

EDP 557-003 - EDUCATIONAL STATISTICS

Fall 2000
 Wednesday, 4:00-6:30
 246 Taylor Education Building

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 Office Hours: Wed. 2:00-3:30 or by appointment.

Required Materials

Sprinthall, R.C. (2000). Basic statistical analysis, 6th Edition. Boston, MA: Allyn & Bacon.

Coursepack available at Johnny Print, 547 S. Limestone, 254-6139. Coursepack is required. You will need **one 3.5 inch floppy disk** to store the class data set. You also should keep a backup copy on another disk.

General Description of Course

EDP 557 is designed to provide students with a working knowledge of basic techniques in statistics. This course is designed so that students can become reflective decision makers when using and reading about statistical techniques that are used in research. At the completion of this course, you should be able to critically examine basic statistical techniques for use in your own research. You also should be able to critically read research that uses these techniques.

This course will **not** emphasize the memorization of formulas; rather, the course focuses on developing your conceptual understanding of statistics, and developing your ability to apply and interpret statistics in meaningful ways. Since this course is offered through the department of Educational and Counseling Psychology, many of the examples will be taken from educational and psychological research. However, the same techniques are used in other disciplines, and I will make an attempt to use examples from other fields as well, based on class enrollment.

I have structured the course to try to minimize stress for those students who identify themselves as “math” or “number” phobic. The course **does** require an understanding of basic algebra, so completion of MA 109 or the equivalent is a prerequisite. No knowledge of calculus is assumed or required. You will need a calculator, but there is no need to buy an expensive, fancy statistical calculator; an inexpensive calculator that can add, subtract, multiply, divide, do square roots, and has some storage capacity is sufficient for this course. There is a computer component involved in this course. We will be using SPSS for Windows. This software is available in our classroom during class. The latter part of class will generally be devoted to time for working on computer problems. You also can have access to SPSS in the Instructional Technology Center in 151 Taylor Education Building. Assignments will involve both problems to be done on the computer, as well as problems that will be done by hand. In addition, some of the “problems” will ask you to interpret data (as a real researcher would have to do), rather than to merely use data in problems. There will be a class data set that we will use to do the problems. This will be copied on to your floppy disk during class. The class data set also can be accessed via the UK College of Education Instructional Technology Center server.

My main goal for this course is to convey to you how statistics can be important, useful, and practical. I will provide as many “real-world” examples as possible, and I will do my best to convince you that statistics is not something to dread!!

EDP 557 is offered for students enrolled in the College of Education. Other students may be admitted, with instructor permission, on a space-available basis.

Objectives of EDP 557

1. To be able to make reflective and well-informed decisions about statistical analyses.
2. To develop a conceptual understanding of how and why researchers use statistics.
3. To be able to understand how statistics are used in various research studies.
4. To plan and carry out simple statistical analyses, both by hand and via computer.
5. To develop an understanding of the assumptions, limitations, and abuses of statistics.

Course Requirements

1. **Attendance** at the class sessions is extremely important. The first part of each class will be spent reviewing problem sets and/or computer assignments, or doing some practice review questions. The second part usually will be spent discussing new material. The final part of class will be devoted to using the computer to do analyses. I will be available to work with you and to assist you. If you have an excused absence, you will be given the opportunity to make up any missed work. Class participation is also extremely important -- do not be shy! If you have a question, ask!
2. **Required readings** -- the reading for this course is minimal, but it is extremely important. The text that we will be using (Sprinthall) is an excellent text -- it is very easy to read and easy to understand, and it makes a lot of "sense" to people who have not done statistics before. *Please* try to do the reading before class -- this is for your benefit. If you have done the reading before class, the lecture/discussion/application of the new techniques each week will be much easier for you, and you will have a much easier time doing the assignments.
3. **Assignments** are due by the beginning of class on the date each assignment is due. All submitted work must be your own. While you are encouraged to work on assignments together and to study together, each student must turn in individual assignments. Cheating or plagiarism carries a **minimum** penalty of a failing grade in the course. Assignments are due at the beginning of class, and late assignments will not be accepted unless prior arrangements have been made with the instructor. If you have difficulties doing an assignment, it is better to hand in what you have done than to not hand in anything at all. Make sure you show all of your work and answer all parts of the questions on the problem sets -- don't lose points because of carelessness. Once we have gone over an assignment in class, you no longer may turn it in to receive credit. On many of these assignments, you will be asked to describe in your own (non-statistical) words exactly what each of these techniques does -- in other words, to describe for a non statistical person why what you have learned is important.
4. **Exams** -- There will be two exams in this course. The questions on the exams will be of a similar level of difficulty as the problems given in the assignments. The exams will consist of multiple choice, true/false, and fill in the blank-type questions, as well as actual problems that you will be asked to do. In addition, you will be asked to "describe" some of the techniques that we have learned to somebody who knows nothing about statistics (just like in some of the assignments). Be sure to bring a calculator to the exams. Make up exams will only be given in the case of an illness that is documented by a note from a doctor.
5. **Quizzes** -- There will be several quizzes given throughout the semester. Quizzes are announced on the syllabus, and are closed-book.

Evaluation

Midterm examination	100 points
Final examination	100 points
Homework assignments	160 points
Quizzes	80 points
Total	450 points

Grading Scale:

Graduate Students

A = 409-450 points

B = 364-408 points

C = 318-363 points

E = 317 or fewer points

Class Schedule

Date	Topic	Reading
August 23	Overview of Course Basic Concepts in Statistics Statistical Notation Scales of Measurement Introduction to SPSS and the computer	Chapter 1 Find one misleading use of statistics in the media for next Wednesday.
August 30	Organizing and Displaying Data Measures of Central Tendency Introduction to NELS data set	Chapter 2
September 6	Variability: Variance and Standard Deviation	Chapter 3 Quiz #1
September 13	The Normal Curve and Z-Scores	Chapter 4 Homework #1 due
September 20	Transformations Involving the Normal Curve Probability	Chapter 5 Chapter 6
September 27	Correlation	Chapter 11 Quiz #2
October 4	EXAM #1	Homework #2 due
October 11	The Logic of Inferential Statistics Sampling Distributions	Chapter 7
October 18	Hypothesis Testing One Sample t-tests	Chapters 8
October 25	Two Sample t-tests	Chapter 10

November 1	One Way Analysis of Variance Post Hoc Tests	Chapter 12
November 8	Chi Square	Chapter 13 Quiz #3 Homework #3 due
November 15	Regression Analysis	Chapter 14
November 22	NO CLASS, THANKSGIVING BREAK	
November 29	Regression Analysis Catch-up day	Chapter 14
December 6	Mock Exam	Homework #4 due
December 13	Exam #2	
