Syllabus: Statistical Methods (18:820:581)
Fall Semester, 2008

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Required Texts


Suggested/Recommended

or the SPSS 15 version of the book--they are very, very similar.

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.

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--sometimes in statistics that can be an issue, so pay close attention to that. Exams will be open book and worth about 100 points. 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 your final letter grade.
<table>
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<tr>
<th>Date</th>
<th>Topics and Assigned Readings</th>
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<tr>
<td>Sept. 2</td>
<td>Introductions; Go over syllabus; Advice; Begin Review</td>
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| Sept. 9 | Continue Review of hypothesis testing; Using the computer for data analysis; ARC LAB session  
Keppel, Saufley, & Tokunaga (1992): ch 1-2  
Stanovich: preface and ch 1-3; |
| Sept. 16| One-way ANOVA; ARC LAB session  
Keppel, Saufley, & Tokunaga: ch 3, 4, & 5  
Stanovich ch. 4 |
| Sept. 23| Magnitude of Effect; Power/sample size; ARC LAB  
Interpreting nonsignificant findings  
K, S, & T: ch. 7 & 8; Fagley & McKinney (1983) Reviewer Bias;  
| Sept. 30| Factorial ANOVA: sig, omega sq., power; ARC LAB  
K, S, & T: ch. 9 & 10; Stanovich: ch. 6;  
ARC LAB session; |
| Oct. 7 | Single-factor Within-subjects Design; ARC LAB  
K, S, & T: ch. 11; Stanovich ch 7-9; |
| Oct. 14| Mixed ANOVAs; ARC LAB  
K, S, & T: ch. 12; Stanovich ch. 10-11; |
| Oct. 21| Project presentations & Review for Exam |
| Oct 28 | Exam I |
| Nov. 4 | Correlation (sig., r-sq, power, ballantines); ARC LAB  
Keppel, Saufley, & Tokunaga (1992) ch. 15;  
| Nov. 11| Prediction/Bivariate Regression; Scatterplots (outliers, heteroscedasticity, curvilinearity). ARC LAB  
Cohen & Cohen: ch. 2-focus on pp.41-51.  
Supplemental: Meyers, Gamst, & Guarino |
| Nov. 18| Factors affecting r; ARC LAB  
Cohen & Cohen 2.11.1 to the end of chpt 2.  
Shavelson(1981) Sources of Misleading Correlations; Stanovich ch. 5 |
| Nov. 25| Chi Square Analysis; Measurement of Constructs  
K, S, & T: ch. 14;  
Murphy & Davidshofer (1991) |
| Dec. 2 | Correlation, Reliability, & Interrater Agreement; ARC Lab  
Kaplan: Reliability & Validity; Kerlinger: Reliability theory; Kazdin: interrater agreement; Rosenthal part of ch. 2: Sampling Judges and Encoders--intraclass correlation. |
| Dec. 9 | Exam II |

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.