Advanced Statistics in Psychology

PSY 670A

Fall 2010

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SSE 2307G	LS 117A	LS 117A
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OH: Th 3-5	M 1-3	W 10-12

Class Meetings

Day	Time	Topic	Room
M	8:00 a.m. – 10:00 a.m.	Lecture	LS 111
W	8:00 a.m. – 9:00 a.m.	Lecture	LS 111
M	9:00 a.m. – 10:00 a.m. (the lab is reserved until 11)	Lab (begins 9/15)	LS 117

Note: In Spring, the class will most likely be on a T, Th schedule.

Goals/Expectations

- Understand the conceptual underpinnings of statistics that are common to all research designs.
- Discern the appropriate model comparison to answer the substantive research question at hand.
- Run analyses by hand and on the computer.
- Interpret statistical output and results…What do they really mean?

What I Do Not Teach

- Traditional names for analyses (provided on syllabus)
- SPSS "canned" procedures
- APA results reporting style

How to Get the Most Out of This Course

My teaching method is very interactive (yes, I realize the class is extremely early but bear with me). My approach is to ask you questions to help you *discover* answers. The more you process information online – as opposed to passively taking notes to think about later – the easier the material will come.

Many people think statistics is an esoteric endeavor and that formulas appear spontaneously from behind some magic (boring?) curtain. Believe it or not, statistics is intuitive. If you understand the basic concepts of *variability* and *sampling error,* the formulas needed for a statistical test can easily be generated.

Tips

- Keep up on reading.
- Rewrite lecture notes.
- Spend 5-10 minutes before each lecture refreshing the material from recent lectures.
- Situate material in a larger context.

Text
Judd, C.M., McClelland, G.H., & Ryan, C.R. (2008). *Data Analysis: A Model Comparison Approach.* 2nd Ed. New York: Routledge.

Course Website
The course website is on Blackboard. The following will be posted:
- Tables (F, PRE, etc.)
- (Incomplete) Lecture slides
- Homework assignments with data sets
- Exam prep materials (approximately 1 week before exams)

Statistical Software
We will use PASW/SPSS v 17.0. Please note that access to SPSS in LS labs may be limited. Site licenses for graduate students are not available for purchase, however, many faculty lab computers have SPSS. Note that files we use may not be readable in older versions.

Assignments
Exams. There will be one midterm exam and a cumulative final. Exams include 2 to 3 sections drawn from the following types of problems: specifying model comparisons to test substantive research questions, short answer/essays on the conceptual underpinnings of statistics, and output questions. You will be able to use a formula sheet I provide and a calculator. As the exams approach, I will post example questions from previous years to give you a better sense of what you can expect.

Homework. There will be homework assignments approximately weekly. HW assignments will be posted on Blackboard. We will work on assignments in the latter half of class on Wednesdays and they will be due the following Wednesday. Although class time is allotted to HW this is largely to assist you with computer issues. Do not expect to finish your HW during class. You can drop 1 HW grade per term.

Note: I encourage students to work together on assignments, however, when it comes to putting pen to paper I want to see YOUR WORDS. Struggling through the material together can be a good way to understand concepts. *But* I want to see your thinking and your understanding reflected in the answers given. I.e., do not share/cheat/plagiarize work in this class. I do not enjoy it but I will pursue disciplinary action in any case of cheating.

Course Grades

Midterm Exam	35%
Final Exam	45%
Homework Average	20%

Letter grades will be based on 10% increments: 90% and above is an A, 80 – 89.9% is a B, and so on. Pluses and minuses to letter grades will be given for the upper and lower 2% within a letter grade category, respectively. Note that I confirm letter grades through z-scoring each assignment.

Est. Schedule	Chapters/Topics	Old Stats Test Name
	Logic of Inferential Statistics	
8/30 -- 9/1 (Labor day 9/6)	1. Introduction to Data Analysis	
9/8 - 9/13	2. Models of Error and Parameter Estimates	
9/15	3. Models of Error and Sampling Distributions	
9/20 -- 9/27	4. Statistical Inference about Parameter Values	One sample t-test
	~~Statistics is over~~~	
	Models with Continuous Predictors/IVs	
9/29 -- 10/13	5. Estimating models with a single continuous predictor, 8. Dichotomous categorical predictors (pps. 159-169)	Simple Regression, Bivariate Correlation
10/18	**Exam 1**	
10/20 -- 11/8 (Veteran's Day 11/11)	6. Models with multiple continuous predictors	Multiple Regression, Partial Correlation
11/15 -- 12/8 (no class 11/24)	7. Moderated and Nonlinear Regression (interactions)	Moderated Regression, Polynomial Regression
Monday 12/13 8:00-10:00	**Final Exam**	