

PSYCHOLOGY 302 – STATISTICAL METHODS IN PSYCHOLOGY
SUMMER 2013

Lectures are held **MONDAYS-THURSDAYS** from **1-1:50 PM** in **GERLINGER 248**

Labs are held **FRIDAYS 1-1:50 PM** and **2-2:50 PM** in **FRANKLIN 271**

INSTRUCTORS:

Weeks 1-4

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Office Hours: Tuesdays 2-4

Franklin Computer Lab rooms are open **Monday through Friday (times are posted on lab doors)**.
SPSS IS ALSO AVAILABLE ON THE KNIGHT LIBRARY COMPUTERS.

OVERVIEW

Students of Psychology 302 (Statistical Methods) learn a variety of statistical terms and procedures. To successfully apply their knowledge to new situations and master the content of Psychology 303 (Research Methods), students also need to acquire a more abstract level of understanding that underlies specific skills.

Here we specify both these abstract principles and the more specific skills:

PRINCIPLES:

1. One goal of statistics is measuring the strength of a potential effect, such as the size of any difference between groups/conditions or relationship among variables. This is done by assessing the size of an effect in a sample (e.g., the difference between two groups) in relation to the total variability in the sample (e.g., the standard deviation around means). Students need to understand how this principle applies to different designs and data sets (e.g., correlation, analysis of variance).
2. Inferential statistical tests allow us to make yes/no decisions about hypotheses by identifying the "range of data situations" that is plausible if the null hypothesis (i.e., no difference among groups or relationship among variables) is correct. For example, under the null hypothesis the distribution of sample differences between two groups has a mean of zero with a standard error determined by variance and sample size. For an analysis of variance the null hypothesis sampling distribution is defined by the ratio of between-group and within-group variance.

SPECIFIC SKILLS:

3. Upon reading the description of a study, infer the research question, hypotheses, and study design, and identify the nature of variables involved (dependent vs. independent, scales of measurement).
4. Determine which statistical tests are appropriate for a given research question and data structure.
5. Complete statistical analyses in SPSS, including entering data in the appropriate format, selecting options to get the data needed, and running appropriate tests.
6. Extract key information from the output of SPSS analyses to assess the plausibility of test assumptions, make decisions about hypotheses, and create tables or figures to illustrate the results.
7. Summarize the results of data analyses within an APA-style report, using appropriate statistical terminology and providing an interpretation in light of the research question. This includes presenting the results of hypothesis tests along with appropriate measures of effect size or confidence intervals and relevant descriptive statistics.

COURSE REQUIREMENTS

1. PARTICIPATION (10%): 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. Participation credit for a day will allow for missing one of each day's questions.

2. HOMEWORK (35%): Homework assignments are due **each Friday at 12 pm (NOON). There are two parts to the homework:**

1. Aplia. Part of the homework will involve completing problem sets on Aplia. You will first need to set up your Aplia account. Instructions for setting up your account are available on Blackboard. **APLIA DOES NOT ACCEPT LATE ASSIGNMENTS**, so be sure to give yourself plenty of time to complete these before the deadline. Aplia will give you multiple attempts for each problem, but **your final grade will reflect the average of these attempts.**

2. Lab assignment using SPSS. The second portion of your homework requires you to use the statistical software SPSS, which you will learn how to use in lab. This portion of the homework should be submitted to Blackboard, also by Friday at noon. Your lab instructor will explain how to submit your homework to blackboard. For the SPSS portion of the homework, there is a **10% point deduction every day the HW is late.**

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.

3. EXAMS (55%): There will be one mid-term (worth 25% of your grade) and one **cumulative final exam** (worth 30% of your grade) given during the final exam period.

4. BOOKS, APLIA, & CALCULATOR: The required text is Gravetter & Wallnau, *Essentials of Statistics for the Behavioral Sciences*, 7th edition. Read assigned chapters **before** class and do Learning Checks as you encounter them. **Reread** if you encounter trouble on a Learning Check. The second time, you will understand more. Aplia is the online program you will use to complete your HW assignments (except for SPSS/PASW problems). You **MUST** purchase this. An e-book of the textbook is included with Aplia so you are not required to purchase a hard copy of the text. You will also need a hand-held **calculator** that can do single variable statistics. No need for graphing calculators. **Bring calculator & text to class.**

SPECIAL NEEDS

Students with Disabilities: If you have a documented disability and may need accommodations, contact us ASAP. Please let us 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 made at the discretion of the instructor. **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 us 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.

COLLABORATION

COLLABORATIVE LEARNING:

Discussing homework with other students and your instructors is encouraged, as are homework and study groups for quizzes and exams. Talking over the problems and reworking them when you discover that others got different answers promotes deeper understanding of concepts. However, each student must submit a separate homework which was *written independently* (no photocopies 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** verbal answers need to be done independently.

INDIVIDUAL WORK (WHEN COLLABORATION = CHEATING):

Your work on the **Exams** must be your own. Copying the work of others on these elements is cheating, and will earn you an F for the course. (The University may impose additional penalties in accordance with the student conduct code.) Exams are a reflection of individual work--rely on your own knowledge only.

THREE WAYS TO DO WELL

1. Keep up and keep trying. Read assigned chapters early and often, come to lecture and lab, start on homework immediately so you will finish early enough to compare notes with others. If you keep up and keep trying, the concepts will eventually sink in. Turn your homework in on time. Slog through those

chapters even if you only understand half of what you read. The fog will clear if you just persist. Don't give up!

2. Work hard on understanding early material. If you have a pretty good feel for the concepts in the first half, the second half will deepen your understanding and so what you are learning will make sense rather than being a maze of confusing techniques. If you don't grasp the concepts in the first half, the second half will not make much sense to you. Seek help *early* when you are feeling bewildered or lost.

3. Stay in touch and speak up. All of your instructors want you to do well! Ask us questions in class. Forming a clear question helps you discover what you do and do not understand, which is vital to mastering this subject.

TOP FIVE PITFALLS

1. Concluding that struggling in this course means you just can't get statistics. This course draws upon several different types of skills – math skills as well as conceptual understanding skills. It is unusual for any given student to sail through without struggling with at least some element of the course. Failing is only an indicator that you need to put forth more effort – not that you aren't smart enough to do it! We will do our best to teach in a way that meets your individual needs, but we don't know what those needs are until you tell us. Please speak up when you don't understand something!

2. Passive listening and reading. Write, draw, figure. Think with a pencil to learn. 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. Get it wrong to 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 too hard to catch up.

5. Giving up because you get stuck. Everyone gets stuck. Math is all about getting stuck and unstuck. When this happens, play around. Try a new tactic. *****Ask for help.*****

6. Spectator overconfidence. Watching someone go through the steps is a starting point only. You have to get in the pool to learn how to swim.

GRADING

Your *final course grade* is based on the following components:

- 35% Homework
- 30% Cumulative Final
- 25% Midterm
- 10% Participation

Final grades will be based 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:

Course grades based on percentage of points			
Grade	Percent	Grade	Percent
A+	*	C+	77-79.9
A	93-100	C	73-76.9
A-	90-92.9	C-	70-72.9
B+	87-89.9	D+	67-69.9
B	83-86.9	D	63-66.9
B-	80-82.9	D-	60-62.9
Anything below 60 will be an F			

COURSE SCHEDULE

WEEK	TOPIC	CHAPTERS TO READ	HW DUE
June 24- June 27	Introduction to Terminology, Variables, Exploratory Data Analysis, and Measures of Central Tendency	Chapters 1, 2 and 3	None
July 1- July 3	Variability, Probability, and Z scores (July 4 th - No class)	Chapters 4, 5, 6	HW 1
July 8- July 11	Sampling Distributions, Introduction to Hypothesis Testing, Introduction to the t-test	Chapters 7, 8 and 9	HW 2
July 15- July 18	Independent Samples t-test, and related samples t-test	Chapters 10 and 11	HW 3
July 22- July 25	Midterm (July 22) Introduction to ANOVA	Chapter 13	HW 4
July 29- Aug 1	Repeated measures ANOVA, Two-Factor ANOVA	Chapter 14	HW 5
Aug 5- Aug 8	Correlation, Regression	Chapter 15	HW 6
Aug 12- Aug 14	Chi-Square, Review for final exam	Chapter 16	HW 7
Aug 15	Final Exam		
