Statistical Methods (PSY 3000/3005, CRN 26642)
Spring 2014, Jan. 12 – May 7
Prof. Robert Carlson

Class Information

Lecture Days: Mon, Wed. & Fri.
Lecture Time: 9:00 – 9:50
Lecture Location: McDonald 102
Lab Days: Tue. & Thur.
Lab Time: 10:00 – 10:50
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).

Primacy of Syllabus: If there are discrepancies between the syllabus (e.g., due dates) and Canvas, always assume the syllabus is correct.

Contacting Prof. Carlson: The most effective way to contact me is by e-mail (note: sending me a message or making a comment through Canvas is **NOT** the same as e-mail—I generally won't see Canvas messages or comments). I check my DSU e-mail account regularly (rcarlson@dixie.edu), and you can generally expect an e-mail response within one academic day (a day the campus is in session). 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 tend to forget). 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.

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: Mon., Wed., 11:00-11:50; Tue., 11:50-12:40; Fri., 10:00-11:50; and by appointment
Prerequisites: Math 1040 and PSY 2000
Course Fees: None
General Education: This course does not fulfill any general education requirements.

Prerequisites: Math 1040 serves as a basic introduction into the mathematical side of statistics—how to calculate simple results using statistical formulae. PSY 2000 provides a background in writing according to APA style guides, which is required when presenting statistical results.

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.

Grading Scale	
Grade	**Range**
A	>90%
A-	88-90%
B+	85-87%
B	81-84%
B-	78-80%
C+	76-77%
C	72-75%
C-	68-70%
D+	65-67%
D	61-64%
D-	58-60%
F	<58%

<u>Classroom Policy</u>: This is a relatively small class, and all students are expected to participate in classroom discussions and lab activities. This material is best learned through active participation and application. Combined with the lab, this will be a hands-on course; passive learning is a very inefficient way to learn how to *apply* statistical techniques.

<u>Academic Honesty</u>: 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.).

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

    <u>Grade Components</u>: Quizzes (10%), Lab Assignments (25%), Midterm Exams (45%), Final Exam (20%).

    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, and lab assignments will be due at least 2 days after they are assigned. Lab assignments area always **due at 8:30 a.m.** on the date indicated on the Course Schedule, listed below. **As much as possible, lab answers must be submitted in APA format**. The average percentage score of each lab assignment (<u>not</u> 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 four midterm exams during the semester; the midterm that you had the highest percentage score on will count more toward your final grade than the other midterms: It will contribute 15% toward your final grade while the rest of the midterm grades will each contribute 10% toward your final grade. All midterm exams will be administered in the Testing Center, 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. Everything covered during the semester will be covered on the Final Exam.

      <u>Grade Calculation</u>: 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 your highest midterm (HM) percentage by .15 and the rest of your midterms (RM) percentages by .10 each. To calculate your overall grade, use the following formula:

      (QA * .10) + (HM * .15) + (RM * .10) + (RM * .10) + (RM * .10) + (Lab * .25) + (FE% * .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.

Date	Course Schedule	Ch:Pages
Mon., Jan. 12	Welcome to the Class	---
Wed., Jan. 14	Introduction to Statistics	1:1-14
Fri., Jan. 16	Basic Concepts	2:17-31
Mon., Jan. 19	**Martin Luther King Jr. Day (no class)** (Lab 1 due)	---
Wed., Jan. 21	Frequency Distributions	3:35-45
Fri., Jan. 23	Other types of graphs	3:45-55
Mon., Jan. 26	Measures of Central Tendency (Lab 2 due)	4:63-76
Wed., Jan. 28	Basics of Variability	5:80-93, 98-100
Fri., Jan. 30	Normal Distribution and Frequency	6:111-120
Mon., Feb. 2	Standard Normal Distribution and z-Tests (Lab 3 due)	6:120-130
Wed., Feb. 4	**Review for Exam 1** (Lab 4 due; no Lab class)	**Ch. 1-6**
Midterm Exam 1 in Testing Center Feb. 4 – Feb. 5		
Fri., Feb. 6	Sampling Distributions	8:156-164
Mon., Feb. 9	Hypothesis Testing	8:164-173
Wed., Feb. 11	Hypothesis Testing Errors	8:173-185
Fri., Feb. 13	Scatterplots	9:188-198
Mon., Feb. 16	**Presidents' Day (no class)** (Lab 5 due)	---
Wed., Feb. 18	Correlations	9:198-208
Fri., Feb. 20	Interpreting Correlations	9:208-226
Mon., Feb. 23	Introduction to Linear Regression (Lab 6 due)	10:230-240
Wed., Feb. 25	How Good is the Regression Model?	10:240-249
Fri., Feb. 27	Using Linear Regression	10:249-262
Mon., Mar. 2	**Review for Exam 2** (Lab 7 due; no Lab class)	**Ch. 8-10**

	Midterm Exam 2 in Testing Center Mar. 2 – Mar. 3	
Wed., Mar. 4	Z-scores for Samples	12:301-310
Fri., Mar. 6	One-sample t-tests	12:310-319
Mar. 9-13	**Spring Break** (no class)	---
Mon., Mar. 16	Confidence Limits (Lab 8 due)	12:319-332
Wed., Mar. 18	Related Sample t-tests	13:336-340
Fri., Mar. 20	Related Sample t-tests examples	13:341-343, 346-349
Mon., Mar. 23	Independent Sample Homogeneous t-tests (Lab 9 due)	14:353-362
Wed., Mar. 25	Heterogeneous t-tests and Examples	14:362-378
Fri., Mar. 27	Decision Trees	---
Mon., Mar. 30	**Review for Exam 3** (Lab 10 due; no Lab class)	**Ch. 12-14**
	Midterm Exam 3 in Testing Center Mar. 18 – Mar. 19	
Wed., Apr. 1	One-way ANOVA Introduction	16:406-416
Fri., Apr. 3	ANOVA Calculations	16:417-427
Mon. Apr. 6	Post-hoc (Multiple Comparisons) Tests (Lab 11 due)	16:427-435, 441-443
Wed., Apr. 8	One-way ANOVA Review	Ch. 16 (no quiz)
Fri., Apr. 10	Factorial Designs	17:453-456
Mon., Apr. 13	Factorial ANOVA Calculations (Lab 12 due)	17:457-466
Wed., Apr. 15	Factorial ANOVA Examples (incl. Interactions)	17: 470-474
Fri., Apr. 17	Chi-Square Goodness-of-fit	19:502-510
Mon., Apr. 20	Chi-Square Contingency Tables (Lab 13 due)	19:510-519, 526-530
Wed., Apr. 22	Chi-Square Review	Ch. 19 (no quiz)
Fri., Apr. 24	**Review for Exam 4** (Lab 14 due)	**Ch. 16-17, 19**
	Midterm Exam 4 in Testing Center Apr. 24 – Apr. 26	
Mon., Apr. 27	**Final Exam Review**	---
Wed., Apr. 29	**Final Exam Review**	---
Mon., May 4	**Final Exam, McDonald 102, 7:30-9:30 a.m.**	**Everything**