Syllabus: Statistical Methods (18:820:581)
Fall Semester, 2009

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Required Texts

Other Required Readings
Other required readings will be posted on the sakai site for the course. The ARC computer lab (next door) is a good place to print readings. They also have SPSS.

Optional Texts

For a basic book on SPSS:

For a more comprehensive book on SPSS:

Objectives
This course will familiarize you with basic statistics and measurement including one-way and two-way ANOVA, repeated measures ANOVA, Mixed ANOVA, correlation, chi square, and reliability. You will get experience computing the tests and interpreting the results. You will need to make friends with a basic calculator and with the SPSS software (the computer labs, such as the one at ARC have SPSS). If you aren't able to finish the computer portions of the assignments during our scheduled time in the lab, you will need to go on your own.

The statistics you will learn in this course are only the beginning--the basics necessary for understanding the statistics typically used in psychological and educational research these days. But don't be discouraged! The material covered in this course is the foundation; learning this material well will provide a strong framework on which future additions can be built.

Grading
Grades will be based on two examinations and a computer data analysis project. There will be approximately six assignments. Assignments will be discussed at the beginning of class on the due date; the answer key will be circulated at that time. I strongly urge you to complete each assignment on time, even though they do not "count" in your grade. Past experience suggests that thorough and timely completion of assignments is related to exam performance. Students are encouraged to work together on assignments. One reason I provide an answer key is so you can see the recommended wording—which can sometimes require noticing subtle differences. Lab sessions are designed to illustrate the concepts, issues, and designs we are learning to aid your understanding, and in the process, you'll learn how to use SPSS for data analysis. Exams will be open book. No make-up exams will be allowed unless prior approval is secured. Letter grades will be assigned on each exam and on the project, and then these will be averaged for a final letter grade.

Cell Phone Policy
Out of consideration for others, during class please turn off your cell phones and other communication devices. If you are "on call" at the clinic, or need an exception for some other reason, please speak with me before class and put your phone on vibrate.
Sept. 1  
**Introductions; Go over syllabus; Advice; Begin Review**

(Sept 8) Monday  
**Classes Meet--Our statistics class will not meet**

Your Reading Assignment:  
Keppel, Saufley, & Tokunaga (1992): ch 1-2  
Optional: Stanovich: preface and ch 1-3.

Sept. 15  
**Using the computer for data analysis; One-way ANOVA; ARC LAB session**  
Keppel, Saufley, & Tokunaga: ch 3, 4, & 5

Sept. 22  
**Magnitude of Effect; Power/sample size; ARC LAB**

Interpreting nonsignificant findings  
K, S, & T: ch. 7 & 8; Fagley & McKinney (1983) Reviewer Bias;  
Optional: Stanovich ch. 4

Sept. 29  
**Factorial ANOVA: sig, omega sq., power; ARC LAB**  
K, S, & T: ch. 9 & 10; Mitchell & Hartmann (1981) A Cautionary Note on Omega Squared. Optional: Stanovich ch. 6

Oct. 6  
**More on Factorial ANOVA—graphs of cell means...**  
ARC LAB session;

Oct. 13  
**Single-factor Within-subjects Design; ARC LAB**  
K, S, & T: ch. 11; Optional: Stanovich ch 7-9;

Oct. 20  
**Mixed ANOVAs; ARC LAB**  
K, S, & T: ch. 12; Optional: Stanovich ch. 10-11;

Oct. 27  
**Project presentations & Review for Exam**

Nov. 3  
**Exam I**

Nov. 10  
**Correlation (sig., r-sq, power, ballantines); ARC LAB**  
Keppel, Saufley, & Tokunaga (1992) ch. 15;  

Nov. 17  
**Prediction/Bivariate Regression; Scatterplots (outliers, heteroscedasticity, curvilinearity). ARC LAB**  
Cohen & Cohen: ch. 2-focus on pp.41-51.  
Supplemental: Meyers, Gamst, & Guarino

Nov. 24  
**Factors affecting r; ARC LAB**  
Shavelson(1981)Sources of Misleading Correlations; Cohen & Cohen 2.11.1  
to the end of chpt 2. Optional: Stanovich ch. 5

Dec. 1  
**Chi Square Analysis; Measurement of Constructs; ARC Lab**  
K, S, & T: ch. 14;  
Murphy & Davidshofer (1991)

Dec. 8  
**Correlation, Reliability, & Interrater Agreement; ARC Lab**  

Dec. 15  
**Exam II**

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Note: Reading assignments may be changed in class. Further, some material not included in readings will be included in the lectures and may be included on the exams.