

SYLLABUS

Course: Psychology 270 (schedule #29013); Statistical Methods in Psychology

Course Description: Introduction to the analysis of research data in psychology. Topics include measures of central tendency and variability, correlation, prediction, and hypothesis testing.

Prerequisites: Concurrent enrollment in or prior completion of Psychology 271 or its equivalent.

Credit: 3 units

Quarter: Spring, 2008

Time: Tuesday and Thursday, 1530-1645 (i.e., 3:30 to 4:45 pm)

Location: LS-111

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Background

A cursory read of a daily newspaper or weekly news magazine will find some type of reporting of data and statistics. For instance, in the Health section of the 8/9/05 SD Union, it is reported that 34.5% of San Diego county adults "always have someone to help with daily chores when they are sick" (pg. E3). Or in an article titled *Study Links Obesity to Friends.....* "UCSD and Harvard researchers point a finger at an unlikely culprit [for obesity]: the subtle--perhaps even subconscious--influence of spouses, family members, and, most important, close friends" (SD Union, 7/26/07).

Or go to: <http://www.census.gov/statab/www/income.html> for the most recent statistics from the US Census Bureau we see the following median household money income from 1990 to 2003:

1990 2000 2001 2002 2003

	1990	2000	2001	2002	2003
Median household money income ²	\$29,943	\$41,990	\$42,228	\$42,409	\$43,318

Or from Time magazine (http://time.blogs.com/daily_rx/) in regard to: **Suicide Prevention Therapy** "There is nobody more likely to commit suicide than someone who has tried at least once before - a single suicide attempt may increase the risk of an eventual successful attempt 40-fold. But according to new findings, cognitive psychotherapy - a simple, increasingly well-established form of treatment - can cut that danger almost in half."

Thus, valuable information can be gleaned from the daily statistics we obtain from the many surveys and research projects conducted; information that can be parlayed into policy and action. However, it is just as important to be a critical consumer of the data, and not fall into the trap of believing every article, blog, or reporter that starts off their commentary with: "research suggests.....". In fact, a 7/27/05 article in the SD Union has the ominous title: "*Science Unbecoming.....*misconduct allegations suggest rise in faked data, phony patients and other dubious inventions". A side article reports that "a new set of federal rules is now in effect, placing the onus for identifying, investigating and reporting allegations of scientific misconduct on universities and institutions" (pg. F2). It is inarguable that data plays a integral part in our

lives (whether we know it or not!!); therefore, developing skills for interpretation of data is critical.

Course Objectives

Even though the first statistics course can (and possibly may be!) a daunting experience, especially when one's self-confidence in mathematics comes up wanting, many students find that with willful diligence and fortitude, this subject matter is surprisingly intelligible, and even fun (at times!). This introductory course will provide a snapshot into a wide array of commonly-used statistical methodologies: equal emphasis will be placed on understanding both the (1) conceptual and (2) mathematical properties inherent in each of the techniques. Especially of importance is how these are applied in the real world, and examples will be frequently provided in class.

Helpful Hints/Platitudes

First of all you will find that the mathematics required for this course is not overwhelming; in fact, basic arithmetic (i.e., adding, subtracting, deriving square roots, etc.) is the rule here. However, it is essential that you keep up with the logic of the derivations as well as the concepts behind them, which will be discussed in-depth in the classroom. Hence, leading to my second point. Given the cumulative nature of this class, it has been my experience that those who are somewhat 'random' (which you will find out later in the course is not synonymous with "haphazard"!!!) in their attendance, will encounter some difficulties if they attempt to learn the material solely through reading/relying on the text. It is the combination of the lecture and in-class break-out sections that serve in amplifying and reinforcing the material in the text.

Again, I want to reiterate that the mathematics itself is not unduly complicated. Rather it is the logic that starts to become a bit complex, especially when we get to hypothesis testing. And it has been my experience that those who tend not to attend, and /or anticipate relying on their own resources to learn the material will not achieve an optimal performance in this class.

Course Requirements

- 1) Given the comprehensive (and cumulative) nature of the curriculum, **attendance** is strongly encouraged and should be adhered to per school policy.
- 2) **Homework.** Homework will be required on a weekly basis and an honor system is assumed (i.e., the results of your homework are solely due to your own effort; if it is found to be otherwise no credit will be assigned). Note: homework will be collected at the beginning of class and then reviewed so please make a copy of your homework if you desire to follow along with the review. No points can be earned for homeworks submitted after the due date, unless contact is made with the instructor *beforehand*. The grading via checkpoint system for each individual homework is as follows:

Grade	%
√ +	100
√	50
√ -	25

- 3) **In class exams (4).** Mixture of multiple choice, true/false, and calculation. Material from text, handouts, and lecture. Examinations will be closed book but formulas will be provided during the test. Calculators will be permitted, but nothing preprogrammed!! Each quiz will be worth 75 points. Please bring Scantron Form No. 19641 to each test. **Note: cell phones will not be allowed in lieu of calculators, so please don't forget to bring your text and calculator for the tests. You will not be permitted to exchange/share texts or calculators during the exam.**

Grading

20% will count towards homework (75 possible points); 80% (20% for each exam; 300 possible points) will be accorded for the four (4) in-class examinations. Total possible points = 375. Grading will be commensurate with school policy. In the event of an emergency situation, make-up of tests will be granted but *only* when notification is provided **prior** to test administration. Late homework will not be permitted, excepting the rare emergency. ***Extra credit will not be provided in this course!***

Text

Moore, D. S. (2007). The Basic Practice of Statistics. (4th Ed.). W. H. Freeman: New York.

Glaser, D. PSY 270: Statistical Methods in Psychology (consisting of handouts). Montezuma Publishing

Course Schedule

Bolded date indicates time of exam

****Responsible for Introduction at start of each chapter****

Jan. 22 & 24	Introduction; Distributions with graphs; Distributions with numbers Required Readings: Chap. 1 - 2
Jan. 29 & 31	Distributions with numbers (con't); normal distributions Required Readings: Chap. 2 - 3
Feb. 5 & 7	Normal distributions (con't); Scatterplots and Correlation Required Readings: Chap. 3 - 4

Feb. 12 & 14	Quiz 1 (chapters 1 to 4) Scatterplots (con't) and Correlation Required Readings: Chap. 4
Feb. 19 & 21	Introduction to Regression Required Readings: Chap. 5
Feb. 26 & 28	Regression (con't); Producing Data: Samples Required Readings: chap. 5; 8
Mar. 4 & 6	Producing Data: Samples (con't); Producing Data: Experiments Required Readings: Chap. 8 - 9
Mar. 11 & 13	Quiz 2 (chapters 5; 8 to 10) Introducing Probability Required Readings: Chap. 10
Mar. 18 & 20	Sampling distributions; Confidence Intervals Required Readings: Chap. 11 & 14
Mar. 25 & 27	Confidence Intervals (con't); Tests of significance Required Readings: Chap. 14 - 15
<i>Apr 1 & 3</i>	<i>Spring Recess: No Class!!!!</i>
Apr. 8 & 10	Tests of significance (con't); Inference in Practice (+ next week) Required Readings: Chap. 15 - 16 Discuss cancelled 4/10 (SIOP)
Apr. 15 & 17	Quiz 3 (chapters 11; 14 to 16) Inference about a Population Mean [introduce next week] Required Readings: Chap. 18
Apr. 22 & 24	Inference about a Population Mean Required Readings: Chap. 18 (con't)
Apr. 29 & May 1	Two-Sample Problems Required Readings: Chap. 19
May 6 & 8	Two Categorical Variables: The Chi-square Test; One-Way Analysis of Variance (ANOVA): Comparing Several Means Required readings: Chap. 23 & 25 (won't have to do calculations)
May 13	Final Quiz (chap. 18, 19, 23 & 25) + Comprehensive TIME: 1530-1730 [i.e., 3:30 to 5:30 pm](per the catalogue)