Psychology 770B   Spring 2011
Experimental Design and Analysis in Behavioral Research

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Course Description

This course focuses on analyzing data via Analysis of Variance (ANOVA); like OLS regression, ANOVA is a version of the general linear model. We will discuss one-way and higher-order between-subjects and within-subjects designs, planned and post-hoc comparisons, fixed and random factors, analysis of covariance (ANCOVA), and, if time allows, more complex designs. As in Psy770A, we will use SPSS and Stata to analyze data. Stata is recommended again, but SPSS is sufficient. Grades will be based on two midterms (20% each), a cumulative final (35%), five homework assignments (20% total), and an in-class presentation (5%). Grades will be assigned as follows: A (92 – 100%), A- (90-91.9%), B+ (88-89.9%), B (82-87.9%), B- (80-81.9%), C+ (78-79.9%), C (72-77.9%), C- (70-71.9%), D+ (68-69.9%), D (62-67.9%), D- (60-61.9%), F (below 60%). There will not be a curve.

Homework
There will be five homework assignments, about one every two weeks, or one for each general topic area. In general, you will be asked to use either SPSS or Stata to analyze data that will be provided to you, and to write a Results section reporting and interpreting the findings. Feel free to work together in determining which analytic approach to use, conducting analyses, and deciding on the appropriate interpretation, but please do the actual writing on your own. Completed homework assignments should be e-mailed to the TA by the end of the day that they are due. Each homework will be worth 20 points. Please do not be late in submitting homework assignments; there will be a 50% per day penalty for late assignments. Homework assignments will be posted on Blackboard.

Methods and Results
Instead of doing a presentation, this semester you're going to be required to write up a Method and Results section. The purpose of this assignment is to practice the kind of writing you'll be doing a lot of in your careers. This assignment takes the place of the presentations, and also

takes the place of one of the homeworks – homework 3, due 3/17, will be to turn in a first draft. Prior to that, on 3/1, you will submit a brief proposal describing the study that the assignment will be based on. You can use existing data if you'd like, or you can make up data, but if you choose the latter you must actually create a data file, with scores for each subject on each variable. It won't work to just make up final statistics. The proposal due 3/1 should briefly describe the study (no more than 5 sentences). It should also identify your IVs, DVs, and the analysis you plan to do. There are no points for the proposal, but you will lose 10 points from your final grade for each day that it is late. The first draft is worth 10 points, and the final draft is worth 30 points, with a 50% per day penalty for late submission. If you're unsure what information and sections to include in either the Method or the Results, get an article from an APA journal (eg, Journal of Abnormal Psychology) and follow that format. You are welcome to submit the proposal any time prior to the due date.

Textbook
Maxwell SE & Delaney HD (2004). *Designing Experiments and Analyzing Data: A Model Comparison Perspective* (2nd edition). Mahwah, NJ: Lawrence Erlbaum.

Web Resources for SPSS, Stata, SAS, HLM, and more
UCLA Statistical Computing Resources: http://www.ats.ucla.edu/stat/

Software
SPSS: The most recent version is 17. For the purposes of this class, version 11 or higher will be fine. Available in most faculty research labs, computer labs on campus, and through a site license agreement (for SDSU employees only).

Stata: The most recent version is 11. For the purposes of this class, version 9 or higher will be fine. Purchase through the Stata GradPlan at http://www.stata.com/coursegp.html
Students enrolled in PSY770a may order Stata online between the dates of 08/31/10 and 12/22/10. Specify NMDOR18 for the GRADPLAN ID and choose what you would like to order. Stata comes in multiple flavors. The least expensive is an **annual license for Small Stata 11** ($49 with PDF documentation). It is limited to 1,167 observations for each of 99 variables, which will be enough for this class. If possible, get the **perpetual license for Stata/IC 11** ($179 with PDF documentation). Stata/IC can handle up 2,047 variables; the number of observations is limited by RAM in your computer. **Stata/MP and SE** are for very large data sets and can support multicore/multiprocessor computers. This will not be needed for this class.

Course Outline

Date	Lecture Number & Topic	READINGS
1/20	1: Mediation	
1/25	2: One-way between subjects designs	Ch 3, pp 67-98
1/27	3: One-way between subjects designs	Ch 3, pp 98-126
2/1	4: Individual comparisons	Ch 4, pp 149-80
2/3	Class cancelled	

2/8	5: Multiple comparisons **Homework 1 due**	Ch 5, pp 193-213
2/10	6: Multiple post-hoc comparisons	Ch 5, pp 213-37
2/15	Exam Review	
2/17	SRNT – no class	
2/22	**Midterm Exam** 1	Ch 3 – 5
2/24	7: Trend analysis	Ch 6, pp 243-69
3/1	8: Two-way designs **Method/Results proposal due**	Ch 7, pp 275-97
3/3	9: Two-way designs **Homework 2 due**	Ch 7, pp 297-320
3/8	10: Nonorthogonal factorial designs (2x2)	Ch 7, pp 320-43
3/10	11: Higher-order designs	Ch 8, pp 354-92
3/15	13: ANCOVA and blocking	Ch 9, pp 399-420
3/17	14: ANCOVA and blocking **Homework 3 due – Method/Results 1st draft**	Ch 9, pp 420-52
3/22	15: Random factors	Ch 10, pp 469-493
3/24	16: 1-way within-subjects designs: univariate	Ch 11, pp 525-47
3/29	No class – spring break	
3/31	No class – spring break	
4/5	17: 1-way within-subjects designs: univariate **Homework 4 due**	Ch 11, pp 547-67
4/7	Exam review	
4/12	**Midterm Exam 2**	Ch. 6 – 11
4/14	18: Higher-order within-subjects designs: univariate	Ch 12, pp 573-92
4/19	19: 1 within and 1 between subjects factor: univariate	Ch 12, pp 592-610
4/21	20: 1-way within-subjects designs: multivariate	Ch 13, pp 624-49
4/26	21: 1-way within-subjects designs: multivariate	Ch 13, pp 658-76
4/28	22: Higher-order within-subjects designs: multivariate	Ch 14, pp 682-704
5/3	23: Higher-order within-subjects designs: multivariate	Ch 14, pp 704-25

	Homework 5 due	
5/5	24: Higher-order within-subjects designs: multivariate	Ch 14, pp 725-46
5/10	**Final exam review**	
5/19	**Final Examination 8-10 am**	Ch 3-14