PSYCHOLOGY 302

STATISTICAL METHODS IN PSYCHOLOGY - SPRING 1996
Straub 146 Tues. & Thurs. 11:00 - 12:20

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Course Description: This course provides an introduction to basic statistical concepts, methods, and applications. Everything connected with collecting, processing, and interpreting numerical information about the world belongs to the domain of statistics (e.g., calculating the odds of winning the lottery, collecting and presenting data on marriages and divorces, evaluating the merits of a commercial product, and assessing the effectiveness of a new "wonder" drug). Most of the statistical examples in this course will be drawn from psychological research. You will learn how to present, analyze, and interpret the results of surveys and studies, how to design experiments to answer quantitative questions, and how to make the best predictions from information you already have. You don't need to be an accomplished mathematician to do well in this course. The ability to reason in a logical manner is more important to successful understanding of psychological statistics than the ability to manipulate complex equations. The course does involve numbers -- there's no escaping that -- but if you have basic arithmetic and algebra skills it should be straightforward.

Course Prerequisites: Mathematics 111 or equivalent.

Textbook: Witte, R.S. (1993). Statistics (4th ed.). Fort Worth, TX: Harcourt Brace Jovanovich.

Lectures and Laboratories: Attached is a list of lecture topics and reading assignments. Sections in the textbook dealing with computer printout can be omitted. In addition to lectures, you must also enroll in and attend one of the weekly statistical laboratories (Tuesdays, 12:30-1:20 or Fridays, 12:00-12:50 in 146 Straub) run by the TA. The labs will involve discussion of the weekly problem sets and reviews prior to exams, as well as providing an opportunity for you to raise any questions you have concerning lectures or the textbook. There will be only one lab in the first week (on Friday). This lab will involve an optional math review designed for those students who have repressed all memory of high school algebra. Please attempt the math review problems in Appendix A of Witte as soon as possible. If you have difficulty with any of these problems you should definitely plan to attend the math review lab.

Exams: There will be two midterms and a final exam each consisting of a combination of multiple choice, short answer, and calculation problems. All exams will be cumulative, with an emphasis on more recent material. Exams will be closed book. However, since comprehension rather than memorization is the goal, we will provide a list of mathematical formulas; your job will be to know what formula is relevant to a particular problem and how to use it correctly. It will be helpful to have a calculator for the exams but to receive credit for calculation problems you will need to show each step of your calculations; do not rely on an advanced calculator in using complex formulas. You should note that make-up exams will only be given in extreme circumstances (e.g., serious illness or injury). If you know now that you will be unable to take the final exam when scheduled, you should immediately drop the course.

Problem Sets: To understand is to do. Just like practicing piano or tennis, you need to exercise your statistical muscles. To help you with this, take home problem sets will be assigned most weeks. These problems represent the minimum you should do to master the course material. Assignments will normally be due in class on the Tuesday after they are handed out. Late problem sets will not be graded unless prior arrangements have been made. The problem sets will be graded on a 5 point scale (0-4). If you want to work with other students on the problems, feel free to do so. Just make sure you understand what is going on. If you have difficulties with the problems, your TA will be able to help.

Grading: The problem sets will count for 30% of your grade, the midterms for 20% each, and the final for 30%.

OUTLINE OF LECTURE TOPICS

Date	Topic	Reading
April 2	Introduction	Ch. 1, Appendix A
April 4	Frequency Distributions and Graphs	Appendix B, Chs 2 & 3
April 9	Measures of Central Tendency	Ch. 4
April 11	Measures of Variability	Ch. 5
April 16	The Normal Distribution	Chs 6 & 7
April 18	**MIDTERM 1**	
April 23	Correlation	Ch. 9
April 25	Regression	Ch. 10
April 30	Sampling	Chs 11 & 12
May 2	Hypothesis Testing	Chs. 13 & 14
May 7	Estimation	Ch. 15
May 9	One Sample T-Test	Ch. 16
May 14	Two Independent Samples T-Test	Ch. 17
May 16	**MIDTERM 2**	
May 21	Two Dependent Samples T-Test	Ch. 18
May 23-30	Analysis of Variance	Ch. 19
June 4	Chi-Square	Ch. 21
June 6	Wrap-Up	Ch. 23
June 13	**FINAL EXAM (3:15 - 5:15)**	