Psychology 302 Statistical Methods in Psychology

Fall 2012 TR 4:00-5:20pm Gerlinger 302

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Course Overview: Understanding statistics and statistical reasoning is essential for understanding psychological research. Just about every psychology paper you read, in other classes and hopefully for some of you in the world beyond, will present statistical data. This data will be meaningless if you don't have at least a basic understanding of the techniques we use to sort, summarize, standardize, compare and contrast the measurements we make of brains, behaviors, and people. The purpose of this course is to familiarize you with these basic statistical techniques, and to impart a conceptual understanding of the reasoning behind them. By the end of the course, you ought to be able to understand the results presented in many social science research articles, and present the results of your own studies in a meaningful, scientifically acceptable way.

Course Objectives: By the end of this course, you should be familiar with the basic ways in which psychologists describe and make sense of data, also known as *descriptive* and *inferential* statistics. Toward the beginning of the course, we will focus on descriptive statistics, including means and other measures of central tendency, variance and standard deviations. As the course progresses, we will increasingly focus on inferential statistics, or how to compare and explain data in a meaningful way. Here we will use what we've learned about descriptive statistics and some basics of probability to test statistical hypotheses and determine with statistical certainty whether our research yields results. By the end of the course, you should be familiar with the following statistical techniques: *z*-tests, *t*-tests, ANOVA (both one-way and factorial), regression, correlation, and several varieties of chi-squared.

Course Requirements:

eText/Aplia: As of recently, the psychology department has started using a system called *Aplia* to manage PSY 302 and 303. One of the features of Aplia is access to an electronic version of the textbook as part of the Aplia software. You are more than welcome to purchase a hardcover copy of the text (Gravetter & Wallnau's *Essentials of Statistics for the Behavioral Sciences*, 7th edition), but it's not necessary. In addition to providing the textbook online, Aplia will allow you to do and submit your homework electronically. To register for Aplia, you will need to go to **login.cengagebrain.com** and create an account. You will need to enter the course key for this course, which is **CXLR-TQZ3-KU5P**.

For more detailed instructions on registering for Aplia, please visit

http://www.wadsworthmedia.com/tlc/LAASR/APLIA/apliastudentrgs.mp4. Once you are registered with Aplia, you will have a 2-week grace period to purchase your account, meaning you will have free (albeit temporary) access to your online text and homework portal. Before Oct 14, 2012, you will need to pay purchase Aplia access via the internet. Importantly, if you purchase a textbook through the bookstore, you will receive an activation code, so you will not need to purchase Aplia a second time. As Aplia is an essential part of the course, and registration may be confusing, please ask your instructor or TAs for assistance if you need it.

SPSS/PASW – One very important part of this course is learning to use statistical software. Some of your homework and test material will include being able to use and understand the results of a program known as PASW (until very recently known as SPSS). This program will allow you to quickly see the results of statistical tests using large data sets which would take too long to do by hand. Importantly, **you don't need to purchase a copy of PASW**, although you're welcome to. It runs around \$200 though, so it's not recommended. All of the computers in the computer lab (Straub 180) have the latest version of PASW installed. Lab sections, conducted in the computer lab, will focus on learning to use this software. When there aren't classes using the lab, the computers are available for your use, and it is recommended that you use these computers to complete the PASW problems in your homeworks.

Labs: Labs are an important part of this course. You should be registered for one of the three lab sections, and attendance at these is highly recommended. Among other things, as mentioned above labs will focus on learning to use statistical software. Without attending labs, this software is not easy to figure out. You should go to labs.

Calculator: As this is a math class, some of the homework and test material will require the use of a calculator. The trickiest math your calculator will need to do is take a square root or use an exponent, so graphing calculators are not required, and will not be allowed on tests. You'll need a simple scientific calculator for some of the homework and tests.

Attendance: Attendance is not mandatory. If you can learn the material on your own, that's fine. At this point in your education though, you should know how this works, if you don't come to class, generally you don't learn as well and your grade goes down. The fact that attendance is not mandatory is not an excuse for bombing the final. Oh, and you probably want to attend on test days.

Grade Components: Your grade is comprised of your scores on homeworks, bi-weekly quizzes, and the final. The breakdown is 45%/40%/15%.

Homeworks: Each week, you will have a homework assignment due at 11:59pm Monday night. **Aplia will not accept late homeworks!** The first homework is due on the Monday of week 2, and there is one due each subsequent week for a total of 9 HWs. Each homework will be worth 5% of your final grade, for a total of 45%. All of the homework assignments will be visible on Aplia from the beginning of the course. To access them, simply log in to Aplia, go to the course website, and click on the homework option which says "graded". There are additional practice problems (listed as "practice") which you may use to study, but which are not a part of your homework. At the end of each homework question, click the "Grade it now" button, and your homework will be instantly scored and you will receive immediate feedback. If you get the answer wrong, you may try again – Aplia will give you a different, but similar question, and will average your scores for each attempt. You have three attempts at each problem.

SPSS Homework: Some of your homework will include using SPSS to run statistical computations. Aplia is not equipped to accept SPSS outputs. Therefore, you will turn in your answers to SPSS problems to your lab instructor during your lab on Wednesday. Your lab instructor will go over this part of your homework with you in more detail. *Quizzes*: Instead of midterms, there will be an in-class quiz every other Thursday, starting in week 2. These quizzes will cover only the material from the previous two weeks (so they're not cumulative). Each quiz will be worth 8% of your final grade, making all five quizzes worth 40%. These quizzes will typically be more conceptually focused, but may still include some calculation, so you should be sure to bring your calculator to each test.

Final: Lastly, there will be a **cumulative** final at **1:00pm**, **Thursday December 6**th. The final will be worth 15% of your grade.

Cheating: Cheating's bad, mmkay? Don't do it. Your work on tests needs to be your own, and violating this policy will get you an F in the class, and probably in some trouble with the university. Again, don't do it.

Unique Circumstances: If you happen to have some unique circumstance, including but not limited to a disability, financial hardship, religious observance, or anything else which requires some adjustment to the course or special accommodation, please let me know by sending me an email, talking to me after class, or dropping by my office hours. I'm sure we can figure something out. If there are disability-related barriers to your education in this class, you may also wish to contact disability services in 164 Oregon Hall at (541) 346-1165 or disabsrv@uoregon.edu

Course Outline

Date	Week	Торіс	Readings	Assignments	Quizzes
9/25	1	Introduction			
9/27		Scaling, Histograms, Frequency Tables	Ch.1-2		
10/2	2	Central Tendency and Variability	Ch. 3-4	HW 1 Due	
10/4		Z-scores and the Normal Distribution	Ch. 5		Quiz 1
10/9	3	Probability	Ch. 6	HW 2 Due	
10/11		Distribution of Sample Means	Ch. 7		
10/16	4	Hypothesis Testing with Z	Ch. 8	HW 3 Due	
10/18		One-sample <i>t</i> -test	Ch. 9		Quiz 2
10/23	5	Independent-samples t-test	Ch. 10	HW 4 Due	
10/25		Related-samples <i>t</i> -test	Ch. 11		
10/30	6	Intro to ANOVA	Ch. 13	HW 5 Due	
11/1		One-way ANOVA			Quiz 3
11/6	7	Factorial ANOVA	Ch. 14	HW 6 Due	
11/8		Repeated Measures ANOVA			
11/13	8	Correlation	Ch. 15	HW 7 Due	
11/15		Regression			Quiz 4
11/20	9	Chi-Square	Ch. 16	HW 8 Due	
11/22		Thanksgiving			
11/27	10	Review & Recap		HW 9 Due	
11/29					Quiz 5