

EDP 613 (4 credits)
Quantitative Analysis in Educational Research
Syllabus

Instructor:

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Computer Lab Sessions:

6:30 – 7:45 pm at Ballentine 240

Required textbooks:

Weiss, N. A. (2005). *Introductory Statistics* (7th Edition). Boston, MA: Pearson Education.

George, D. & Mallery, P. (2006). *SPSS for Windows Step by Step: A Simple Guide and Reference, 13.0 Update* (6th Edition). Boston, MA: Pearson Education. (Referred to below as GM)

Supplementary textbooks:

Kranzler, J. H. (2007). *Statistics for the Terrified* (4th Edition). Boston, MA: Pearson Education.

Huck, S. W. (2008). *Reading Statistics and Research* (5th Edition). Boston, MA: Pearson Education.

Statistical Software:

We will use the computer lab at Ballentine which is equipped with SPSS 16.0 for Windows. But those of you who want to work at home and therefore to buy your own copy, you can get SPSS 16.0 for Windows Student Version for \$87 (Amazon) and Graduate Packet for \$200 (JourneyEd). However, the student version is limited to 50 variables and 1500 cases whereas there is no limit for graduate packet. They both expire in 4 years.

Course Overview:

Building on the topics covered in EDP 555, the focus of this course is on understanding basic statistical topics in educational research. Starting with descriptive statistics such as frequency distribution, measures of central tendency, variability, and correlation, this course will expand your knowledge on inferential statistics. It will utilize various statistical analysis procedures in conjunction with research designs commonly found in educational research. Primary emphasis will be on the set of statistical procedures commonly included under the heading Analysis of Variance (ANOVA). Such utilization requires an understanding of how the differences in various analysis models impact upon the substantive conclusions which may be drawn. Other statistical

procedures that will be covered include multiple regression, analysis of covariance and factor analysis.

Students will learn the basic ideas and theory of various statistical procedures, as well as have many opportunities to apply these procedures to real data from studies in education, psychology and social sciences.

Lectures:

Because the lectures will usually follow the readings quite closely, I urge you to do the readings before class. After a chapter is discussed, I encourage you to look at the selected problems at the end of each chapter as a review and also for your portfolio. We will occasionally discuss them to help clarify certain concepts.

Throughout the session we will be covering a lot of material, some parts certainly more difficult than others. If you have any questions or simply do not understand some point that I am trying to make, please do not hesitate to ask questions.

A basic understanding of the mathematical models is necessary to understand their application. However, if you have a working knowledge of elementary algebra and patience, you will be able to follow the mathematics.

Computer Lab/ Review Sessions

Application of statistical package in analyzing quantitative data will be emphasized in computer lab sessions with hands-on experience of SPSS. These sessions will also be used as review sessions to answer questions, and clarify areas of confusion.

Course requirements:

1. Exams

There will be two examinations in the course - a midterm exam and a final exam. Two exams will account for 60% of your grade. The tests will be comprehensive and you will be able to use your book, notes, other references and a calculator.

2. Assignments Portfolio

Practice problems from the text and other work sheets will be handed out during the class sessions. Students will keep a log of their responses to those problem sets. A portfolio of class assignments will be collected twice during this course. These will account for 15% of your grade.

3. Project

You will have to do one project for the course. These will account for 25% of your grade. Detailed description of the project will be provided later.

Grades:

Course grades will be based on the following:

Overall

Portfolio	15%	A	95 – 100	A-	90 – 94		
Midterm Exams	30%	B+	87 – 89	B	83 – 86	B-	80 – 82
Projects	25%	C+	77 – 79	C	73 – 76	C-	70 – 72
Final Exam	30%	D+	67 – 69	D	63 – 66		

Attendance at ALL classes is both important and expected. If you have a valid reason for missing a class, it is your responsibility to contact the instructor and to get notes and information from other students.

If you have a documented disability that requires accommodations, please make an appointment with me prior to the third class meeting. We will discuss how to meet your individual needs to ensure your full participation and fair assessment procedures.

EDP 613

Spring 2010 (Tuesdays 4:00 – 7:45)

Class Schedule

Week	Reading	Topic	Note
1	W. Ch. 1-3, G&M Ch. 1-3	Introduction, Variables, Data, Descriptive Statistics, Introduction to SPSS	
2	W. Ch. 3, 4, 6, 7 G&M Ch. 4-6	Probability, Normal distribution, Sampling distribution	
3	W. Ch. 8-9 G&M Ch. 7, 10	Confidence interval, Hypothesis testing	
4	W. Ch. 10 G&M Ch. 11	T-test	
5	W. Ch. 10 G&M Ch. 11	T-test	
6	Ch. 1-10	Midterm	Portfolio Due
7	W. Ch. 16, G&M Ch. 12	ANOVA	
8	W. Module C G&M Ch. 13-14	ANOVA, ANCOVA	
		Spring Break	No class
9	W. Ch. 14-15 G&M Ch. 15	Regression	
10	W. Module A, B G&M Ch. 16	Multiple Regression	
11	W. Ch. 13 G&M Ch. 8, 20	Chi-Square, Factor Analysis	Project Due
12	Supplementary	HLM	Portfolio Due
13		Final Exam	

The above schedule is only approximate and may change to allow for expanding or reducing the coverage of certain topics.

Exercises to be included in the portfolio

Chap 1	7
Chap 2	1, 14, 18
Chap 3	11, 14, 17
Chap 6	17, 18, 19
Chap 7	5, 7, 12
Chap 8	8, 13, 18, 8.67
Chap 9	15, 19
Chap 10	10.19, 10.42, 10.81

Portfolio 2

Chap 16	16.29, 16.35
Chap 14	14, 15, 16
Chap 15	19, 20, 21
Module A	18, 19, 20
Module C	8, 10, 13