## Psychology 302—Statistical Methods in Psychology—Summer 2014

#### Meetings & Instructors

Course dates	June 23–August 13, 2013
Lecture	Mondays through Thursdays, 10:00-10:50, 112 Lillis Hall
Labs	Fridays, 9:00-9:50, 10:00-10:50, or 11:00-11:50, 271 Franklin

	Lecture weeks 1-4	Lecture weeks 5-8	Friday labs, all term
Instructor	Jason Wallin	Bill Schumacher	Philippe Bou Maltham
E-mail	jwallin@uoregon.edu	wms@uoregon.edu	<u>philippe@uoregon.edu</u>
Office	230 Franklin	231 Franklin	231 Franklin
Office hours	Tuesdays 11-1	Thursdays 9-10 & 11-12	Fridays 12-2

Jason will be available at the listed time for office hours during Weeks 1-4; he will host additional hours during some later weeks by announcement and appointment. Bill will only be available for office hours during Weeks 5-8.

#### **Course Overview**

Broad goals: 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.

Specific objectives: At the end of this course, you will be able to

- 1. read a description of a research study and then identify the appropriate statistical technique needed to answer the research question
- 2. identify problems and issues with data sets through exploratory data analysis
- 3. describe and evaluate data using summary statistics
- 4. use inferential tests and measures of effect size (both computing by hand and using statistical software) to answer research questions and draw conclusions (written in APA style) based on your analyses

Using the knowledge you gain here, you should be better equipped to evaluate statistical information reported in popular media as well as in primary research articles. You will also gain the statistical knowledge to help you run your own study in PSY 303 (so make sure to save your materials).

#### How to Succeed in This Course

This class both is and is not really a math class. Although you will be learning how to do some statistical calculations by hand, this course is very different from courses taught in mathematics departments. The focus in this class is on a conceptual understanding of statistics and the application thereof to psychological science. 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 techniques that is emphasized even when it comes to actual formulas. Here are some other pointers:

- 1. Attend class and lectures. If you must be absent, it is your responsibility to catch up with the material you missed—by reading the text, talking with students who did come, photocopying their notes from the day, and so on. Do not consider office hours a chance to hear a repeat of a lecture you missed.
- 2. Come prepared for class. At the very least, skim the target chapter for the day before class. Better yet, read, take notes, and develop questions to bring to class. Don't let the lecture or lab session be your first exposure to the topic.
- 3. Don't get behind! Just about everything in this course builds off of earlier material in the course. If you find yourself struggling, get help during class or office hours as soon as possible. It will make the later material much easier to master.
- 4. Check your e-mail and Blackboard often. At least twice a day, before and after class.
- 5. Work together. While you are required to submit your own work (see below), don't neglect talking and working with others in the class. Many primates, including humans, are remarkably social critters, and, despite the stereotypical image of the awkward, socially inept scientist, science is an intensely social process. So make use of one another. Bounce ideas and questions off one another, in person, over the phone, or on Blackboard. Make use of my office hours and e-mail to ask questions and clarify your understanding of topics we will cover this quarter. Don't go it alone: learning is easier, and more fun, when it is a social activity.
- 6. Be respectful of the time and effort of others. Engagement and participation are essential for understanding these concepts. Our classroom and laboratory will be environments where we welcome participation and acknowledge one another's contributions. Not only are incorrect answers expected, they are an important part of the learning process. It is your responsibility to help ensure that our shared spaces are comfortable and welcoming to all participation.

#### **Required Materials**

Textbook: The required text is by Gravetter & Wallnau (2011), *Essentials of Statistics for the Behavioral Sciences.* On-line access to an electronic copy of the text comes with your Aplia subscription below. Access to the textbook in class may be handy.

Aplia courseware: You are also required to have access to the Aplia online course. This program includes an electronic version of your textbook and it will be where you complete a majority of your homework assignments. In addition, it includes valuable study tools, so be sure to browse around the website and take advantage of it.

iClicker: This course also utilizes iClickers for in-class participation. Clickers used for previous courses will work. Instructions for registering iClickers are on Blackboard. You do NOT need to bring iClickers to lab.

Blackboard: You must have access to Blackboard (https://blackboard.uoregon.edu/), and check it regularly. Assignments will be posted to Blackboard, and you will submit your completed work there. You will also find lecture notes, study guides, and other support there, when applicable.

## Suggested Materials

Calculator: We will conduct computations during lab, lecture, and on exams. A calculator is strongly recommended. It does not need to be fancy: a graphing, scientific, or specialized statistical calculator is NOT necessary. A simple 10-key calculator with a memory function will be fine. It is your responsibility to learn how to use your calculator. We can provide some help during office hours, but we cannot take classtime to demonstrate how to operate calculators. <u>You will not be permitted to use cell phones as calculators on exams.</u>

# Special Circumstances

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 the Accessible Education Center (164 Oregon Hall; 541-346-1155; uoaec@uoregon.edu; website: aec.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 require accommodation. Requirements for the course will still be the same, 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 have other circumstances that might affect your ability to devote time to the class, please let me know so that I can discuss strategies to promote your success in this course.

#### Grading

Exams (55% of Grade): There will be two non-cumulative in-class exams (each worth 15% of your grade) and one cumulative final exam (worth 25% of your grade) given during the final exam period, <u>Friday, August 15th at 10:15 am.</u> We will allow you to bring one page (double-sided) of hand-written notes to these exams. You will turn this sheet in with your exam.

Homework (35% of Grade): For many weeks this term, you will submit two separate homework assignments. Each is due to Blackboard on Friday morning, no later than 9 am. <u>Late homework will not be accepted.</u> Scheduling and content of homework are subject to change at the discretion of the instructor.

An updated homework list will appear on Blackboard and changes to this list will be accompanied by Blackboard announcements. Please be sure your Blackboard settings allow you to receive these announcements.

*Aplia Homework:* In Aplia, you have one or more chapter assignments to complete in a given week. Sometimes, these assignments may take a couple of hours to complete, so make sure you give yourself time enough to finish them. <u>You have three chances to submit each homework assignment;</u> <u>your best score counts.</u> The due dates for the assignments are listed in the course calendar at the end of this syllabus. Instructions for gain access to Aplia are found on the Blackboard site.

*SPSS Homework:* In lab each week, you will discuss various concepts and operations related to statistics. You will also practice conducting analysis using SPSS, a common statistical software package. The SPSS homework assignments closely mirror the analyses that you conduct in lab, and will give you additional practice with computer-based analysis and interpretation of the output.

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. We don't take kindly to it, and you will end up with a 0 for a copied assignment.

We will not be able to accept technology-based (computer crash, loss of internet, etc.) excuses for late or unsubmitted work. Make sure you're working from a reliable connection, and give yourself plenty of time for the submission. Please don't plan on sending frantic e-mails 5 minutes before the homework deadline!

Participation via iClickers (10% of Grade): Participation includes in-class activities designed to increase understanding of concepts introduced in reading, topics discussed that day and reviewing previous concepts. There will be several of these scattered randomly throughout lectures during the course; some days there may not be any questions, some days there might be five questions. But be aware that I like to test how well you all understand the material; so don't bank on me not asking any questions. Participation points will not be based on whether you got the right answer, but only on

whether you tried. To allow for technical glitches, bathroom breaks, etc., participation credit for a day will allow for missing one of each day's clicker questions. <u>There is no opportunity to make up these</u> points if you are absent or forget your clicker.

Final grades. We will base your final course grade on the above weighted percentages of total possible points earned. Grades will be posted as expediently as possible on Blackboard so you can monitor your grade in the course and address any problems. Final grades will be assigned letter grades as follows:

Letter grade	Percent
А	93-100*
А-	90-92.9
B+	87-89.9
В	83-86.9
В-	80-82.9
C+	77-79.9
С	73-79.9
C-	70-72.9
D+	67-69.9
D	63-66.9
D-	60-62.9
F	< 60

\*A+ grades will only be granted to students whose interest, dedication, and performance is deemed exceptional.

#### Course Calendar

Daily topics and readings are a rough guide. Due dates should be stable, but please note that this calendar is subject to change. You will receive announcements in class, on Blackboard, or both if we make changes to the calendar. Jason Wallin will be your instructor for weeks 1-4. Bill Schumacher for weeks 5-8.

	_			Homework due to Blackboard	
Wk	Date	Topics	Readings	by 9:00 am	Notes
	6/23	Course introduction, basic terms	Syllabus		Last day to drop course with 100% refund and no W.
	6/24	Basic terms, variables	Ch. 1		Register for Aplia. Register iClicker.
1	6/25	Exploratory analysis, visualization	Ch. 2		
	6/26	Measures of central tendency	Ch. 3		
	6/27	Lab 1		Aplia practice set	Last day to drop course with 50% refund and no W. Deadline for student athletes to request accommodations.
	6/30	Variability	Ch. 4		Last day to change to/from audit.
	7/01	Variability	Ch. 4		Last day to add the course. Tuition due.
2	7/02	z-scores	Ch. 5		
	7/03	Probability	Ch. 6		
	7/04	Independence Day holiday, no classes		HW #1 Due	
	7/07	Exam 1 (Chs. 1-6)			
	7/08	Sampling distributions	Ch. 7		Last day to withdraw with 50% refund, W recorded.
3	7/09	Hypothesis testing & the $z$ -test	Ch. 8		
	7/10	Hypothesis testing & the z-test	Ch. 8		
	7/11	Lab 2			
	7/14	Single-sample <i>t</i> -test	Ch. 9		
	7/15	Independent samples <i>t</i> -test	Ch. 10		
4	7/16	Paired samples <i>t</i> -test	Ch. 11		
	7/17	Catch-up and review			
	7/18	Lab 3		HW #2 Due	

				Homework	
Wk	Date	Topics	Readings	due to Blackboard by 9:00 am	Notes
	7/21	One-way independent ANOVA	Ch. 12		
	7/22	One-way independent ANOVA	Ch. 12		
5	7/23	One-way independent ANOVA	Ch. 12		
	7/24	One-way independent ANOVA	Ch. 12		
	7/25	Lab 4		HW #3 Due	
	7/28	Exam 2 (Chs. 7-13)		Exam 2 Due	-
	7/29	One-way repeated measures ANOVA	Ch. 13		Last day to withdraw with 0% refund, W recorded. Last day to change grading option for the course.
6	7/30	One-way repeated measures ANOVA	Ch. 13		
	7/31	Factorial ANOVA	Ch. 13		
	8/01	Lab 5		HW #4 Due	
	8/04	Factorial ANOVA	Ch. 13		
	8/05	Correlation	Ch. 14		
7	8/06	Correlation/regression	Ch. 14		
	8/07	Regression	Ch. 14		
	8/08	Lab 6		HW #5 Due	
	8/11	Chi-square	Ch. 15		
	8/12	Chi-square	Ch. 15		
8	8/13	Chi-square	Ch. 15		Last day of lecture
	8/14	No class		HW #6 Due	
	8/15	Final exam (cumulative) 10:15-12:15 in 112 Lillis			

Final grades should be posted by the end of the day on Tuesday, August  $19^{\rm th}.$