Psychology 302: STATISTICAL METHODS
242 Gerlinger, Mondays & Wednesdays 2:00-3:20pm
Labs: Tuesdays 8:30-9:50, 12-1:20, 2-3:20, 4-5:20 180 Straub Hall
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Text: Gravetter, F. J., & Wallnau, L. B. (2008). Essentials of statistics for the behavioral sciences, 6th edition. Belmont, CA: Thomson/Wadsworth.
Course web page: Blackboard

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 the statistical information reported in primary research articles.

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 in this class is on **conceptual understanding** of statistics. In the past, most students have found that the actual "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. **Tests will be focused on conceptual understanding, while homeworks will apply concepts to actual problems**. Please keep this in mind as you approach this course.

Requirements

1.   Participation credit is gained from in-class exercises, which you will turn in during class.   Credit is based not at all on whether you got the right answer, but only on whether you tried. If you attend every class and do the exercises, you will get full credit. In-class exercises will be part of every class. If you miss class, you can make up missed participation by writing a summary of approximately 200 words about the topics covered in class the day you missed. To complete this assignment you should use information from your textbook to describe material posted on lecture slides. The assignment must be completed within a week of the missed class, and I reserve the right to revoke this makeup policy for an individual or the whole class if it is overused.

2. Homework assignments are listed at the end of this syllabus, and will be due **in lab** each week, beginning week 2. You may drop your lowest homework score. If you miss a homework you will receive a 0 and that will count as your lowest score. **No late homeworks will be accepted for credit**. However, even if you fail to get a problem set in on time, **you are required to turn in all homework assignments by the last day of lab** in order to get 5% of the course grade. This 5% of the course grade is awarded on an all or none basis. If you turn in all your assignments (even if they are turned in late) you get the 5%, if you are missing even just one, you don't get any of the credit.

3. Quizzes/Exams will take place on 5 Wednesdays throughout the term. The quizzes will consist of multiple choice questions, **and will be primarily conceptual**. This means that **quizzes and homeworks will cover different material**. All quizzes will *focus* on material presented since the previous quiz, but will require knowledge from throughout the course (because all of the material in the course is cumulative, the quizzes will also be cumulative). The quizzes are closed book, and you will not be required to do calculations on the quizzes. At the end of the term, you will have the option of

taking a "make-up" quiz on the last day of class, which will replace the lowest of your 5 quiz scores. Therefore, if you miss a quiz (and have a score of 0 for that quiz) the makeup quiz can be used to replace that. **This is the only option for making up missed quizzes, no exceptions!**

What Do Students Need to Do to Succeed in This Class?

1. **Read the assigned material**. That includes following the numeric examples closely and writing down questions about anything not entirely clear. *You are expected to read the text*, in full.
2. **Complete the homework assignments (and turn them in on time).** Nearly all students who fail this course fail primarily because they either do not complete their homework assignments, or do not complete them on time. I do not know of a single student who has failed who has also turned in all completed homework assignments on time.
3. **Attend the class sessions.** If you must miss a class, it is *your* responsibility to come to my office hours, or your TA's office hours, and find out what you've missed. Missing class, for whatever reason, does not entitle you to any special treatment or relaxed deadlines. *Do not fall behind!*
4. **Attend your lab section.** Lab sections are not optional. In order to complete the homework problems, you will need to learn how to use the computer program SPSS, which will only be covered in lab. If you know you will have to miss a lab, let your TA know and try to attend a different lab section.
5. **Ask questions.** This is an *introduction* to statistical methods in psychology. You are not expected to know anything about this topic yet. Therefore, no question is a "dumb" question. If you don't understand something, speak up! This is the only way I will know when I am not explaining something clearly. You can ask questions in class, by e-mail, and in office hours.
6. **Study for quizzes.** The quizzes will focus on your conceptual understanding of course material covered in lecture, labs, and readings. The best way to study for quizzes is to attend all classes/labs, complete all assignments, do all your reading, and ask questions when you don't understand something. **Quizzes will cover different material from what is on HWs!**

Grading

Your *final course grade* is based on the following components:
45% Score on the 9 homework assignments, each worth 5% (with adjustment: dropping lowest score)
45% Score on 5 quizzes/exams, each worth 9% (makeup quiz can replace one of these 5 exams)
 5% For turning in *all* homework assignments. These are "all or none" points, received if you turn in all assignments, not received if you do not. They are an added incentive for completing all homeworks. *Note: you can receive these points even if some assignments are handed in late, as long as all assignments are handed in by the last lab.*
 5% Participation in in-class exercises

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

A+	*Reserved for exceptional performance*		
A	93-100	D+	67-69.9
A-	90-92.9	D	63-66.9
B+	87-89.9	D-	60-62.9
B	83-86.9		
B-	80-82.9	N*	less than 70
C+	77-79.9	P*	70 or higher
C	73-76.9		
C-	70-72.9		

*If taking Pass/Fail

Rules and Policies

No late homeworks will be accepted. No makeup quizzes will be given, other than the one final make-up quiz at the end of the term. It is your responsibility to stay on top of things, plan ahead, and leave some wiggle room in case an unexpected emergency comes up. You have the option of dropping **one** homework score and replacing **one** quiz score with the makeup quiz. **Exceptions will only be made in exceptional circumstances, at the discretion of the instructor.** If unexpected circumstances come up that cause you to miss more than one homework assignment and more than one quiz, it is suggested that you talk to me to determine whether you should withdraw from the course and re-take it another term.

Collaborative learning is encouraged: If you want to discuss the problems with other students, feel free to do so. Talking over the problems and reworking them when you discover that others got different answers promotes deeper understanding of concepts and gives you more practice in applying skills. However, **each student must submit separate homework**, and you must show your work (**no photocopies or word-for-word copying**). This is also the case for SPSS problems—you may work together to get the SPSS output, but then each person must interpret and annotate the output individually.

The TAs and the instructor take academic integrity seriously.   **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 (e.g., lying about having turned in an assignment on time) is considered academic dishonesty and will be treated as cheating. Students caught cheating will be given an "**F**" for the course, and UO's student conduct coordinator will be informed. The instructor retains the right to assign seats for tests, to change an individual's seating for test security purposes, to require and check ID for admission to tests.

A note on A+ grades: A+ grades are reserved for performance that **stands out** from the rest of the class. If everyone in the class earned 90% or above, everyone in the class could get an A grade. However, if everyone in the class earned grades of 98% or above, no one could receive an A+ grade, as the A+ grade is reserved for **outstanding** or **exceptional performance**, and will be given to a *maximum* of 2-3 students in a class this size.

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). Students who are experiencing learning difficulties are encouraged to consult Disabilities Services (164 Oregon Hall; 346-1155; **http://ds.uoregon.edu/**). Without documentation, accommodations are not guaranteed and are to be made at the discretion of the 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 request accommodation. Requirements for the course will not be relaxed for student athletes, however minor scheduling accommodations may be made (e.g., taking a quiz early) if planned well ahead of time.

Other Students: If you are repeating this class, 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.

CLASS SCHEDULE

Note: This is an outline for the course, subject to change at any time. Updates to this schedule will be discussed in class, so please attend. Being unaware of a change due to missing class is not an excuse for being unprepared.

Date	Topic	Readings	Quizzes/Assignments
3/30	Course Introduction		
3/31	Lab 1		
4/1	Scaling, Frequency Tables, Histograms	Ch. 1-2	
4/6	Central Tendency and Variability	Ch. 3-4	
4/7	Lab 2		HW 1 Due
4/8	Z-Scores and the Normal Distribution	Ch. 5-6	**Quiz 1**
4/13	Probability, Distribution of Sample Means	Ch. 6-7	
4/14	Lab 3		HW 2 Due
4/15	Hypothesis Testing with z	Ch. 8	
4/20	The one-sample t-test	Ch. 9	
4/21	Lab 4		HW 3 Due
4/22	Independent samples t-test	Ch. 10	**Quiz 2**
4/27	Related samples t-test	Ch. 11	
4/28	Lab 5		HW 4 Due
4/29	Intro to ANOVA	Ch. 13	
5/4	One-way ANOVA		
5/5	Lab 6		HW 5 Due
5/6	Factorial ANOVA	Ch. 14 (391-417)	**Quiz 3**
5/11	**CLASS CANCELED**	Get ahead on your reading!	
5/12	Lab 7		HW 6 Due
5/13	Repeated ANOVA	Ch. 14 (379-391)	
5/18	Correlation	Ch. 15 (423-449)	
5/19	Lab 8		HW 7 Due
5/20	Regression, intro to Chi-square	Ch. 15 (449-467), Ch. 16	**Quiz 4**

5/25	**NO CLASS-- Memorial Day**		
5/26	Lab 9	Ch. 16	HW 8 Due
5/27	Chi-Square		
6/1	Which Test?, Review and Recap	Pages 556-564	
6/2	Lab 10		HW 9 Due, *Last day to turn in late HWs*
6/3	Quiz 5, make-up quiz		**Quiz 5, Makeup Quiz**

HOMEWORK ASSIGNMENTS

Put your name and your TA's name on all homework, and please staple. If unstapled, you must put your name on every sheet. All work must be neat and legible. If we can't read it we can't grade it!

Problems are at the end of each chapter. **Turn homework in on time!** To earn full credit, *show and explain all work.* For problems completed by hand, show all steps. **Annotate** SPSS output to receive full credit: Circle the most important numbers and explain (write or type directly and legibly on the output) what they mean. You must demonstrate that you are able to read and understand what you have produced. In addition, for any problem that includes hypothesis testing, you must include all steps of hypothesis testing including an APA style summary of your results. The book has answers to odd-numbered problems in the back. Use these for extra practice or to check your work.

Homework 1: Concepts, Scaling, Frequency Tables and Histograms (15 pts) Ch 1: problems 2, 4, 12, and 18; Ch 2, problem 18. You may do chapter 2 problem 18 either using SPSS or by hand. **For part b of chapter 2 problem 18, sketch a histogram instead of a polygon.** Label your axes, and include a title! If you use SPSS for this problem, be sure to include the output, clearly identify which parts of the output go with the homework question, and don't forget part c of the question.

Homework 2: Central Tendency, Variability, z-scores (15 pts) Ch 3, problems 8, 10, and 26. Ch 4, problems 9, 15, 22, & 26. Ch. 5, problems 4 & 22. For Ch. 3 problem 26 use SPSS. For Ch. 4 problem 22, complete the problem 3 times—once using the computational formula, once using the definitional formula, and once in SPSS.

Homework 3: z-Scores & the Normal Curve, Distribution of Sample Means (15 pts) Ch 6, problems 4, 8, 12, 16, 23. Ch 7, problems 12, 20, 24. No SPSS homework this week.

Homework 4: z-test & t-test (15 pts) Ch 8, problems 2, 6, 8, 16, &19. Ch 9, problems 2, 10, & 24. Be sure to show all work and explain answers fully. For ch. 9 problem 24, do the problem by hand and in SPSS. Use all steps of hypothesis testing and calculate Cohen's d when doing the problem by hand. For SPSS problems, annotate printout by circling the key elements in the output and explaining what the output shows.

Homework 5: t-tests with Independent Samples and Related Samples (15 pts)   Ch 10, problems 2, 3, 4, 14a (by hand) and 21a (in SPSS). Ch 11, problems 2, 3, and 17(*both by hand and in SPSS)*. On 14a, 21a, and 17 use all steps of hypothesis testing. For SPSS problems, annotate printout by circling the key elements in the output and explaining what the output shows.

Homework 6: One-way ANOVA (15 pts) Ch 13, problems 2, 3, 14, 15 (by hand and in SPSS), 22. For the by hand version of problem 15 use all steps of hypothesis testing and compute eta-squared. In the SPSS version, do both Scheffé and Tukey post-hoc tests. Annotate output, including explaining results (what did you find?).

Homework 7: Advanced ANOVA (15 pts) Ch 14, problems 1, 12, 21, 24, and 28 (by hand and in SPSS). For the by hand version of problem 28 use all steps of hypothesis testing. In the SPSS version, annotate output.

Homework 8: Correlation & Regression (15 pts) Ch 15, problems 4, 8 (by hand and in SPSS), 18, and 22. For the by hand version of problem 8, use all steps of hypothesis testing. For the SPSS version of problem 8, after finding the correlation for the data in the book (*EXTRA STEP*), change the correlation substantially by adding an outlier (make up the data for this person). Hand in annotated printouts for both original and modified data sets (identify which is which, and write down the data for the outlier you added), including an explanation of results. Explain on the modified printout what you learned from the exercise about the possible impact of a single case on correlation.

Homework 9: Chi-Square (15 pts)   Ch 16, problems 2, 8, & 18. Do all problems by hand, and in SPSS. For by hand versions use all steps of hypothesis testing. For SPSS versions, annotate output.