

**Appalachian State University**  
**Department of Educational Leadership – Spring 2016**  
**EDL 7150 – INFERENCE STATISTICS**

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**Instructor:** Dr. Tracy Goodson-Espy

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**Class Meeting Times:** Thursday 3:00-5:30 PM

**Classroom:** RCOE 414-D

**3 Semester Hours Credit**

**Office Hours:** MW 3:30-5:00 PM; R 5:30-6:30 PM; and other times by appointment

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**Course Description:**

EDL 7150 deals with the application of parametric and non-parametric techniques in hypothesis testing and other inferential situations. The course includes some basic hypothesis testing theory, as well as theory involving various well known types of distributions of data. Students will have the opportunity to learn techniques for determining probability estimates in hypothesis testing and will also be required to use the Statistical Package for the Social Sciences (SPSS) in hypothesis testing tasks. Prerequisites: a background in statistics, EDL 7110 or permission of the instructor.

**Goals of the Doctoral Program:**

The Doctor of Education degree (Ed.D.) in Educational Leadership is designed for potential and practicing educational leaders who wish to develop and refine their leadership capabilities in educational organizations. The goals of the program include:

- Introducing students to the methodologies of critical analysis of educational theory and practices;
- Engaging students in disciplined inquiry in the field of education;
- Preparing students for making a contribution to educational theory and practice; and,
- Preparing students to become leaders in the diverse world in which educational institutions exist.

**Course Goals:**

1. Enable students to understand quantitative research design methods including the differences between experimental and non-experimental studies and when each should be employed.
2. Enable students to understand and apply descriptive and inferential statistics.
3. Assist students in developing a thorough understanding of concepts such as independent and dependent variables, randomization, bias, sampling distributions, hypothesis testing, estimation, parametric and non-parametric models, comparing two means (z-test, t-tests), analyzing categorical data, comparing several means (ANOVA), the general linear model, and other topics of inferential statistics (ANCOVA, MANOVA, repeated-measures designs, etc.).
4. Assist students in developing the competence to determine what type of statistical test is appropriate in a given situation.
5. Enhance students' ability to intelligently read and interpret educational research literature, particularly quantitative research literature including both experimental and non-experimental studies.

### Required Text & Materials:

1. **Fundamentals of Statistical Reasoning, Fourth Edition**, by Theodore Coladarci & Casey Cobb, John Wiley & Sons (ISBN-13: 978-1-118-42521-3). (As a new text is rather pricey, I advise purchasing a used copy or renting a copy which can be achieved more economically. Be sure to get the 4<sup>th</sup> edition to ensure the problem sets will be correct.)
2. **Using SPSS: An Interactive Hands-On Approach, Second Edition**, by James B. Cunningham & James O. Aldrich, Sage Publishers (ISBN-13: 978-1483383576).
3. **Other Readings** will be assigned and will be available via AsU Learn.
4. **SPSS**. SPSS can be accessed for free on-campus. To work on SPSS from home, you need to obtain a student-version of SPSS for \$35.00 from ASU IT Support Services in Anne Belk Hall. As we will work extensively with SPSS, I strongly urge you to get a copy.  
(<http://support.appstate.edu/services/technology-support-center/equipmentsoftware-rentals-software-sales>).

### Class Web Supplements:

Class materials will be available via AsU Learn: <http://asulearn.appstate.edu/>

### Course Requirements

*(Adjustments may be announced in class or on AsU Learn to accommodate the needs of students.)*

1. **Tests:** There will be two take-home tests, a mid-term and a final exam.
2. **Weekly Tasks:** There will be weekly homework tasks that will be submitted on AsU Learn. These may include:
  - Homework problems
  - SPSS exercises
  - Reading and reading responses
  - Research critiques
  - Proposals concerning how to design a study, collect, and analyze data for a given research situation.

Late assignments will receive a point deduction.

### Course Evaluation:

Evaluation of your performance in the course will be made as follows:

Test 1	20%
Test 2	20%
Weekly Tasks	60%
<b>TOTAL</b>	<b>100%</b>

Grading Scale	What the grades mean...
A = 94 -100	A Exceptional work which goes beyond the expectations of the course
A- = 90 – 93	A- Superior work, very high quality
B+ = 88 - 89	B+ Work of high quality, much better than average
B = 83 - 87	B Very good work, meets all expectations
B- = 80 – 82	B- Good work
C+ = 78 – 79	

C = 76 – 77 C- = 74 - 75 D = 69-73 F = Below 69	C+ Satisfactory work that indicates a basic understanding of the course material C Satisfactory work, passable C- Passing work, but below reasonable expectations D Barely passing, less than satisfactory F Failure
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**Course Policies:**

**Attendance Policy:** Students are discouraged from being absent as a great deal of material is covered in a once-a-week class! Attendance will be taken every class meeting (face-to-face or online) through a student sign-in. Prompt and regular attendance is expected. Learning is a social process. Thus, students are expected to attend every class and be an active participant in the classroom practices. In the event of an absence, students are to contact the instructor in advance and turn in any work that is due on AsU Learn. Absent students are responsible for any work announced in class and for all announced changes, additions, and deletions to the syllabus. Absence from class is not a valid excuse for failing to meet deadlines or fulfill course requirements. Online students are expected to review lecture materials and complete assignments on-time (weekly) to continue in the course.

All that said, students can miss one class session without penalty—life happens. This day should be reserved for illness or family emergencies and should not be viewed as a ‘free day’. As we will use part of our class time for SPSS instruction, it is critical that one does not get left behind. Each subsequent unexcused absence may result in a final grade lowered by a letter grade (e.g., A becomes B, B becomes a C, etc.). Extenuating circumstances will be handled individually. Two tardies/early departures constitute one absence. It is the student’s responsibility to ask the professor to change an absence into a tardy immediately after the class in which the tardy occurred. (No changes will be made on a later day.)

Absences due to religious observance will be respected. The ASU religious observance policy can be accessed at <http://academicaffairs.appstate.edu/resources/syllabi>. Students wishing to be absent from class due to religious observance must notify the instructor in writing in advance as specified by university policy.

**Electronic Device Policy:** Full participation in all course activities is required. Please silence all phones and pagers and put them away during class. It is also not acceptable to be texting during class. These devices may only be used during class breaks. If you text, or have your phone out during class, your grade will be lowered. Laptops may be used to take notes and will be needed when we use SPSS together in class. If you are observed using your laptop for other non-scholarly things (e.g., Facebook, etc.), then your grade may be lowered. Failure to cooperate with regard to electronic devices may result in removal from the course.

**Academic Integrity Code:** As a community of learners at Appalachian State University, we must create an atmosphere of honesty, fairness, and responsibility, without which we cannot earn the trust and respect of each other. Furthermore, we recognize that academic dishonesty detracts from the value of an Appalachian degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form and will oppose any instance of academic dishonesty. This course will follow the provisions of the Academic Integrity Code, which can be found on the Office of Student Conduct Web Site: <http://academicintegrity.appstate.edu/>.

**Americans with Disabilities Act:** Appalachian State University is committed to making reasonable accommodations for individuals with documented qualifying disabilities in accordance with the

Americans with Disabilities Act of 1990, and Section 504 of the Rehabilitation Act of 1973. If you have a disability and may need reasonable accommodations in order to have equal access to the University's courses, programs and activities, please contact the Office of Disability Services (828.262.3056 or [www.ods.appstate.edu](http://www.ods.appstate.edu)). Once registration is complete, individuals will meet with ODS staff to discuss eligibility and appropriate accommodations. Any student whose disabilities fall within ADA should inform the instructor at the beginning of the term of any special needs or equipment necessary to accomplish the requirements of the course.

**Title IX:** Title IX of the Education Amendments of 1972, as amended, prohibits discrimination on the basis of sex in any federally funded education program or activity. Sexual harassment is a form of sex discrimination prohibited under Title IX. Sexual harassment may be verbal, non-verbal or physical in nature, such as persistent unwanted sexual advances or requests for sexual favors. Sexual harassment also includes acts of sexual violence.

Appalachian State University is committed to providing equal opportunity in education and employment to all applicants, students, and employees. The university does not discriminate in access to its educational programs and activities, or with respect to hiring or the terms and conditions of employment, on the basis of race, color, national origin, religion, sex, gender identity and expression, political affiliation, age, disability, veteran status, genetic information or sexual orientation. The university actively promotes diversity among students and employees.

Any student who believes they are experiencing discrimination should report this to the instructor of the course ([goodsonespyt@appstate.edu](mailto:goodsonespyt@appstate.edu), 828-262-7620) and Dr. Bindu Jayne, Associate Vice Chancellor for Equity, Diversity and Compliance, Chief Diversity Officer ([jaynebk@appstate.edu](mailto:jaynebk@appstate.edu), 828-262-2144).

**EDL 7150 – INFERENCE STATISTICS (Tentative Schedule for Spring 2016)**  
**(Weekly tasks are posted on AsU Learn)**

Date	Topics
Session 1: January 14	Review Syllabus Introduction to SPSS Introduction to Experimental Design Hypothesis Testing (Coladarci, Ch. 11)
Session 2: January 21	Hypothesis Testing (Coladarci, Ch. 11) Estimation (Coladarci, Ch. 12)
Session 3: January 28 (AMTE)	One-Sample t-Test and the Non-parametric Binomial test of Equality (Coladarci, Ch. 13), (Aldrich & Cunningham, Ch. 12)
Session 4: February 4	Comparing the Means of Two Populations: Independent Samples t-Test and the Non-parametric Mann-Whitney <i>U</i> Test (Coladarci, Ch. 14), (Aldrich & Cunningham, Ch. 13)
Session 5: February 11 (NCARE)	Examination of Experimental Literature
Session 6: February 18	Comparing the Means of Dependent Samples ( <i>Paired Samples t-Test</i> ) and the Non-parametric Wilcoxon Test (Coladarci, Ch. 15)
Session 7: February 25	Comparing the Means of Three or More Independent Samples: One-Way Analysis of Variance (ANOVA) and the Non-parametric Kruskal-Wallis Test (Coladarci, Ch. 16), (Aldrich & Cunningham, Ch. 15)
Session 8: March 3	Two-Way (Factorial) ANOVA (Aldrich & Cunningham, Ch. 16)
March 7-11	Spring Break
Session 9: March 17	One-Way ANOVA Repeated Measures Test and the Non-parametric Friedman Test (Aldrich & Cunningham, Ch. 17) Mid-term Due
Session 10: March 24	Analysis of Covariance (Aldrich & Cunningham, Ch. 18)
Session 11: March 31	Logistic Regression (Aldrich & Cunningham, Ch. 22)
Session 12: April 7	Introductory Factor Analysis (Aldrich & Cunningham, Ch. 23)
Session 13: April 14	Inferences about the Pearson Correlation Coefficient (Coladarci, Ch. 17)
Session 14: April 21	Making Inferences from Frequency Data (Coladarci, Ch. 18) Chi-Square Goodness of Fit (Aldrich & Cunningham, Ch. 24)
Session 15: April 28	Chi-Square Test of Independence (Aldrich & Cunningham, Ch.25)
Session 16: Exam day	Final Examination Due

\*Changes to the schedule/topics may be needed to accommodate the class needs and will be communicated via AsU Learn.