

EDP 482K: Experimental Design and Statistical Inference
Unique numbers 10915 (Thurs. lab) or 10920 (Tues. lab)
Fall, 2014

Lecture: TTh 9:30-11 (SZB 524)

Lab: Tuesday 11-12 (SZB 524)

OR Thursday 8:30-9:30 (SZB 524)

Instructor: Ed Emmer

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Office hours: M 2-3, Tu 1-2, Th 11-12, and by appointment

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Office: SZB 538 (or across the hall in the Learning Technology Center, SZB 536)

Office Hours: W12-4 and by appointment.

Text: Stevens, J. (2007). *Intermediate Statistics: A Modern Approach (3rd ed.)*. Lawrence Erlbaum Associates.

Course Description:

This course covers statistical procedures and experimental designs frequently encountered in psychological, educational, and other behavioral science research. The goals of the course are to develop your ability to use these design and analysis procedures when you conduct research in your field, to enable you to read and interpret research that relies on statistical analysis, and to use SPSS to conduct statistical analyses. For each of the major statistical procedures and designs, we will examine appropriate uses, the assumptions needed to justify their use, the types of data that are usually available for analysis, computer programs and correct interpretation of output, and situations in which one or another design or statistic would be preferred.

Topics will be covered in the same order as in the text. We will use lecture time to learn about the various designs and statistical procedures, along with data analysis steps, and some applications. Questions are always welcome during lectures. Lab time will be devoted to instruction and discussion of data analysis, as well as to providing assistance with computational exercises. About half of the lab sessions will be computer-based. Problem sets will be assigned from time to time, in order to provide experience with applications.

Date	Topic	Reading
8/28, 9/2	Overview, basic design concepts and the hypothesis testing process, t-tests.	Ch. 1 (1-6,8-11, 15-16)
9/4, 9, 11	Designs with one independent variable, two or more levels (ANOVA)	Ch. 2 (1-9)

9/16, 18, 23	Planned and post hoc comparisons; designs using multiple <i>dependent</i> variables (MANOVA)	Ch. 2 (10-20)
9/25, 9/30	Power considerations in research design	Ch. 3
10/2	Designs with two or more independent variables: Factorial ANOVA	Ch. 4 (1-4)
Oct. 7	Exam 1	
10/9,14,16	Factorial ANOVA designs, continued	Ch. 4 (5-8)
10/21, 10/23 10/28, 10/30	Designs with a repeated treatment or repeated measure variable	Ch. 5 (1-6, 9-15)
11/4, 6, 11, 13	Regression analysis (MRA)	Ch. 6
November 18	Exam 2	
11/20, 25 12/2, 12/4	Analysis of Covariance (ANCOVA)	Ch. 7

Assignment Description: There are two types of assignments:

1. **Problem sets.** These are short computational exercises done in lab or at home. Their purpose is to illustrate commonly used computations and provide insight about the statistical procedures and practice in interpreting results. You don't have to show primary calculations, but do show intermediate results if obtained by hand calculator. Feel free to check your work via SPSS. Also, it will be important to write sentence length interpretations of results. Note: Collaboration on these assignments is appropriate, but each person should submit her or his own work.
2. **Article summaries.** These are one-page descriptions of research based on group comparisons. Two will be assigned and reported in lab. Their format will be described later.

Exams. There will be two tests and a final exam. The final exam is scheduled for Wednesday, Dec. 10, 9am-noon.

Evaluation: The tests contribute 20% each, the final exam 40%, and the problem sets and written assignments 20% of the final grade.

In addition: If you have a condition that will require some accommodation during instruction, exams, or on assignments, please let me know ASAP, and at least before the end of the second week of classes. The University of Texas provides upon request appropriate academic adjustments for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259.

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