

Statistical Methods (PSY 3000/3005, CRN 43031)

Fall 2013, Aug. 19 – Dec. 13

Prof. Robert Carlson

Class Information

Lecture Days: Tues. & Thur.
Lecture Time: 9:00 – 10:15
Lecture Location: McDonald 104
Lab Days: Thur.
Lab Time: 10:30 – 12:15
Lab Location: McDonald 111

Contact Information

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Disclaimer: Details of this syllabus are subject to change (I hope not, but you never know).

Contacting Prof. Carlson: The most effective way to contact me is by e-mail (contacting me through Canvas will generally be ineffective, however). I check my e-mail regularly, and I am much more likely to remember to respond to an e-mail than to a comment made to me before or after class (I tend to forget those comments, unfortunately). If you speak to me in person, especially away from my office, **make sure to follow up any conversations with an e-mail** to remind me to address the matter in a timely manner. I may not be in my office a lot outside of office hours, but you are welcome to drop by any time to see if I have time to meet with you. If you want to be sure I will be there to talk with you during a time other than official office hours, please feel free to contact me via e-mail to make an appointment. I am happy to work with you on your lab assignments or understanding any of the material. There are also Psychology tutors, at least one of which is traditionally chosen because they have excelled in this course in a previous semester.

Course Summary: The purpose of this course is to introduce Psychology majors to the use of statistics within the behavioral sciences. Students will learn how to *apply* statistical principles, instead of merely memorizing a set of equations, in a variety of research contexts within the behavioral sciences. This course should prepare students to succeed in a Psychology Research Methods course.

Course Information:

Textbook: *Fundamental Statistics for the Behavioral Sciences*, 7th Edition, by David C. Howell

Study Guide: Online study guide (as of now, incomplete) provided for your convenience

Office Hours: Tue., 10:20-11:10, 1:00-1:50; Wed., 10:00-10:50, Thu., 2:00-2:50

Prerequisites: None

Course Fees: None

General Education: This course does not fulfill any general education requirements.

Attendance Policy: Students are expected to attend every class (lecture and lab) and participate in class discussions. There is a lot of material to learn in this course, and it is not easily learned in the abstract; it is vital for students to actively participate in learning the material, through class discussions and actively completing laboratory assignments. If you are going to perform well in this class, you must plan on staying on top of the work every week of the semester.

Classroom Policy: This is a relatively small class, and all students are expected to participate in classroom discussions. This material is best learned through active participation and application. Combined with the lab, this will be a hands-on course.

Academic Honesty: It is extremely important that students present their own work for grading in this course. I cannot accurately evaluate how much you have learned if you are turning in someone else's work. Although collaboration among students regarding the general approach to completing assignments is encouraged (groups working together in lab and studying together outside of class is a very good way to learn), the specific work that is submitted must reflect an individual student's own work, including your own wording of lab assignment answers (graphs, open-ended questions, etc.).

Grading Scale	
Grade	Range
A	>91%
A-	89-91%
B+	86-88%
B	82-85%
B-	79-81%
C+	76-78%
C	72-75%
C-	69-71%
D+	66-68%
D	62-65%
D-	59-61%
F	<59%

Grading Information: Final grades in this course will be based on a percentage-based system, and there will **not** be a "curve" used to determine grades.

Grade Components: Quizzes (10%), Lab Assignments (25%), Midterm Exams (40%), Final Exam (25%).

Quizzes. Quizzes may be given each class period; if there is a quiz, it will usually be given at the beginning of class. Each quiz will be a short test of your knowledge of that class's reading assignment. In-class quizzes will typically be very short and can be completed in less than five minutes. Other quizzes will need to be completed outside of class. These quizzes must be completed independently; **do not copy another student's work.**

Lab Assignments. Plan on having a lab assignment due **every week.** Each assignment will be introduced in lab, including an elaboration of the material that was discussed in class which will be relevant for the assignment. Explanations about the use of statistical software (mostly Excel) will be also given during Lab, along with handouts available through Canvas on how to use Excel. There will always be time available during lab to work on that assignment, but lab assignments will be due at least 4 days after they are assigned. The average percentage score of each lab assignment (**not** total lab points) will count toward 25% of your course grade. See the Lab Guide for more information about lab.

Midterms. Midterms will test your knowledge of an entire section of the course (usually 5-6 chapters). Midterm test questions will involve true/false and multiple choice questions, as well as questions that will require students to demonstrate their ability to apply the statistical principles learned in class, but with minimal calculations. There will be three midterm exams during the semester; the lowest of the three midterms will count less toward your final grade. Specifically, your two highest midterm scores will each contribute 15% toward your final grade, and your lowest midterm score will contribute 10% toward your final grade. All midterm exams will be administered during class time, according to the schedule below.

Final Exam. The final exam will be administered at the end of the semester and will cover material from the entire course. It will be equivalent to a longer midterm exam.

Grade Calculation: Grades are calculated based on percentages, **not total points.** For example, if you score 9 out of 10 on one lab assignment, that counts as a grade of 90%; if you score 70 out of 100 on another lab assignment, that counts as a grade of 70%. If those were your only two lab assignments, your Lab Average would be 80% (the average of 70% and 90%), **not** 72% (79 out of 110 total points). The same principle applies to quizzes and midterm exam grades. Your Quiz Average (QA) will be calculated by averaging the percentage scores from each quiz, and your Lab Average (Lab) will be calculated the same way. Multiply each of your two highest midterm (HM) percentages by .15 and your lowest midterm (LM) percentage by .10. To calculate your overall grade, use the following formula:

$$(QA * .10) + (HM * .15) + (HM * .15) + (LM * .10) + (Lab * .25) + (Final Exam \% * .25)$$

This sum will be your total percentage grade in the course; use this figure to determine your letter grade in the course based on the Grading Scale listed above.

<u>Date</u>	<u>Reading Assignments/Course Events</u>	<u>Ch:Pages</u>
Tue., Aug. 20	Introduction	1:1-14
Thu., Aug. 22	Basic Concepts	2:17-31
Tue., Aug. 27	Frequency Distributions and Graphs	3:35-55
Thu., Aug. 29	Measures of Central Tendency (Lab 1 due)	4:63-76
Tue., Sep. 3	Basics of Variability	5:80-93
Thu., Sep. 5	Boxplots (Lab 2 due)	5:94-107
Tue., Sep. 10	Normal Distribution and Frequency	6:111-120
Thu., Sep. 12	Standard Normal Distribution and z -Tests (Lab 3 due)	6:120-130
Sep. 12 – Sep. 17	Exam 1 in Testing Center	Ch. 1-6
Mon., Sep. 16	Lab 4 due (9:00 a.m.)	
Tue., Sep. 17	Sampling Distributions and Null Hypotheses	8:156-169
Thu., Sep. 19	Hypothesis Testing	8:169-185
Tue., Sep. 24	Scatterplots and Correlation	9:188-201
Thu., Sep. 26	Factors that Affect Correlations (Lab 5 due)	9:201-226
Tue., Oct. 1	Linear Regression	10:230-243
Thu., Oct. 3	Regression Predictions (Lab 6 due)	10:243-262
Tue., Oct. 8	Multiple Regression	11:268-285
Thu., Oct. 10	Fall Break (no class)	---
Tue., Oct. 15	Residuals and Multiple Regression Examples (Lab 7 due)	11:285-296
Thu., Oct. 17	Review for Exam 2	
Oct. 17 – Oct. 22	Exam 2 in Testing Center	Ch. 8-11
Mon., Oct. 21	Lab 8 due (9:00 a.m.)	
Tue., Oct. 22	Sampling Distribution of the Mean	12:301-317
Thu., Oct. 24	t -test and Confidence Limits	12:317-332
Tue., Oct. 29	Comparing Two Samples	13:336-349
Thu., Oct. 31	Independent Sample t -tests (Lab 9 due)	14:353-362
Tue., Nov. 5	Heterogeneity of Variance and Examples	14:362-378
Thu., Nov. 7	Examples from Chapter 21 (Lab 10 due)	21
Tue., Nov. 12	Career Day (no class)	---
Thu., Nov. 14	ANOVA (Lab 11 due)	16:406-427
Tue., Nov. 19	Post-hoc Tests	16:427-446
Thu., Nov. 21	Thanksgiving Holiday (no class)	---
Tue., Nov. 26	Factorial Designs (Lab 12 due)	17:453-477

Thu., Nov. 28	Leftover Material and Exam 3 Review	---
Mon., Dec. 2	Lab 13 due (9:00 a.m.)	
Tue., Dec. 3	Exam 3	Ch. 12-14, 16-17
Thu., Dec. 5	Final Exam Review	Ch. 1-6, 8-14, 16-17
Thu., Dec. 12	Final Exam, McDonald 104, 8:00-10:00 a.m.	Ch. 1-6, 8-14, 16-17