

ADVANCED STATISTICS **PSYC 631/391 (01), Fall 2009**

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Texts:

Howell, David C. (2009). *Statistical methods for psychology*, 7th Edition. Belmont, CA: Wadsworth. [We'll use this same text next semester as well.]

Kirkpatrick, L. A., & Feeney, B. C. (2009). *A simple guide to SPSS: For Version 16.0*. Belmont, CA: Wadsworth, Cengage Learning. [Recommended for anyone unfamiliar with SPSS.]

Additional readings will be available via Blackboard.

Course Overview

PSY 631/391 (Advanced Statistics) is designed as the first half of a two-semester course sequence, to be followed by PSY 633/392 (Multivariate Analysis) in the Spring semester. The courses each have two numbers because they are cross-listed as both graduate (631/633) and advanced undergraduate (391/392) courses. Because I will be teaching both courses, and because I expect the same students to be enrolled both semesters, I will treat the two courses much like a single two-semester course, without worrying much about which material is covered under "Advanced Statistics" and which under "Multivariate Analysis." Indeed, the courses would be more appropriately titled "Advanced Statistics Part 1" and "Advanced Statistics Part 2."

If you don't remember much from your previous statistics course(s), don't panic: We'll be starting more or less at the beginning. In many ways this semester will be much like a (somewhat) advanced version of an introductory undergraduate statistics course, covering the same topics -- e.g., descriptive statistics, t-tests and chi-square tests, correlation and simple regression, and simple analysis of variance -- but in greater depth. Next semester we will go on to topics beyond a typical introductory course, including more advanced topics in analysis of variance, multiple regression, and analysis of covariance. A primary goal next semester will be to demonstrate how, under the rubric "general linear model," all of the previously covered topics are interrelated.

The purpose of both of these courses is to prepare students to analyze real data from real research, and to understand these analyses at a conceptual level. Toward this end, we will focus more on concepts and computer analyses, and less on hand calculations and mathematics (particularly next semester, when hand calculations become virtually impossible for many of the advanced techniques covered). Discussion of issues in research design and philosophy of science will be sprinkled throughout the course. I strongly encourage you to bring questions and problems to class related to your own research and other course work. The material will make much more sense, and sink in more deeply, when you think about it in the context of your own research or some other research problem of interest to you.

Laboratory

Our laboratory period is scheduled on Friday afternoons from 2:00-3:20, and we will meet every week unless I announce otherwise. Lab meetings will be devoted largely to computer applications (using SPSS for Windows), review of homework problems, and discussion of students' own research and data. I may occasionally assign additional readings for discussion during lab sessions.

Course Requirements and Grades

Grades will be computed based primarily on three exams (80%), with the comprehensive final exam weighted slightly higher (30%) than the other two (25% each). My exams comprise a mixture of computations, definitions, and short-answer questions. I'll tell you much more about what to expect as the first exam approaches. The other 20% of the grade will be based on weekly (more or less) laboratory/homework assignments. These assignments typically will involve homework problems from the textbook, including both hand and computer (SPSS) calculations. Homework problems are not graded for correctness per se, because they are intended as practice for exams and not exams themselves. However, penalties are assessed for incompleteness, tardiness, or clear lack of reasonable effort.

Tentative Schedule

<u>Week</u>	<u>Days</u>	<u>Chapters</u>	<u>Topics</u>
8/24	--Th	--	Introduction and Preview
8/31	TTh	1, 2	Descriptive Statistics
9/7	TTh	3	Normal Distributions
9/14	TTh	4	Sampling Distributions and Hypothesis Testing
9/21	TTh	6	Chi-Square Tests
9/28	TTh	--	Catch-up and Review; EXAM 1 in lab Friday 10/2
10/5	TTh	7	Z and t-Tests
10/12	--Th	7	[no class Tuesday] Z and t-Tests (cont.)
10/19	TTh	8	Statistical Power
10/26	TTh	9	Correlation and Simple Regression
11/2	TTh	10	Other Correlation Coefficients
11/9	TTh	--	Review & catch-up; EXAM 2 in lab Friday 11/13
11/16	TTh	11	ANOVA for Independent Groups
11/23	T--	11	[no class Thursday] ANOVA (cont.)
11/30	TTh	11	ANOVA (cont.); Catch-up & Review
