Psych. 501 INTRODUCTORY STATISTICS

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Text: Wilcox, R. R. (2011) *Modern Statistics for the Social and Behavioral Sciences: A Practical Introduction.* New York: Chapman & Hall/CRC press.

The primary goal is to provide a strong foundation for understanding and applying basic statistical techniques. A detailed outline of the material is given below. The basics include sampling distributions, expected values, hypothesis testing, the difference between parameters and statistics, least squares regression and correlation, and the basics of probability theory. No prior training in statistics is assumed. Classic methods are covered as well as some modern methods developed during the last half century that are aimed at dealing with skewed distributions, heavy-tailed distributions and heteroscedasticity.

This course covers chapters 1-9 in the text. Time permitting, portions of chapters 10 and 11 (ANOVA) will be covered.

There are three exams: two midterms and a final. Each test accounts for 30% of your grade. The computer lab is mandatory and counts for 10% of your grade. There is a possible 100 points for the course. A grade of A requires 92 or higher, 90-91 is A-, 88-89 is B+, 82-87 is a B, 80-81 a B-, 78-79 is a C+, etc.

Consequently, if you don't do the computer assignments, you can get an A- only if you get perfect scores on all of the exams.

A quiz is given after each chapter is covered in class. It is graded pass/fail. If you fail, you can hand in a take-home make-up quiz and get a pass. The quizzes can raise your grade but they can't lower it. You get a bonus point added to each exam if you do all of them prior to exam being given.

The first test will be on chapters 1-3 and will be given during the fifth week of the semester. So if you complete the quizzes prior to week 5, you get a bonus point on the exam. The second exam is on chapters 4-6 and will be given during the tenth week, and the final will cover chapters 7-9.

THE FINAL IS GIVEN ON THE DAY INDICATED BY THE SCHEDULE OF CLASSES. THERE ARE NO EXCEPTIONS.

Weekly layout:

week 1: Chapter 1 + Sections 2.1-2.4

week 2: Sections 2.5-2.10

week 3: Quiz, ch. 2, Sections 3.1-3.6 week 4: Sections 3.7-3.8, Quiz Ch 3.

week 5: Section 4.1-4.2, exam

week 6: Sections 4.3-4.9

week 7: Sections 4.10-4.13, 5.1-5.6 quiz ch 4

week 8: Sections 6.1-6.3, quiz ch 5

week 9: Sections 6.4-6.6, quiz ch 6

week 10: 7.1-7.2, exam

week 11: sections 7.3-7.6

week 12: 7.7-7.8, 8.1-8.3, quiz ch 7

week 13: 8.4-8.9

week 14: 8.10-8.13

week 15: 9.1-9.2, 10.1 and 12.1, review.

A MORE DETAILED OUTLINE OF THE MATERIAL:

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1 INTRODUCTION

BROAD OVERVIEW
 Samples versus Populations
 Software
 R Basics (The book illustrates how to apply standard methods)

2 NUMERICAL AND GRAPHICAL SUMMARIES OF DATA
Basic Notation
Measures of Location
The Sample Mean: Issues related to skewness and outliers
The Sample Median
Criticisms of the Median and Two General Strategies for Dealing with these Concerns
Measures of Variation or Scale
Sample Variance and Standard Deviation
The Interquartile Range
Robust measures of variation that have practical value.
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Comparing All Quantiles Simultaneously
Graphical Methods for Comparing Groups
   Error Bars
   Plotting the Shift Function
   Plotting the Distributions
Methods for Comparing Measures of Variation
Comparing Robust Measures of Variation
Measuring Effect Size
Comparing Correlations and Regression Slopes
Comparing Two Binomials
Making Decisions About Which Method To Use

9 COMPARING TWO DEPENDENT GROUPS
The Paired T Test
 When Does the Paired T Test Perform Well?
     Understanding When and Why It Can Perform Poorly.
Comparing Robust Measures of Location
Handling Missing Values
The Sign Test
Wilcoxon Signed Rank Test
Comparing Variances
Comparing Robust Measures of Scale
Comparing Quantiles
Plots for Dependent Groups

10 and 12. Basic ANOVA.
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Statement on Academic Integrity:

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one.s own academic work from misuse by others as well as to avoid using another.s work as one.s own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: http://www.usc.edu/dept/publications/SCAMPUS/gov/. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: http://www.usc.edu/student-affairs/SJACS/.

Students who need to request accommodations based on a disability are required to register each semester with the Disability Services and Programs. In addition, a letter of verification to the

instructor from the Disability Services and Programs is needed for the semester you are enrolled in this course. If you have any questions concerning this procedure, please contact the course instructor and Disability Services and Programs at (213) 740-0776, STU 301.