COLLEGE OF EDUCATION AND HUMAN SERVICES
COURSE SYLLABUS

Department: Educational Leadership Course Number: EDL 751

Credit Hour Range: 4

Course Title for the Catalog: Statistics and Research for Education

Catalog Description:

Introduction to descriptive and inferential statistics and their application to research and assessment procedures.

Prerequisites for this Course: None

Enrollment Restrictions for this course: Graduate status; online access required.

Purpose of this Course:

To prepare the student for the implementation of basic descriptive and inferential statistics and the interpretation of educational research and assessment procedures.

Course Objectives: Upon completion of this course, the students will be able to:

Knowledge

1. Identify the type of data and type of measurement scale described in a given research situation.
2. Identify a statistic, parameter, sample, and population in a given research situation.
3. Identify types of frequency distributions including: bar graph, histogram, frequency polygon, curve, frequency table, and stem and leaf plot.
4. Identify the following statistical procedures: mean, median, mode, variance, standard deviation, quartile, Z score, Pearson product-moment correlation coefficient, reliability, validity, standard error of measurement, one variable regression equation, t-test, chi square, and analysis of variance.
5. Identify a problem statement, hypothesis, research question, and operational definitions.
6. Identify experimental and descriptive, quantitative, and qualitative research.
7. Identify independent, dependent, and intervening variables.
8. Identify and explain the characteristics of the following types of descriptive research:
    a. Case studies
    b. Surveys
    c. Developmental studies
    d. Correlational studies
    e. Ex-post facto studies
    f. Ethnography
    g. Focus groups
    h. Content analysis

9. Identify and explain the characteristics of the following types of experimental research:

   a. Nomothetic
   b. Ideographic
   c. Pre-experimental
   d. Quasi-experimental
   e. True-experimental

Disposition:

1. Indicate a more positive attitude toward one's own mathematical ability, and toward statistics research and assessment in general.
2. Develop a more critical view of research, i.e., not to take results at face value.
3. Value the importance of design and analysis in research.

Performances:

1. Interpret frequency distributions including: bar graph, histogram, frequency polygon, curve, frequency table, and stem and leaf plot.
2. Interpret the following statistical procedures: mean, median, mode, variance, standard deviation, quartile, Z score, Pearson product-moment correlation coefficient, reliability, validity, standard error of measurement, one variable regression equation, t-test, chi square, and analysis of variance.
3. Using excel, compute the following for a set of data: mean, median, mode, variance, standard deviation, scatter plot, Pearson product-moment correlation coefficient, and reliability.
4. Construct a stem and leaf plot.
5. Critique research articles using the format discussed in class.

EDL 751 – Statistic and Research

Welcome

Hi! Welcome to EDL 751- Educational Statistics and Research

While the course does not begin until Monday, June 11, there are some items I want to call to your attention.

1. For some reason statistics courses have horrible reputations. I think it's because some people who teach them think it's pronounced- SADISTICS!

   I hope I can reduce your anxiety by the following:

   I see my job as helping you learn the material in this course. I do not see my job as one of creating a grade distribution! I hope you all get A's, and I'll do my best to help you get there.

   In my experience some of the best learning comes from one's mistakes, especially if corrections can be made. Therefore, when you look at how this course is graded, you will note that each assignment and the exam are open-book, and each can be resubmitted with corrections. You just need to get the worksheets and the exam to me by their due dates.

2. The calendar, syllabus, and assignments/grading can be found by clicking on "Content" on the Pilot NavBar.

3. If you have questions/comments about the course or chapter content, we will be communicating through the email available on Pilot or WSU email. Beginning June 11 I will try to monitor this daily, and I will try my best to reply the same day when possible. If you need to contact me before June 11, use my WSU email: glenn.graham@wright.edu.

4. I am going to have two **optional** meetings on campus for those of you who would like some extra help. One will be Monday, June 18. The other Monday, July 2. They will be scheduled from 7:00-9:00 in the evening, in Room 490 Allyn Hall. These sessions are designed to answer your questions- No formal presentation will be made.

5. We have tried to write the book for this course (Basic Analysis for Research in Education) so that it is self-instructional. You will find practice problems at the end of each chapter along with the answers to each problem. Beginning with Chapter 3 (where the statistics start). Step-By-Step solutions are provided. These can be found in the "content" section on Pilot.

6. I have also included videos of my class lectures. You are welcome to view these at any time. Those of you who have trouble getting to sleep may find them useful! The videos are available in the "Content" section of Pilot.
   Note: To view the videos you need to have high-speed internet access.

7. While a calculator is not required, I strongly recommend one. You don't need anything fancy… Just one that adds, subtracts, multiplies, divides and takes square root. Remember the sign: √

   The calculations we will do are not difficult, but they can be tedious. A calculator will speed things along, and are worth their weight in gold for problems requiring square root. Hopefully you already have a calculator, but if you want to buy one you shouldn't need to spend more than $5 or $6… just be sure that it can compute the functions above.

   Another option is to use a computer program. If you have Excel you can do most of the calculations on it. You may also use Excel for worksheets and exams, just show me the print out. You may also use other statistical packages such as SAS, SPSS, STAT PRO, etc. if you have access to them at work.

8. While we don't start until June 11, I encourage you to go ahead and get started as soon as you can. See how far you can go. We only have 5 weeks for the course, so the more you can do in advance, the better off you'll be.

9. **Feel welcome and encouraged to work at a speed comfortable to you. You can submit all assignments early, just don't miss the due dates. You can also finish the course early, if you wish!**

I hope you enjoy the course and learn a lot. I'll do my best to help you succeed.

Don't forget- If you need help email me and/or come to an on-campus help session.

Note: Chapter 1 in the book is a math review for help if needed. The course begins with Chapter 2.

EDL 751.A90 ASSIGNMENT CALENDAR

Text: *Basic Analysis for Research in Education*

Week of June 10:

Chapter 1: Introduction, Data and Measurement
This is a math review. There will be no assignments from this chapter, but you might want to review some "old friends" and try some of the practice problems at the end of the chapter. The problem answers are provided.

Chapter 2: Frequency Distribution, Stem & Leaf Plots
Read the chapter and try some of the practice problems.

Chapter 3: Central Tendency
Read the chapter and try some of the practice problems.

Week of June 17:

Chapter 4: Variability
Read pages 81-95, stopping at the formulas. We will skip the computer printout section. Try some of the practice problems 1-9.

Chapter 5: Z-Scores
Read pages 109 to the middle of page 111. Try the practice problems 1-2.

Worksheet #1 is DUE BY SATURDAY, June 23
NOTE: The worksheets are in the packet in the back of your book. You only need to do the "A" form for each worksheet unless I recommend the "B" form for you.

Week of June 24:

Chapter 5: Correlation
Read from the middle of page 111 to page 121. Try some of the practice problems 6-11.

Chapter 7: Reliability and Validity
Read the chapter and try some of the practice problems.
NOTE: The answer to problem 4 should be 33-41

Worksheets #2 & #3 DUE BY SATURDAY, June 30.

Week of July 1:

Chapter 8: Inferential Statistics
Read the chapter and try some of the practice problems.

Chapter 6: Read page 134 to middle of page 142

Worksheets #4 & #5 DUE BY SATURDAY, July 7

Week of July 8:

Take Home Exam DUE BY WEDNESDAY, JULY 11
*All corrections DUE THURSDAY, JULY 12 (THE LAST DAY OF THE QUARTER)
Worksheet #6 DUE BY WEDNESDAY, JULY 11