Statistical Methods in Psychology
Spring 2020

Course Professor Dr. Sara Weston
(sweston2@uoregon.edu)
Office hours: Tuesday 10a - 12p

Lab Instructors

Brendan Cullen	Monika Lind	Andrew Zavala
bcullen@uoregon.edu	mlind2@uoregon.edu	azavala2@uoregon.edu
Office Hours	Office hours:	Office hours:

Meeting time Tuesdays & Thursdays, 8:30-9:50am

Required Materials

1. *Learning Statistics with jamovi* by Danielle Navarro. This is a free online textbook; a copy has been uploaded to Canvas.
2. Calculator (exams and classroom activities will involve working problems)

Course Description

Statistics can help improve your logic, critical thinking, and analytical skills. With regard to psychology, knowledge of basic statistics is critical to understanding, interpreting, and conducting research. In this course, we will cover basic statistical techniques that are commonly used in psychology and the social sciences, as well as how they are applied in analyzing and interpreting data. Specifically, we will focus on exploratory data analyses, measures of central tendency, correlation and regression, hypothesis testing, t-tests, analysis of variance and chi-square tests. The primary goal of this course is for you to be able to select, apply, and understand basic statistical techniques in research and in daily life.

This course is the second in the PSY 301-303 sequence for Psychology majors. In PSY 301, you built critical thinking skills and gained an understanding of how knowledge is generated in psychological research, which has prepared you for acquiring data analysis skills in PSY 302. In PSY 303, you will be using the skills in you gained in the prior two courses to design and implement a research protocol, analyze the data collected, draw conclusions from your analyses, and write and present your research.

Course Objectives

1. Understand statistical analysis presented in journals and reports.
2. Select and perform the correct statistical analysis for given data and research questions, by hand (for basic statistics) and using a computer software program
3. Articulate basic principles of statistical inference and sampling

Course Requirements

1) Homework

All homework assignments are due Wednesday by 11:59pm, electronically. Problem sets are written to be completed with the statistical software called **jamovi.** Each week, there will be a worksheet on Canvas with analyses to complete and questions to answer. It is strongly recommended that you work through this worksheet first. After completing the worksheet, you'll open the Homework Submission module on Canvas, where you will be asked to type in your responses and upload any tables or figures you have created during the assignment. Only the responses entered in the Homework Submission modules will be graded. Your lowest homework grade will be dropped. Late homework assignments will be docked 10% for every day they are late.

Please note that jamovi can be downloaded for free (www.jamovi.org) and is available on the computers in Straub 237A. However, I am aware that many students will work in labs and for faculty who prefer other statistical software. So, if you would prefer to use either **SPSS** or **R** to complete your homework assignments, you may do. Please email your Lab Instructor with your decision to use one of these software programs, and specify which one, before completing the first homework assignment.

2) Quizzes
Each week, you will take an online quiz through Canvas. This quiz will become available at the end of lecture on Thursday and close at 11:59pm on Sunday. Your lowest quiz grade will be dropped. Late quizzes will be docked 10% for every day they are late.

3) Exams
There will be 2 midterms and a final exam. All exams will include a mix of multiple-choice questions, short-answers and calculations, and each will cover material since the beginning of the term (cumulative), although most questions will focus on new material covered since the previous quiz/exam. The test dates are listed on this syllabus and will not change – plan accordingly. Missed exams will be given a score of 0. If you must miss an exam due to University-sponsored events, you may take the exam in advance by arranging it with the Professor. You must inform the Professor at least two weeks prior to the exam. University-sponsored events are the only reason that will be considered for scheduling alternate exam dates.

Your exam grade will be calculated by comparing the average of your two midterm grades to your final grade; the highest of these two will be used as your exam grade.

4) Class attendance and participation
Attendance and participation are not required.

Your final grade is made up of the following components:

Canvas Quizzes	30%	Exams	40%
Homework	30%	Extra Credit	5%

Final grades will be assigned as follows (fractions of a percent are rounded down to the nearest full percent):

100+%	A+	87-89%	B+	77-79%	C+	67-69%	D+	0-59%	F
93-99%	A	83-86%	B	73-76%	C	63-66%	D		
90-92%	A-	80-82%	B-	70-72%	C-	60-62%	D-		

Grading Disputes
If you feel that an item on your exam or homework assignment has been graded incorrectly, you may submit the Item Review Form (posted on Canvas). The procedure is as follows: The Lab Instructor will examine your request and determine whether to change your grade. You can accept that decision as final or appeal to the Professor. If you appeal to the Professor, she will re-grade the entire exam (meaning you may end up with a higher or a lower score than you were initially assigned).

While we are happy to explain why a particular answer is correct (or incorrect), please be aware that neither the Professor nor the Lab Instructor will debate points (in class or in office hours). If you have a question or concern about the grading of a particular item, the only way to have your grade reviewed is to fill out the Item Review Form. You must fill out an Item Review Form for each item that you would like to have reviewed. Finally, Item Review Forms must be submitted BEFORE THE NEXT SCHEDULED EXAM. So, if you would like to have an item reviewed from Exam 1, you must submit the form before Exam 2.

Generally, we will not accept grade dispute for homework assignments. However, if upon receiving your grade, you discover that you mistyped a number into jamovi and this was the cause of receiving all points off, you may appeal to your Lab Instructor. If the Lab Instructor agrees that this was the case, you have one opportunity to redo the homework assignment. You may receive *up to half* of the points you missed. For example: if you missed 6 points on a 20-point assignment, the maximum amount of credit you can receive is 17 (the 14 points you received initially, plus half of the points you missed). You have one week from the time grades are posted to request a homework redo.

Online Instruction through Canvas

The Professor will lecture remotely using Zoom. Please try to attend lecture at our regularly scheduled time. However, if you are unable to attend, these lectures will be recorded and posted on Canvas. During each lecture, there will be an activity – please download the activity worksheet before joining the lecture. Throughout the lecture period, we will stop and complete part of the worksheet separately, and then review the answers together. It is in your best interest to attempt these activities on your own before reviewing the answers. Some of these activities will require students to report results, so that we can use these data in the activity; in those cases, you'll be asked to complete part of the activity before class.

There are a number of additional resources available on Canvas. The course is organized by modules, with one module for each lecture, another module for the week's assignments, and a weekly module with extra resources. In those modules, you will find abbreviated versions of the lecture presentations – these presentations have gaps in the text for you to fill in as you watch a lecture. Consider these to be your study guides. There will be formula corresponding to any formulas we learn in a given week. For extra practice, you will find practice quizzes with fill-in-the-blank questions and YouTube videos related to the content we have covered.

Student Workload

When you complete this course, you will earn 4 credits toward your degree. According to the 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 for the term, or 12 hours for each of 10 weeks. You will spend 4 hours in lecture and lab each week, so expect to spend an additional 8 hours reading, studying and completing homework assignments.

Extra Credit

There will be one extra-credit assignment that can add up to 5% to your final grade. For this assignment, you will complete a bi-weekly survey (twice a week) that asks about your emotions, activities, and events in your life. At the end of the term, you will receive your own data, which you will then use to test a hypothesis. You must complete the survey at least 12 assessments in order to participate in the extra-credit assignment.

Academic Honesty

Academic dishonest in any guise, including plagiarism, fabrication, and cheating, will not be tolerated. All work submitted in this course must be your own and produced exclusively for this course. Cheating is defined as providing or accepting information on a quiz or exam, plagiarism or copying anyone's written work, or allowing someone else to copy your work. In addition, lying to try to get points is considered academic dishonesty and will be treated as cheating. Consequences of academic dishonesty range from receipt of a failing grade on an assignment to an F in the course. All violations will be taken seriously and noted on a student disciplinary record. For further information, refer to the University Student Conduct Code: http://dos.uoregon.edu/conduct.

Collaboration

We strongly encourage collaborative learning, but you must produce individual work. Discussing homework with other students and Professors 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 individual homework assignments. You must also 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. No collaboration is allowed on exams and quizzes.

Access and Accommodation

If you have a documented disability and anticipate needing accommodations in this course, please email or meet with the Professor as soon as possible. Also, please request that a counselor at the Accessible Education Center (uoaec@uoredon.edu, tel. 541-346-1155) send a letter verifying your disability and needed accommodations. For a list of resources provided by the Accessible Education Center, please see aes.uoregon.edu.

English as a Second Language

If you are a non-native English speaker and think you may have trouble in this course due to language difficulties, please see me as soon as possible to make any necessary arrangements. If you need to use a dictionary for in-class exams, you must ask to have your dictionary checked by me or one of the GTFs prior to the exam. Electronic dictionaries are not permitted.

Emailing the Professor and Lab Instructors

We are more than happy to help you work through difficult material throughout the course. However, we have other responsibilities to the university that we are attending to when in not in class or office hours. We can commit to responding to emails within 24 hours (48 hours if you email us between 5pm on Friday and 5pm on Sunday). Please come to office hours or schedule a meeting with us if you would like to discuss course content.

Schedule of Lectures and Assignments

Week	Lecture	Lab	Reading (LSJ Chapters)	Canvas (Quizzes due Sunday at 11:59 pm; HW due following Wednesday at 11:59 pm)
1	3/31 – Variables and their visualization *Your Turn: Handedness* 4/2 – Central tendency, variability *Your Turn: Shapes of distributions*	Introduction, variables	1, 2, 4	Quiz 1 jamovi HW #1
2	4/7 – Probability *Your Turn: z-scores* 4/9 – Sampling and confidence intervals *Your Turn: M&M samples*	Means, variability, *z*-scores	7, 8	Quiz 2 jamovi HW #2
3	4/14 – Introduction to hypothesis testing *Your Turn: z-test* 4/16 – Power and error *Your Turn: NHST and Error*	*z*-test	9, 11.1	Quiz 3 jamovi HW #3
4	4/21 – **MIDTERM #1** 4/23 – One-sample *t*-tests *Your Turn: one-sample t-test*	One-sample *t*-tests	11.2, 11.6	Quiz 4 jamovi HW #4
5	4/28 – Independent samples *t*-test *Your Turn: Independent samples t-test* 4/30 – Paired-samples *t*-test *Your Turn: Paired-samples t-test*	Two-sample *t*-tests	11.3, 11.4, 11.5, 11.7	Quiz 5 jamovi HW #5
6	5/5 – Correlation *Your Turn: Correlation* 5/7 – Regression *Your Turn: Regression*	Correlation, Regression	12	Quiz 6 jamovi HW#6
7	5/12 – *p*-values *Your Turn: p-hacking* 5/14 – One-way ANOVA *Your Turn: One-way ANOVA*	One-way ANOVA	13.1-13.6, 13.10	Quiz 7 jamovi HW #7
8	5/19 – **MIDTERM #2 (through p-values)** 5/21 – Repeated-measures ANOVA *Your Turn: Repeated-measures ANOVA*	Repeated Measures ANOVA	13.8	Quiz 8 jamovi HW #8
9	5/28 – Factorial ANOVA *Your Turn: Interactions* 5/28 – Factorial ANOVA *Your Turn: Factorial ANOVA*	Factorial ANOVA	14	Quiz 9 jamovi HW #9
10	6/2 – Chi-square test *Your Turn: Chi-square test* 6/4 – Review	Chi-Square	10.1-10.2, 10.4, 10.5	Quiz 10 jamovi HW #10

***** The final exam will be **Monday, June 8, 8:00 am – 10:00 am**. The final exam is cumulative but will focus more on material not covered in the midterms.