PSYCHOLOGY 302 – STATISTICAL METHODS IN PSYCHOLOGY

Spring 2014, CRN: 37662
Lecture: TR 12:00pm-1:20pm Chapman Hall, Room 207
Labs: Tuesdays and Wednesdays at scheduled times, Franklin 271 or 271A

Instructor: **Robbie Ross, M.S.**
robbier@uoregon.edu // Franklin 214 // Office Hours: Monday 10:00am-12:00pm

Jordan Miller-Ziegler Lab Instructor Email: jmillerz@uoregon.edu Office Hours: LISB 117 Wednesday: 12:00pm-2pm	**Jason Wallin** Lab Instructor Email: jwallin@uoregon.edu Office Hours: Franklin 230 Monday: 1:45pm-3:45pm

Franklin Computer Labs and Student Center are open M-F. SPSS is also available on Knight Library computers.

REQUIRED MATERIALS

Aplia: This is an online program you will use to complete homework assignments. **Purchase is required.**

Text: Gravetter, F. J., & Wallnau, L. B. (2013). *Essentials of statistics for the behavioral sciences* (8th edition). Belmont, CA: Thomson/Wadsworth. This is included with Aplia as an e-book. Hard copy not required.

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. Required.

You will also need a **calculator** for in-class work. It does NOT need to be a graphing calculator. You should bring it to class.

COURSE OVERVIEW

Welcome to Statistical Methods! This course will introduce you to descriptive and inferential statistics, teach you how to calculate statistics and analyze data using a computer statistics package (SPSS), and improve your ability to understand and evaluate the statistical information reported in primary research articles, newspapers, and magazines. As a bonus, you will sharpen your ability to think critically and logically about important topics. These skills will provide you with a basic foundation in scientific methodology, needed if you choose to go on to graduate study in the social, behavioral, or physical sciences, but useful even if you do not.

By the end of this course, you should 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 should be able to conduct this test (by hand or using statistical software), draw conclusions, and write up the results in APA style based on your analyses.

This class both is and is not really a math class. While you will be learning how to do statistical calculations by hand, this course is very different from courses taught in mathematics departments. The focus will be on increasing your **conceptual understanding** of statistics. In the past, most students have found that the "number crunching" in this class is relatively easy; it is the conceptual understanding of statistical methods that can be difficult for some. Once you understand the concepts, you will probably have little trouble doing calculations. **Exams will be focused on conceptual understanding, while homework assignments will apply concepts to actual problems**. Please keep this in mind as you approach this course.

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 **<u>mandatory</u>** and *essential* to your success in this course. Attendance will be tracked using iClickers in lecture. 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).

When you complete this course, you will earn 4 credits toward your degree. According to University principles governing credit and contact hours, each credit equals 30 hours of work for the term. Four credits are thus equivalent to 120 hours of work in total, or 12 hours per week for 10 weeks. You will spend 4 hours in class and lab each week. The other 8 hours should be spent reading, studying, and completing assignments outside of class.

<div align="center">COURSE REQUIREMENTS</div>

1. Attendance/participation: You must participate in *ungraded* class exercises using your iClicker to get credit for each day you attend. 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: The question "Did I miss anything important?" is always answered with "Of course."

2. Homework: Assignments are due each **Tuesday by 10 am, electronically.**

Homework has two components:

Aplia software questions. After the due date and time, these assignments become unavailable. Therefore, Aplia HW **cannot be turned in late**.

Make sure to register with Aplia using the same name that you use on Blackboard for grading

You get up to three attempts to answer questions correctly. However, with multiple attempts, 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!

Complete the SPSS portion of the homework as an electronic document. Copy and paste any *relevant* SPSS output in the document. Assignments are turned in on Blackboard. Go to the "Assignments" page, and upload.

For help, see http://library.uoregon.edu/scis/blackboard/faq/students/s9.html or ask your lab instructor

SPSS assignments will lose 10% of points every day they are late, including weekend days, starting at 10:00am *sharp* on Tuesdays. Aplia assignments cannot be late; see above.

3. Quizzes: There will be 5 in-class quizzes throughout the term (in weeks 3, 5, 6, 8, & 10). Quizzes will be multiple-choice, and will cover all material since the previous quiz. Your lowest quiz grade will be *dropped.* I use this policy so that poor performance on one quiz or an absence for a quiz does not negatively impact your class grade. 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 begin promptly at the start of class, and you will have 40 minutes to complete them. If you finish early, you may (temporarily) leave class, or sit quietly. All quizzes and materials must be turned in. **Lecture will start following the quizzes, and attendance will be taken at some point during lecture.**

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.

SPECIAL NEEDS

Students with Disabilities: If you have a documented disability and may need accommodations, contact me ASAP. Please let me know in advance even if you are not sure that your disability will require accommodation (for example, if you have a physical disability that may require you to miss class, but you aren't sure 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 me know now 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.

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 try 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. We retain the right to assign seats for tests, to change an individual's seating for test security purposes, and to require and check ID for admission to tests.

Simply put: Don't cheat, as it will make everyone upset. You will be mad at me, and (hopefully) disappointed in yourself. It's not worth it, and it doesn't really work anyway.

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 which was *written independently* (no word-for-word copying), and you must show your work for hand calculations. Thus, while you should 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 your own. Copying the work of others on these is cheating, and will lead to an F for the course. (The University may impose additional penalties in accordance with the student conduct code.) Quizzes are a reflection of individual work--rely on your own knowledge only.

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 SIX 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

Final grades will be based on percentage of total possible points earned, out of 100, and distributed as follows:

A+	97-100		D+	67-69.99
A	93-96.99		D+	67-69.99
A-	90-92.99		D	63-66.99
B+	87-89.99		D-	60-62.99
B	83-86.99		F	<60
B-	80-82.99		N	less than 70***
C+	77-79.99		P	70 or higher***
C	73-76.99			*** Only for Pass/NoPass grading option.
C-	70-72.99			

The *final course grade* that you earn is based on the following components:

35% Average of homework assignments: 70% Aplia HW (24.5 points) and 30% SPSS (10.5 points) (35 points total)

40% Average Score of 4 quizzes out of 5 (lowest grade is dropped) (40 points total)

20% Cumulative final exam (20 points total)

 5% Attendance/Participation (up to 2 classes can be missed without penalty) (5 points total)

How to figure out your grade: Regardless of "number of points" on any assignment (e.g., quiz, HW), divide your score by total possible score to get 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 total points for assignment (e.g., .8475*40=33.9 points). Add up all 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.

A note on A+ grades: A+ grades are reserved for outstanding or exceptional performance that **stands out** from the rest of the class, and will be given to a *maximum* of 4-5 students in a class this size. For your own sanity—please do not "go for" an A+; it is not worth it. Also, recently most graduate schools have adopted a policy of requiring applicants to recalculate their GPA's without A+ grades included, meaning A+ grades usually carry the same weight as good old regular A grades.

TITLE IX

I support Title IX and have a duty to report relevant information. The UO is committed to providing an environment free of all forms of prohibited discrimination and sexual harassment, including sexual assault, domestic and dating violence and gender-based stalking. Any UO employee who becomes aware that such behavior is occurring has a duty to report that information to their supervisor or the Office of Affirmative Action and Equal Opportunity. The University Health Center and University Counseling and Testing Center can provide assistance and have a greater ability to work confidentially with students.

COURSE SCHEDULE

Schedule, homework due dates and quiz dates subject to change

Week	Date	Topic	Reading	Quiz/Assignments
1	T 4/1	Intro: Variables, Histograms, Freq.	Ch. 1-2	
	R 4/3	Central Tendency	Ch. 3	
	Tues or Wed	Week 1 Lab		
2	T 4/8	*Guest Lecture:* Variability	Ch. 4	HW1 due 4/8 10am
	R 4/10	Z-Scores and Normal Dist.	Ch. 5	
	Tues or Wed	Week 2 Lab		
3	T 4/15	Probability and Normal Dist.	Ch. 6	**Quiz 1 (Ch.1-4)** HW2 due 4/15 10am
	R 4/17	Distribution of Sample Means	Ch. 7	
	Tues or Wed	Week 3 Lab		
4	T 4/22	Hypothesis Testing with Z	Ch. 8	HW3 due 4/22 10am
	R 4/24	The one-sample t-test	Ch. 9	
	Tues or Wed	Week 4 Lab		
5	T 4/29	Independent samples t-test	Ch. 10	**Quiz 2 (Ch. 5-8)** HW4 due 4/29
	R 5/1	Related samples t-test	Ch. 11	
	Tues or Wed	Week 5 Lab		
6	T 5/6	Intro to ANOVA	Ch. 12	HW5 due 5/6 10am
	R 5/8	One-way ANOVA	Ch. 12	**Quiz 3 (Ch. 9-11)**
	Tues or Wed	Week 6 Lab		
7	T 5/13	Factorial ANOVA	Ch. 13	HW6 due 5/13 10am
	R 5/15	Factorial ANOVA	Ch. 13	
	Tues or Wed	Week 7 Lab		
8	T 5/20	Repeated Measures ANOVA	Ch. 13	HW7 due 5/20 10am
	R 5/22	Correlation	Ch. 14	**Quiz 4 (Ch. 12-13)**
	Tues or Wed	Week 8 Lab		
9	T 5/27	Regression	Ch. 14	HW8 due 5/27 10am
	R 5/29	Chi-Square	Ch. 15	
	Tues or Wed	Week 9 Lab		
10	T 6/3	Which Test? Review & Recap	Statistics	HW9 due 6/3 10am
	R 6/5	Last Quiz, No Lecture	Organizer	**Quiz 5 (Ch. 14-15)**
	Tues or Wed	No Lab this week		
11	**6/13**	**Final Exam, 8:00-10:00am**		**Cumulative Final**