

## PSYCHOLOGY 302 – STATISTICAL METHODS IN PSYCHOLOGY

Summer 2016

Lecture: MTWR 10:00am-10:50am Lawrence Hall, Room 115

Labs: Fridays at scheduled times, Straub Hall Basement, Room 006

**Lecture Instructor: Robbie Ross, M.S.**

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### Lab Instructors

<b>Zhuo Job Chen</b> Lab Instructor, Office: Straub 339 Email: <a href="mailto:zhuochen@uoregon.edu">zhuochen@uoregon.edu</a> Office Hours: Wednesdays 5:00-7:00pm (email Job for access), and by appointment	<b>Ellen Huang</b> Lab Instructor, Office: Straub 470 Email: <a href="mailto:ellenh@uoregon.edu">ellenh@uoregon.edu</a> Office Hours: Thursdays 1:00-3:00pm, and by appointment
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Straub Computer Labs and Student Center are open M-F.  
SPSS software 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. See Canvas site for registration instructions.**

**Text:** Gravetter, F. J., & Wallnau, L. B. (2014). *Essentials of statistics for the behavioral sciences* (8<sup>th</sup> edition). Belmont, CA: Thomson/Wadsworth. **Included with Aplia as an e-book. Hard copy not required.**

A **calculator** is also recommended for in-class work and quizzes/exams. It does NOT need to be a graphing calculator. Cell phone calculators are fine for in-class, but may not be used for quizzes/exams.

### 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 **mandatory** and *essential* to your success in this course. Attendance will be tracked 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 Canvas 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.

## COURSE REQUIREMENTS

**1. Attendance/participation (10% of Course Grade):** Attendance in the lecture meetings is required and will be tracked daily. In addition to tracking whether you show up or not, I will also be tracking your level of engagement each day in class. This includes paying attention to our discussions, actively participating, asking questions, contributing to discussions, and respectful behavior in class towards instructors and other class members. While you get 4 “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 (35% of Course Grade):** Assignments are due each **Friday by 5pm, electronically. Late homework is not accepted.**

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 Canvas for grading. Registration instructions are available on the Canvas site.

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 Canvas. Go to the “Assignments” page, and upload. **No late SPSS homework will be accepted.**

Discussing homework with other students and your instructors is encouraged. However, each student must submit a separate homework assignment, written independently (no photocopies, printing out multiple copies of SPSS, or word-for-word copying), and you must show your work for all by hand calculations. This will not be an issue with Aplia assignments, as each student will receive different questions, but all SPSS and by-hand problems must be done independently. More explicitly, you may work together to solve problems and check your answers on homework with each other, but preparing those answers for your homework and the actual writing of any answers need to be done independently. Copying homework assignments is a big pet peeve of mine, so please don't do it. I don't take kindly to it, and you will end up with a 0 for a copied assignment.

**3. Mid-Term Exams (30% of Course Grade):** There will be two non-cumulative in-class exams (each worth 15% of your grade). The format of these exams will be a combination of short answer and multiple choice questions. These exams will be primarily assessing your conceptual understanding of the topics covered in the course (rather than number crunching). I'm not interested in your ability to memorize a formula and plug numbers into it, but I am interested in whether you understand what the formula means and WHY we use it.

**4. Final Exam (25% of Course Grade):** 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 format of the final will be similar to the mid-term exams. It will be held during the final exam period, Wednesday, August 10 at 10:00am-Noon in our usual classroom. Contact Robbie ASAP regarding any conflicts.

## 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 an exam 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 any exams 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.) Exams 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		
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 percentage score for each homework assignment
- 30% Average of the two mid-term exam scores
- 25% Cumulative final exam
- 10% Attendance/Participation (up to 4 classes can be missed without penalty)

**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 midterm exam grades were 75% and 95%:  $(.75+.95)/2=.85$ . Multiply this average by the “weight” for that grade component (e.g.,  $.8475*30=25.5$  points). Add up all your points for all assignments to get your total points for the class out of a possible 100 points. This is your percentage grade. See above for translation to letter 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 exam dates subject to change*

Week	Date	Topic	Reading	Quizzes/Assignments Due
1	June 20-24	Variables, Visualization, Frequency, Central Tendency	Ch. 1-3	<i>None</i>
	June 25	Week 1 Lab (Job)		
2	Jun 27-Jun 30	Variability, Z-Scores, Probability	Ch. 4-6	HW1 due July 1 @ 5pm
	July 1	NO LAB		
3	July 5-7	NO CLASS ON MONDAY Probabilities & Samples, Intro to Hypothesis Testing	Ch. 7&8	HW2 (Aplia only) due July 8 @ 5pm <b>EXAM 1 on Thurs., July 7</b>
	July 8	Week 3 Lab (Ellen)		
4	July 11-14	<i>t</i> -Tests: One-Sample, Independent Samples, Related Samples	Ch. 9-11	HW3 due July 15 @ 5pm
	July 15	Week 4 Lab (Ellen)		
5	July 28-21	Intro to Analysis of Variance (ANOVA)	Ch. 12	HW4 due July 22 @ 5pm
	July 22	Week 5 Lab (Ellen)		
6	July 25-28	Repeated Measures ANOVA Factorial ANOVA	Ch. 13	HW5 due July 29 @ 5pm <b>EXAM 2 on Thurs., July 28</b>
	July 29	Week 6 Lab (Job)		
7	Aug 1-4	Correlation & Regression	Ch. 14	HW6 due August 5 @ 5pm
	August 5	Week 7 Lab (Ellen)		
8	Aug 8-10	Chi-Square & Review for Final	Ch. 15	HW7 due August 12 @ 5pm
	<b>August 10</b>	<b>Final Exam 10:00am-12:00pm</b>		