ch ppt
* Read the ch summary
* Practice supp materials
 | * Chapter quiz to Aplia
* Chapter problems to Aplia
* Ch discussions to Bb
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| Wk 7,Oct 02 – Oct 08 | Ch 7, Distribution of Sampling Means | * Read the chapter
* View the ch ppt
* Read the ch summary
* Practice supp materials
 | * Chapter quiz to Aplia
* Chapter problems to Aplia
* Ch discussions to Bb
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| Wk 8,Oct 09 –Oct 15 | Mid-Term RevisionsSPSS Assign | * Revise Ch 1 -7
* Analyze and Interpret data using SPSS
* ***Live Meeting (Oct 3)***
 | * Data analysis and data displays
* Retrieving and orientation to the SPSS software
* SPSS Assignment 1
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| Wk 9\*,Oct 16 – Oct 22 | Ch 8,Introduction to Hypothesis Testing | * Read the chapter
* View the ch ppt
* Read the ch summary
* Practice supp materials
* Watch the video
 | * Chapter quiz to Aplia
* Chapter problems to Aplia
* Ch discussions to Bb
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| Wk 10,Oct 23 –Oct 29 | Ch 9,Introduction to *t* Statistic | * Read the chapter
* View the ch ppt
* Read the ch summary
* Practice supp materials
 | * Chapter quiz to Aplia
* Design a study using the single sample t stats
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| Wk 11,Oct 30 –Nov 05 | Ch 10,The *t*-test for two indepenSamples | * Read the chapter
* View the ch ppt
* Read the ch summary
* Practice supp materials
 | * Chapter quiz to Aplia
* Design a study using the two independent t stats
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| Wk 12, Nov 06 –Nov 12 | Ch 11,The *t*-test for two related samples | * Read the chapter
* View the ch ppt
* Read the ch summary
* Practice supp materials
 | * Chapter quiz to Aplia
* Design a study using the two related t stats
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| Wk 13,Nov 13 –Nov 19 | Ch 15,Correlation | * Read the chapter
* View the ch ppt
* Read the ch summary
* Practice supp materials
 | * Chapter quiz to Aplia
* Design a correlational Study
* SPSS Assignment 2
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| Wk 14,Nov 20 –Nov 26 | Ch 17, Chi-Square | * Read the chapter
* View the ch ppt
* Read the ch summary

Practice supp materials | * Chapter quiz to Aplia
* Design a study using the chi-square stats
* Post course survey
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| Wk 15,Dec 02 – Dec 06 | Final Research Design Paper |