

## PSYCHOLOGY 274

Instructor: Dr. R. Wilcox

Office Hours: TBA

Room: SGM 618

Final Exam for Fall 2016 is scheduled for Dec 13, 11AM.

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Text: Understanding and Applying Basic Statistical Methods Using R

### COURSE OUTLINE

The purpose of this course is to acquaint students with the basic principles, concepts and methods used to characterize and compare groups of individuals. Included are graphical methods for summarizing data, measures of location and scale, basic probability, descriptions of discrete and continuous random variables, sampling distributions, the basics of hypothesis testing, one-way ANOVA, multiple comparisons, basic regression, the analysis of categorical data, and methods based on ranks. A fundamental goal is understanding how to interpret standard methods correctly, which includes avoiding common misinterpretations that have been revealed by some modern insights.

A quiz is given after each chapter is covered in class. They are designed to provide some information about what to expect on the midterms. Another goal is to help students identify any errors and misinformation they might have about the methods covered.

On occasion, bonus questions are added to the exams. Getting a bonus question wrong does not lower your grade, but getting it right can improve your grade.

Grades are based on the percentage of total points possible. A=92%, A-=90%, B+=88%, B=82%, B-=80%, etc.

### GETTING OUTSIDE TUTORING:

There is a website for USC students to find or offer tutoring: [YourCollegeTutors.com](http://YourCollegeTutors.com)

Email: [tutoring@usc.edu](mailto:tutoring@usc.edu)

You can also contact Center for Academic Support — Student Union 301 — Los Angeles, CA 90089-0896 (213) 740-0776 (Phone)

tutor appointment site: <https://sait.usc.edu/academicsupport/centerservices/secure/login.asp>

SOFTWARE: This course uses R. The focus is on learning how to apply standard methods using

R. But by learning R, students will be able to apply recently developed methods, not covered in this course, that provide substantially improved techniques for detecting and describing differences among groups and associations among variables that are generally impossible to apply using SPSS. A second reason for using R is that, from the point of view of teaching basic concepts, it has advantages over SPSS.

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

From the USC grade handbook: No student in a course with a final examination is permitted to omit the final examination or take it prior to its scheduled date, and no instructor is authorized to permit a student to do so.

#### Homework

Ch 1: 1-5, 9, 15-17

Ch 2: 1-5, 7-11, 13-16, 18, 20-26, 27, 29, 32, 33, 35-37.

Ch 3: 1, 2, 8-10, 12, 13, 15, 18.

Ch 4: 1, 2, 4, 5, 8, 9-11, 13, 14, 17-26, 29, 30, 33-35, 38-40, 46, 48, 50, 54, 57-59, 61, 62.

Ch 5: 1-4, 6, 7-11, 14, 16-19, 22, 23, 26, 28, 29.

Ch 6: 1-5, 8, 11, 12, 15, 16, 18, 21-23, 26, 29, 30, 32, 35, 39, 40.

Ch 7: 1-5, 9, 11, 13, 15-17, 20-22, 25, 33.

Ch 8: 1-4, 13, 17, 19, 21, 23, 25-27, 31-33, 36.

Ch 9: 1-5, 11, 14, 16, 18, 19, 21-30

Ch 10: 1, 3, 5, 9, 12, 14, 16-17, 19-21,

Ch 11: 1-3, 8, 12, 13, 17-19.

Ch 12: 1-3, 5-7, 10-13,

Ch 13: 1-6, 8, 14, 16

There are three exams: two midterms and a final. Each counts about 30% toward your grade and the lab counts 10%. The first exam covers chapters 1-4, the second covers chapters 5-8, and the final covers chapters 9-13.

Week 1: Ch 1 and 2. Overview and basic notation. Some R basics. Measures of location and dispersion. Understand their basic properties. Understand relative merits of outlier detection techniques.

Week 2: Complete Ch 2. Glimpse at modern advances. Start Ch 3. Quiz on Ch 2.

Week 3. Complete Ch 3. Understand relative merits of methods for plotting data. Glimpse at modern advances. Start Ch 4. Quiz on Ch 3.

Week 4. Complete Ch 4. Understand expected values, conditional probability, the binomial probability function, basic properties of a normal distribution. Provide a foundation for understanding when and why a normal distribution can be highly unsatisfactory. (More details are covered in subsequent chapters.) Start Ch 5. Quiz on Ch 4

Week 5. First midterm.

Week 6. Complete Ch 5. Understand basics of sampling distributions. Glimpse at modern advances: the impact of non-normality on sampling distributions and standard errors. Start Ch 6. Quiz on Ch 5.

Week 7. Complete Ch 6. Understand basics of hypothesis testing. Glimpse at modern advances: the impact of non-normality on sampling distributions and standard errors. Cover Ch 7. Quiz on Ch 6.

Week 8. Cover Ch 8. Understand basics of hypothesis testing. Glimpse at modern advances: the impact of non-normality on sampling distributions and standard errors. Start Ch 9. Quiz on Ch 7

Week 9. Cover Ch 8. Understand basics of least squares regression and correlation. In particular, take a close look at features of data that impact these techniques. Start Ch 9. Quiz on Ch 8.

Week 10. Midterm 2.

Week 11. Complete Ch 9. Understand relative merits of methods for comparing measures of location. Start Ch 10. Quiz on Ch 9.

Week 12. Complete Ch 10. One-Way and Two-Way ANOVA basics . Start Ch 11. Quiz on Ch 10.

Week 13. Complete Ch 11. Multiple comparisons and how they should be used in conjunction with global tests in Ch 10. Start Ch 12. Quiz on Ch 11.

Week 14. Complete Ch 12. Understand basic methods for analyzing categorical data. Start Ch 13. Quiz on Ch 12.

Week 15. Complete Ch 13, review for the final.

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 Disability Services and Programs at (213) 740-0776, STU 301.

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/>.