

# PSYCHOLOGY 302 – STATISTICAL METHODS IN PSYCHOLOGY

Summer 2017

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

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

**Lecture Instructor: Lauren Kahn, M.S.**

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## Lab Instructors

<b>Sarah Donaldson</b> Lab Instructor, Office: Straub 339 Email: <a href="mailto:sdonalds@uoregon.edu">sdonalds@uoregon.edu</a> Office Hours: Wednesdays 11am-1pm, and by appointment	<b>Bradley Hughes</b> Lab Instructor, Office: Straub 339 Email: <a href="mailto:bhughes7@uoregon.edu">bhughes7@uoregon.edu</a> Office Hours: Fridays 12-2pm, and by appointment
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**To reserve time at office hours:** <https://summerstats.youcanbook.me>

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 exams. It does NOT need to be a graphing calculator. Cell phone calculators are fine for in-class, but may not be used for 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 & identify the appropriate statistical technique needed
- Conduct this test using hypothesis-testing procedures (by hand or using statistical software)
- Draw conclusions about the results of these tests
- Write up 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, problem-solving, and computer exercises. In many ways the instructor and TAs will act as coaches, but ultimately, you must actively internalize the concepts. The course encourages teamwork among students, instructor, and TAs.

### Student Responsibilities:

- Attend lectures and lab sessions. 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. If you have questions that go unresolved in lecture or lab, write them down and go to office hours to explore them further.
- 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.
- Ask for help early. 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.
- Check your email and the Canvas website often. Important class information may be communicated in this way. If you do not check your email at least daily, you might miss an important announcement.

## 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 3 “free” absences (only 1 of which may be a lab), you shouldn't use them unless absolutely necessary; if you skip, you will miss important information.

**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 do your best the first time!
- SPSS homework (submitted 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 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. 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 will not be tolerated, and you will end up with a 0 for a copied assignment.

### 3. Mid-Term Exams (30% of Course Grade):

- Content: Two non-cumulative in-class exams (each worth 15% of your grade).
- Format: Short answer and multiple choice questions
- Goal: Assessing your conceptual understanding of the topics covered in the course (rather than number crunching). We want to see whether you understand what the formula means and WHY we use it. We're less interested in your ability to memorize a formula and plug numbers into it.

### 4. Final Exam (25% of Course Grade):

- Content: Cumulative in-class exam
- Format: Similar to the mid-term exams.
- Goal: One 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.
- When & where: It will be held during the final exam period, Thursday, August 17 at 10:00am-Noon in our usual classroom. Contact Lauren ASAP regarding any conflicts.

## 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. 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. This kind of collaboration promotes deeper understanding of concepts. However, each student must submit a separate homework that was *written independently* (no word-for-word copying), and you must show your work for hand calculations. **Copying and pasting another student's work and changing a few words does not constitute "independent work."** 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 from others is cheating, and will lead to an F for the course. (The University may impose additional penalties in accordance with the student conduct code.)

### 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 FOUR 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 do something different – perhaps more effort, or a different approach – 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. **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. 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.

### 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 3 classes can be missed without penalty)
- 2% Extra credit for research participation

**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.

## INCLUSION AND VALUES

One of my core scientific values is that scientific knowledge is a public good that belongs to everyone. That means that as an educator, I strive for my classes to be accessible to all and respectful of diversity, including diversity in race, ethnicity, gender, sexuality, disability, socioeconomic status, religion, and culture. It is important to me that everyone has the opportunity to learn in this class.

I also recognize that in a group this big and this diverse, there will be times when the subject matter of the course will touch on the lived experiences of people in the class. It is my goal to create a respectful classroom environment where people feel safe to explore difficult topics. Your suggestions, concerns, and other feedback are always welcome, and I will listen to you with respect and an open mind.

## 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.

## 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 26-29	Variables, Visualization, Frequency, Central Tendency	Ch. 1-3	<i>None</i>
	June 30	Week 1 Lab (Bradley)		
2	July 3-6	Variability, Z-Scores, Probability NO CLASS TUES 7/4	Ch. 4-6	HW1 due July 7 @ 5pm
	July 7	NO LAB (tentative)		
3	July 10-13	Probabilities & Samples, Intro to Hypothesis Testing	Ch. 7&8	HW2 (Aplia only) due July 14 @ 5pm <b>EXAM 1 on Thurs., July 13</b>
	July 14	Week 3 Lab (Sarah)		
4	July 17-20	<i>t</i> -Tests: One-Sample, Independent Samples, Related Samples	Ch. 9-11	HW3 due July 21 @ 5pm
	July 21	Week 4 Lab (Bradley)		
5	July 24-27	Intro to Analysis of Variance (ANOVA)	Ch. 12	HW4 due July 28 @ 5pm
	July 28	Week 5 Lab (Sarah)		
6	July 31-Aug 3	Repeated Measures ANOVA Factorial ANOVA	Ch. 13	HW5 due Aug 4 @ 5pm <b>EXAM 2 on Thurs., Aug 3</b>
	Aug 4	Week 6 Lab (Bradley)		
7	Aug 7-10	Correlation & Regression	Ch. 14	HW6 due August 11 @ 5pm
	August 11	Week 7 Lab (Sarah)		
8	Aug 14-17	Chi-Square & Review for Final	Ch. 15	HW7 due August 18 @ 5pm
	<b>August 17</b>	<b>Final Exam 10:00am-12:00pm</b>		