

# Statistical Methods (PSY 3000/3005)

Fall 2009, Aug. 24 – Dec. 18

Prof. Robert Carlson

## Class Information

Class Days: Tues. & Thur.

Class Time: 9:00 – 10:15

Class Location: McDonald 106

## Contact Information

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**Course Summary**: The purpose of this course is to introduce students to the use of statistics within the behavioral sciences. Students will learn how to apply statistical principles 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*, 6<sup>th</sup> Edition, by David C. Howell

Office Hours: Monday through Friday, 12:00 p.m. – 12:50 p.m.

**Attendance Policy**: Students are expected to attend every class and participate in class discussions.

**Classroom Policy**: This is a small class, and all students are expected to participate in classroom discussions (this will form part of your grade). This material is best learned through active participation. 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, the specific work that is submitted must reflect an individual student's own work.

**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. Lab assignments will be available 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. There will always be time available during lab to work on that assignment. The average percentage score of each lab assignment will count toward 25% of your course grade.

Midterms. Midterms will test your knowledge of an entire section of the course. Midterm test questions will involve true/false and multiple choice questions, as well as questions that will

<b><u>Grading Scale</u></b>	
<b><u>Grade</u></b>	<b><u>Range</u></b>
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%

require students to demonstrate their ability to apply the statistical principles learned in class. There will be three midterm exams during the semester; the lowest of the three midterms will only count half as much toward your final grade. In other words, 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 4 out of 4 on one quiz, that counts as a grade of 100%; if you score 4 out of 5 on another quiz, that counts as a grade of 80%. If those were your only two quizzes, your Quiz Average would be 90% (the average of 80% and 100%), not 89% (8 out of 9 total questions correct). The same principle applies to midterm exam grades. **The total number of points quizzes, lab assignments and midterms does not matter.** 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 Assignment</u>	<u>Ch:Pages</u>
Tue., Aug. 25	Introduction	1:1-11
Thu., Aug. 27	Basic Concepts	2:16-27
Tue., Sep. 1	Frequency Distributions and Histograms	3:32-42
Thu., Sep. 3	Reading Graphs	3:42-52
Tue., Sep. 8	Measures of Central Tendency	4:60-71
Thu., Sep. 10	Basics of Variability	5:75-87
Tue., Sep. 15	Boxplots	5:87-99
Thu., Sep. 17	Normal Distribution and Frequency	6:103-111
Tue., Sep. 22	Standard Normal Distribution and $z$ -Tests	6:111-119
Thu., Sep. 24	<b>Exam 1</b>	<b>Ch. 1-6</b>
Tue., Sep. 29	Sampling Distributions and Null Hypotheses	8:143-154
Thu., Oct. 1	Hypothesis Testing	8:154-167
Tue., Oct. 6	Scatterplots and Correlation	9:171-182
Thu., Oct. 8	Factors that Affect Correlations	9:183-198
Tue., Oct. 13	Linear Regression	10:211-220
Thu., Oct. 15	Regression Predictions	10:220-229, 236-239

Tue., Oct. 20	Multiple Regression	11:245-261
Thu., Oct. 22	Residuals and Multiple Regression Examples	11:261-274
Tue., Oct. 27	<b>Exam 2</b>	<b>Ch. 8-11</b>
Thu., Oct. 29	Sampling Distribution of the Mean	12:279-287
Tue., Nov. 3	$t$ -test and Confidence Limits	12:287-299
Thu., Nov. 5	Comparing Two Samples	13:309-320
Tue., Nov. 10	Independent Sample $t$ -tests	14:325-334
Thu., Nov. 12	Heterogeneity of Variance and Examples	14:334-345
Tue., Nov. 17	<b>Career Day (no class)</b>	---
Thu., Nov. 19	Why an Analysis of Variance?	16:374-384
Tue., Nov. 24	<b>Thanksgiving Break (no class)</b>	---
Thu., Nov. 26	What the ANOVA gives you	16:384-394
Tue., Dec. 1	Post-hoc Tests	16:394-406
Thu., Dec. 3	Factorial Designs and Interactions	17:418-431
Tue., Dec. 8	<b>Exam 3</b>	Ch. 12-14, 16-17
Thu., Dec. 10	<b>Final Exam Review</b>	<b>Ch. 1-6, 8-14, 16-17</b>
Thu., Dec. 17	<b>Final Exam, McDonald 106</b>	<b>Ch. 1-6, 8-14, 16-17</b>