PSYCHOLOGY 302 – STATISTICAL METHODS IN PSYCHOLOGY

Spring 2014

Lecture: MW 8:30-9:50am, ALL 141 (Allen Hall)

Labs: T at scheduled times, FRNK 271 (Franklin Building)

Lecture Instructor: **Jessica Kosie**, Office: FRNK 238

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Office Hours: Wednesday 3:15pm-5:15pm or by appointment

Lab Instructor: **Colton Christian**, Office: FRNK 230

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Office Hours: Friday 12:00-2:00pm or by appointment

REQUIRED MATERIALS

Text: Gravetter, F.J., & Wallnau, L.B. (2013). *Essentials of Statistics for the Behavioral Sciences* (8th edition). Belmont, CA: Thomson/Wadsworth. Included with Aplia as e-book. Hard copy not required.

Aplia: This is an online program you will use to complete HW assignments. **Purchase is required for this course.**

iClicker: If you do not own one already, you will need to purchase an iClicker for use in class. It will be used to track attendance, and to do periodic learning assessments. **Purchase is required for this course.**

You will also need a **calculator** for in-class work. It does *not* need to be a graphing calculator. Note that cell phones *may not* be used as calculators during quizzes/exams, but can be used for in-class work.

See Blackboard for more information about registering your Aplia account and iClicker (under Course Information).

COURSE OVERVIEW

Course Objectives: At the end of this course you will be able to read a description of a research study and identify the appropriate statistical technique needed to answer the research question. Using hypothesis testing procedures, you will be able to conduct this test (both by hand and using statistical computing software) and draw a conclusion (and write it in APA style) based on your analyses.

Course Description: This course will introduce you to descriptive and inferential statistics, teach you how to calculate statistics and analyze data using a computer statistics package, and improve your ability to understand and evaluate statistical information reported in primary research articles.

Although you will be learning how to do statistical calculations by hand, this course is different from courses taught in mathematics departments. The focus in this class is on *conceptual* understanding of statistics. In the past, students have generally found that the "number crunching" in this class is relatively easy. It is the conceptual understanding of statistical methods that is more difficult. Once you understand the concepts, you will probably have little trouble doing calculations.

Course Design: The course promotes active learning through discussion, solving problems, and computer exercises. In many ways the instructor and TAs will act as coaches – ultimately, you must actively internalize the concepts. The course encourages teamwork among students, instructor, and TAs.
Responsibilities: The course includes traditional lecture meetings and weekly lab meetings. Attendance at all lectures and labs is **mandatory** and *essential* to your success in this course. Attendance will be tracked using iClickers during lecture. If you think you will need to leave class early let me know in person or via email. If you leave class early without talking with me you **will not** receive credit for attendance. When in class, you should stay engaged with the material rather than just going through the motions. Ask questions. Take notes. Go to office hours.
If you find yourself not doing as well as you would like in this class, you should contact us earlier rather than later. Although you must take responsibility for your own learning, we can also help you solve many problems, if they arise. But if you wait until the end of the term, it will probably be too late for us to be of much help.

Come **prepared** to class. Read relevant assignments prior to class, think about what you read, and bring questions if you have them. You will not do well on exams if you do not keep up with the reading. You should also do the *learning checks*, and if you find you haven't completed them successfully, read through the material again. It will help you improve your understanding.

Check your email and the blackboard website often, as we may post important class information. This course has been designed to comply with the psychology department's guidelines for teaching and learning (http://psychweb.uoregon.edu/undergraduates/guidelines).

If you successfully complete this course, you will earn 4 credits toward your degree. According to University principles governing credit and contact hours, each credit means 30 hours of work. Thus, 4 credits are equivalent to 120 hours of work over 10 weeks, or 12 hours/week. You will spend 4 hours in class and lab each week and should plan to spend 8 hours/week reading, studying, and completing assignments outside of class.

COURSE REQUIREMENTS

1. Attendance. You must participate in *ungraded* class exercises using your iClicker to get credit for each day that you attend lecture. While you get 2 "free" miss days, you shouldn't use them unless absolutely necessary; if you skip class or lab, you will miss important information. Note that you get credit for attending the *entire lecture*. If you come to class to take a quiz and leave before that day's lecture you will *not* receive attendance points for that day. If you need to leave class early for any reason you must let me know *in advance*. Otherwise, you will not receive attendance points for that day.

- Lecture slides will be posted *after* class each day. Lecture slides will be numbered - if you want to link your notes notes to a specific slide you can reference that slide number in your notes.
- Lab handouts will be posted *after* the last lab for the week. For this class, that is Tuesdays at 1:30pm.

***Important Note on iClicker**: You are required to have an iClicker by the start of Week 2, or you will begin to lose attendance points. You must register your iClicker on BB by the start of Week 3, or you will lose *2 days* of participation points. If not registered by the start of Week 4, you will be *unable to earn any* participation points.

2. Homework. Assignments are due **Sunday at 11:45 pm, electronically.** Homework has two components:

- Aplia software questions. Aplia assignments **cannot be turned in late** as these assignments become unavailable after the due date and time.
    - Make sure to register with Aplia using the same name that you use on Blackboard for grading You will get three attempts at the right answer. Your score will be the *average* of all attempts. So it is in your best interest to try hard and do the best you can the first time!

- The SPSS portion of the homework should be completed as a *Word document* (NOTE: If you turn in your SPSS assignment in a format that is NOT Word, it will not be accepted) – copy and paste in any SPSS output you include. To turn it in, go to the course Blackboard page, 'Assignments.' This will lead to a page where you can upload your document.
    - For help, http://library.uoregon.edu/scis/blackboard/faq/students/s9.html or ask lab instructor
    - Late SPSS homework assignments will receive a 10% reduction in points available for every day late (note that this is for the SPSS portion of homework only – Aplia cannot be turned in late). SPSS homework is considered late if it is turned in after 11:45pm Sunday evening.

3. Quizzes. There will be 5 in-class quizzes throughout the term. The lowest of these 5 quiz grades will be dropped. Because of this, I **do not allow make-up quizzes.** If, for *whatever reason* (aside from university sponsored excuses), you miss a quiz, this will be the one that is dropped. *Missing subsequent quizzes will result in grades of zero for those quizzes.* Quizzes will cover all material since previous quiz, and will be multiple-choice. You will have 40 minutes to complete each quiz, 8:30-9:10am, with lecture starting promptly at 9:10am. You may have a pencil, eraser, and calculator (that is not a cell phone) on your desk during quizzes. Everything else must be put away. Please use the restroom *before* the quiz starts. You may sit quietly or take a break if you finish early, but do not leave the room until I have your quiz. Remember that iClicker class exercises will occur during the lecture portion of class. Thus, if you leave immediately after taking the quiz you will *not* receive points for attendance.

4. Final Exam. The final exam will be cumulative. A major component of the final will be selecting the appropriate statistical test to answer a given research question. Knowing when to use which statistical test (i.e., how to appropriately analyze your data) is one of the fundamental goals of this course. The date and time of the final exam is *not* flexible unless you have another final exam scheduled at the same time.

COMPUTER LABS

The Franklin building is open to undergraduates from 8am-5pm Monday through Friday. The only way into the building is through the main entrance (located at the BACK of the building). Doors lock at 5pm sharp. You can leave after 5pm, but you cannot enter.

There are computers that run SPSS in the **Student Center** in room 162 Franklin, on the first floor. This is also where you can find the 302 stats tutors. Thus, it's a great spot to work on homework since you might have a tutor on hand to help out if you get stuck. You can find more information about the tutors (including their hours) on their website: http://302tutors.uoregon.edu/ or on Facebook: https://www.facebook.com/UO302Tutors. SPSS is also available on **Knight Library** computers.

SPECIAL NEEDS

Students with Disabilities: If you have a documented disability and need accommodations, let me know ASAP. Please let me know in advance even if you are not sure that your disability will require accommodation in this course (for example, if you have a physical disability that my require you to miss class, but you aren't sure that it will). With advance planning, adjustments can be made. Last minute changes will be problematic. Students who are experiencing learning difficulties are encouraged to consult the Accessible Education Center (164 Oregon Hall; 346-1155; http://aec.uoregon.edu/). Without documentation, accommodations are made at discretion of instructor.

Student Athletes: You must let me know during the first week of classes if you will miss class due to travel with a UO athletic team and require accommodation. Requirements for the course will not be relaxed for student athletes, however minor scheduling accommodations may be made (e.g. taking a quiz a few hours early) if planned well ahead of time.
Other Students: If you are repeating this class, or if you are a student with children, a job, or have other circumstances that might affect your ability to devote time to the class, please let us know so we can discuss strategies to promote your success in this course. If you wait until you have problems in the course it may be too late to salvage your grade, but planning ahead will likely lead to success.

COLLABORATION

We strongly encourage collaborative learning, but you must produce (and we must assess) individual work. Discussing homework with other students and instructors is encouraged, as are homework and study groups. Talking over problems and reworking them when you get different answers promotes deeper understanding of concepts. However, each student must submit a separate homework assignment, which was *written independently* (no word-for-word copying), and you must show your work for hand calculations. Thus, while we encourage you to work together to solve problems and check answers, the actual writing of answers needs to be done independently. Your work on the Quizzes and Final must be entirely your own.

ACADEMIC INTEGRITY

We take academic integrity seriously. Cheating is defined as providing or accepting information on an exam, plagiarism or copying anyone's written work, or allowing someone else to copy your work. In addition, lying to get points (e.g. lying about having turned in an assignment on time) is considered academic dishonesty and will be treated as cheating. Discovery that a student has cheated will lead to a grade of F in the course for that student, and we will inform UO's student conduct coordinator. The University may impose additional penalties in accordance with the student conduct code. Reporting of suspected Academic Misconduct (such as cheating) is *mandatory.* It is required by the university and is not at the discretion of the instructor. We retain the right to assign seats for tests, to change an individual's seat for test security purposes, and/or to require and check ID for admission to tests.

THREE WAYS TO DO WELL

1. **Keep up and keep trying**. Read assigned chapters early and often. Keep slogging through even if you only understand half of what you read. Persistence really will pay off – concepts will sink in. Come to lecture and lab. Start homework immediately so you finish in time to compare with others. Turn it in on time.
2. **Work hard on understanding early material.** If you get the concepts in the first half of the term, the second half will deepen your understanding. If you don't grasp concepts in the first half, the second half may seem like a maze of confusing techniques. Seek help early if you are feeling lost.
3. **Stay in touch and speak up.** We want you to do well! Ask questions in class and lab. Forming a clear question helps you discover what you do and do not understand, which is vital to mastering this subject.

TOP FIVE PITFALLS

1. **Concluding that struggling in the course means you don't/can't get statistics.** This course draws on more than one type of skills – math plus conceptual understanding. Almost every student struggles with some element of the course. Failing on something is an indicator that you need to put in more effort – not that you aren't smart enough. We do our best to teach in a way that meets your needs—if you let us know when you don't understand something, we can better understand what those needs are.
2. **Passive listening and reading.** Write, draw, figure. Think with a pencil in hand. Turn the concepts into something you do. To succeed, you must be able to explain and execute.
3. **Beginner's luck.** Doing it right once doesn't mean you can repeat the trick. Getting it wrong helps you understand how the process works. Mistakes help you learn.
4. **Trying to cram.** You can cram content, but skills don't compress. Don't fall behind; it's very hard to catch up.
5. **Giving up because you get stuck.** Everyone gets stuck. Math is all about getting stuck and unstuck. When this happens, play around. Try a new tactic. *Ask for help.*
6. **Spectator overconfidence.** Watching someone go through the steps is a starting point, but you have to get in the pool to learn how to swim.

GRADING

Your *final course grade* is based on the following points (of 100):

35	Average of homework assignments: 70% Aplia HW (24.5 points) and 30% SPSS (10.5 points)
40	Average score of 4 quizzes out of 5 (lowest grade is dropped)
20	Cumulative final
5	Attendance (up to 2 classes can be missed without penalty)

Final grades will be based on percentage of total possible points earned, distributed as follows:

A+ = 97-100%	**B+** = 87 – 89.9%,	**C+** = 77-79.9%	**D+** = 67-69.9%	**F =** < 60%
A = 93-96.9	**B** = 83-86.9%	**C** = 73 – 76.9%	**D** = 63 – 66.9%	
A = 90-92.9%	**B-** = 80-82.9%	**C-** = 70 – 72.9%	**D** = 60 – 62.9%	

If taking Pass/Fail: P = 70% or greater, N = less than 70%

How to figure out your grade: Regardless of the *number* of points on any assignment (e.g. quiz, HW), divide your score by the total possible score to get the percentage (e.g. 10.5/14 = 75%). Average your percentages across relevant assignments. For example, if your quiz grades were 75, 95, 80, and 89%: (.75+.95+.80+.89)/4 = .8475. Multiply this average by the total points for that assignment (e.g. .8475*40=33.9 points). Add up all of your points for all assignments, and divide by 100 to get your percentage score out of total points for the class. This is your percentage grade. See above for translation to letter grades.

COURSE SCHEDULE

(Schedule, homework due dates, and quiz dates subject to change)

Week	Date	Topic	Reading	Quiz/Assignments
1	M 3/31	Course Introduction, Key Terms		
	W 4/2	Variables, Histograms, Frequency	Ch. 1-2	
	T 4/1	Week 1 Lab		HW1 due 4/6
2	M 4/7	Central Tendency and Variability	Ch. 3-4	
	W 4/9	Z-Scores and the Normal Distribution	Ch. 5	
	T 4/8	Week 2 Lab		HW2 due 4/13
3	M 4/14	Probability and Normal Distribution	Ch. 6	**Quiz 1 (Ch. 1-4)**
	W 4/16	Distribution of Sample Means	Ch. 7	
	T 4/15	Week 3 Lab		HW3 due 4/20
4	M 4/21	Hypothesis Testing with z	Ch. 8	
	W4/23	The one-sample t-test	Ch. 9	**Quiz 2 (Ch. 5-8)**
	T 4/22	Week 4 Lab		HW4 due 4/27
5	M 4/28	Independent samples t-test	Ch. 10	
	W 4/30	Related samples t-test	Ch. 11	
	T 4/29	Week 5 Lab		HW5 due 5/4
6	M 5/5	Intro to ANOVA	Ch. 12	**Quiz 3 (Ch. 9-11)**
	W 5/7	One-way ANOVA		
	T 5/6	Week 6 Lab		HW6 due 5/11
7	M 5/12	Factorial ANOVA	Ch. 13.1, 13.3	
	W 5/14	Repeated ANOVA, ANOVA Review	Ch. 13.2	
	T 5/13	Week 7 Lab		HW7 due 5/18
8	M 5/19	Correlation	Ch. 14.1-14.5	**Quiz 4 (Ch. 12-13)**
	W 5/21	Regression	Ch. 14.6	
	T 5/20	Week 8 Lab		HW8 due 5/25
9	M 5/26	Memorial Day – No Class!		
	W 5/28	Chi-Square	Ch. 15	
	T 5/27	Week 9 Lab		HW9 due 6/1
10	M 6/2	Which Test? Review & Recap		
	W 6/4	Last Quiz		**Quiz 5 (Ch. 14-15)**
	T 6/3	Week 10 Lab		HW10 due 3/16
11	**T 6/10**	**TUESDAY 10:15am – 12:15pm**		**Cumulative Final**