



## Psychology 302 – Statistical Methods in Psychology Spring 2012

Lecture: Mondays and Wednesdays 2:00p.m. – 3:20p.m., HEDCO 220  
Labs: Held in Straub 180 at designated times (see “lab instructors” section”)

**Instructor:** Alexander M. Khounlavouth  
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**Office:** 353 Straub  
**Office Hours:** Mondays: 10:50a.m. – 11:50a.m.  
Wednesdays: 12:30p.m. – 1:30p.m.

### Lab Instructors:

**William Moore III**  
Mondays: 4:00p.m. – 5:30p.m.  
Tuesdays: 12:00p.m. – 1:20p.m.  
**Email:** [Wem3@uoregon.edu](mailto:Wem3@uoregon.edu)  
**Office:** 470 Straub  
**Office Hours:**

**Naomi Aguiar**  
Tuesdays: 08:30a.m. – 09:50a.m.  
Tuesdays: 10:00a.m. – 11:20a.m.  
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**Office:** 398 Straub  
**Office Hours:**  
Mondays: 3:30p.m. – 4:30p.m.  
Thursdays: 2:00p.m. – 3:00p.m.

**Straub Computer Lab** rooms (180 & 186) are open **Monday through Friday 8:00a.m. – 5:00pm.** (180 may not be available due to labs being held through the week)

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## *OVERVIEW OF COURSE STRUCTURE*

**Course Objectives:** At the end of this course, you should have a solid understanding of the ways in which statistical techniques are used in psychology, and you should be able to read a description of a research study and then identify the appropriate statistical technique needed to answer the research question. Using hypothesis-testing procedures, you will also be able to conduct this test (by both hand and using statistical computing software). This includes the ability to understand and critically evaluate graphical presentations of data, the ability to identify the appropriate statistical approach for a given research question, and an understanding of the factors that contribute to the interpretation of a statistical test (e.g., effect sizes and statistical power) writing that interpretation in APA format.

**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 can be thought of as applied or conceptual mathematics. Although you will be learning how to do statistical calculations by hand, this course is very different from courses taught in mathematics departments. 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.

**Course Design:** The course promotes active learning — through discussion, solving problems, and computer exercises. The instructors and TA are guides, cheerleaders, and coaches. The course encourages teamwork among students, instructor, and TA. *Although quizzes are to be completed individually, students are encouraged to work together on homework.*

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## ***COURSE REQUIREMENTS***

**1. Participation.** Participation includes in-class group activities (Lecture & Lab), iClicker questions, and Online StatLabs. For in-class group activities and iClicker questions credit is based NOT whether you got the right answer, but on whether you tried. In-class activities and iClicker questions will be given randomly (either in Lecture on Monday or Wednesday) throughout the term. You can miss up to 2 in-class activities/iClicker question days (for any reason) without penalization. After two free in-class activity absences, a single point will be deducted for each missed activity/iClicker day. Points will also be awarded based on your attendance and participation in Lab, these points will be up to the discretion of your Lab instructor. There are no make-up opportunities for participation points.

StatLabs are to be completed prior to coming to lecture on the day in which they are due (see Class Schedule below). StatLabs must be completed **in one session individually**. You will have to create your own account to receive credit. Instructions for creating your account are available on Blackboard under “Course Information->StatLabs->Account Creation”.

The website for the StatLabs is Below:

<http://www.statlabonline.com/>

The Group ID for the Class is: 302Khounlavouth

The Class Password is: Psy302

**2. Homework.** Homework assignments are due in lab each week beginning week 2 (at the beginning of your lab session). Some problems will be completed “by hand”, some using SPSS/PASW (a data analysis software package that is accessible in lab classrooms), and some using both methods. ***Turn homework in on time!*** ***Homework is considered late if it is not turned in at the beginning of your lab on the day it is due. In calculating your final grade, your lowest homework score will be replaced with your highest homework score, but ONLY if you turn in all 9 homework assignments within the terms designed by the late policy.***

**Late work will be penalized 10% each day it is late and no homework will be accepted after the 3<sup>rd</sup> day.**

**1 day late: Maximum Points Possible 13.50/15**

**2 days late: Maximum Points Possible 12.00/15**

**3 days late: Maximum Points Possible 10.50/15**

This policy is designed to encourage you to stay on top of your homework, as it will be vital to your success on exams, and in this course in general.

**3. Quizzes.** You will have 50 minutes to complete each quiz (about 2/3 of the lecture period). Be on time!! Quizzes will cover all material since the previous quiz and might include multiple choice questions, true/false questions, and short answer questions. Quizzes are closed book and are completed individually. ***You may bring calculators on quiz days, but they must be basic, 5 function calculators. Also, you are not allowed to use cell phones as calculators on quiz days.*** On quiz days, we will have a 30-minute lecture following the quiz. You may sit quietly or leave and return if you finish a quiz early but you may not leave the room until I have your test form. **Absolutely no texting or other use of electronic devices during scheduled quiz time.**

At the end of the term, ***you will have the option of taking a “comprehensive make-up” quiz, 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!*** On the final day of lecture, you will have 35 minutes to complete quiz 5, followed by 35 minutes to complete the make-up quiz.

**4. Books, iClicker, Calculator, & Optional SPSS/PASW.** The required text is *Statistics for the Behavioral Sciences* (Privitera, 2012). There is a website, which accompanies this textbook:

<http://www.sagepub.com/priviterastats/study/intro.htm>

It is free to register and includes chapter outlines, flashcards, practice quizzes, & SPSS tutorials. ***I STRONGLY recommend using the resource to help you prepare for quizzes.***

Read assigned chapters **before** class and do “check your learning” sections as you encounter them. **Reread** if you encounter trouble on a “check your learning” section. You will also need a hand-held calculator that can do single variable statistics. No need for graphing calculators. **Bring calculator & text to class.**

You **must** bring your **iClicker** to each lecture. Though not every lecture will feature in-class activities or iClicker questions, the days during which these events are held will be unannounced (***so the safest thing to do is to have your iClicker with you at all times***). You **must register your iClicker before** the 2<sup>nd</sup> week of class. Instructions for registering your iClicker are on Blackboard under “Course Information->iClicker Registration”. You can also use the link below.

<http://libweb.uoregon.edu/dc/blackboard/iclicker/>

**Optional Purchase** SPSS/PASW is available to use in the Straub computer labs (180 & 186), times listed above, but if you wish to purchase your own copy for use on your home computer IBM recommends the following websites:

<http://www.onthehub.com/spss/>

<http://studentdiscounts.com/>

<http://www.studica.com/>

Note: These websites are not affiliated with the University of Oregon or the Psychology department in anyway and you are responsible for any purchases you make and any difficulties that you may incur.

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## **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 that 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 quizzes must be your own. Any verbal statements on homework MUST be written in YOUR OWN WORDS.*** If you are caught cheating, the following consequences apply:

#### **Cheating on homework:**

First offense: "0" on homework assignment and homework will be counted as not turned in.

Second offense: An "F" in the course. Infraction will be reported to the Office of Student Conduct and Community Standards.

#### **Cheating on a quiz:**

An "F" in the course. Infraction will be reported to the Office of Student Conduct and Community Standards.

**The University may impose additional penalties in accordance with the student conduct code:**

<http://studentlife.uoregon.edu/StudentConductandCommunityStandards/StudentConductCode/tabid/69/Default.aspx>

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## **SPECIAL NEEDS**

**Students with Disabilities:** If you have a documented disability and may need accommodations, contact us ASAP. ***There is no way we can help you if you come to us with a documented disability at the end of the term. In addition, 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/>).

**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 not be relaxed*** for student athletes, however ***minor scheduling accommodations may be made (e.g., taking a quiz 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 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.

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## ***TOP SIX SUCCESS STRATEGIES***

- 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/PASW, 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. Therefore, no question is a "dumb" question. If you do not understand something, speak up! This is the only way we will know when we are 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 do not understand something, and complete the online practice quizzes. **Quizzes are different from, but complementary to homeworks!** Homeworks typically test your ability to perform analyses and apply concepts, whereas quizzes test your understanding of those concepts on a deeper level without asking you to perform analyses, **though you may be asked to perform an analysis or interpret data on a Quiz!**

## ***TOP SIX PITFALLS***

- 1. Concluding that struggling in this course means you just cannot 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 are not smart enough to do it! We will do our best to teach in a way that meets your individual needs, but we do not know what those needs are until you tell us. So speak up when you do not understand something!
- 2. Passive listening and reading.** Write, draw, and 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 does not 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 do not compress. Do not fall behind; it is too hard to catch up.

**5. Giving up because you are 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.

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## ***GRADING***

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

- 135 points    (45%)**    Score on 9 homework assignments worth 15 points each (lowest score will be converted into highest previous homework score if all assignments are turned in).
- 135 points    (45%)**    Score on 5 quizzes worth 27 points each (there will be one comprehensive make-up quiz at the end of the term if you would like to replace your lowest quiz score or make up a missed quiz).
- 12 points      (4%)**      Participation in in-class exercises and iClicker questions (you can miss up to two points without penalty).
- 12 points      (4%)**      Lab Participation: This includes attendance and participation in Lab exercises.
- 6 points        (2%)**        StatLabs to be completed prior to lecture.

**Note that there is NO EXTRA CREDIT.** Final grades will be based on percentage of total possible points earned, distributed as follows:

	B+ 87.5 – 89.4%	C+ 77.5 – 79.4%	D+ 67.5 – 69.4%	Pass/No Pass:
A 92.5 – 100%	B 82.5 – 87.4%	C 72.5 – 77.4%	D 62.5 – 67.4%	P: 70% and up
A - 89.5 – 92.4%	B - 79.5 – 82.4%	C - 69.5 – 72.4%	D - 59.5 – 62.4%	N: 69% or lower

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## **COURSE SCHEDULE**

*\*Schedule, homework due dates and quiz dates subject to change*

<b>Date</b>	<b>Topic</b>	<b>Readings</b>	<b>Quizzes/HW/StatLab</b>
<b>Week 1</b>			
4/2	Course intro, statistics, and research designs	Ch. 1	
	Lab 1		
4/4	Visual Displays of Data	Ch. 2-3	StatLab – Frequency Distribution (Speeded Reaction Time)
<b>Week 2</b>			
4/9	Central Tendency & Variability	Ch. 4	StatLab – Central Tendency (Horizontal Vertical Illusion)
	Lab 2		<b>HW 1 Due</b>
4/11	Z scores, and the Normal Distribution	Ch. 5-6	StatLab – Standard (z) Scores (Memory Span)
<b>Week 3</b>			
4/16	Probability & the Normal Distribution	Ch. 7	<b>Quiz 1</b>
	Lab 3		<b>HW 2 Due</b>
4/18	Distribution of Sample Means	Ch. 7-8	
<b>Week 4</b>			
4/23	Hypothesis Testing with Z	Ch. 8	
	Lab4		<b>HW 3 Due</b>
4/25	The One-Sample t-test	Ch. 8-9	<b>Quiz 2</b>
<b>Week 5</b>			
4/30	Independent Samples t-test	Ch. 9-10	StatLab – One-Sample T-Test (Ebbinghaus Size Illusion)
	Lab 5		<b>HW 4 Due</b>
5/2	Related Samples t-test	Ch. 10-11	StatLab – Two-Sample T-Test (Judging Faces)
<b>Week 6</b>			
5/7	Intro to ANOVA	Ch. 12	StatLab – Two-Sample T-Test (Emotional Stroop Effect)
	Lab 6		<b>HW 5 Due</b>
5/9	One-Way ANOVA	Ch. 12	<b>Quiz 3</b>
<b>Week 7</b>			
5/14	Within Subjects ANOVA	Ch. 13	StatLab – One-Way ANOVA (Judging Abstract Art)
	Lab 7		<b>HW 6 Due</b>
5/17			
<b>Week 8</b>	Factorial ANOVA	Ch. 14	
5/21	Correlation	Ch. 15	StatLab – Correlation (Lexical Decision)
	Lab 8		<b>HW 7 Due</b>
5/23	Linear Regression	Ch. 16	<b>Quiz 4</b>

## ***COURSE SCHEDULE CONTINUED***

<b>Date</b>	<b>Topic</b>	<b>Readings</b>	<b>Quizzes/HW/StatLab</b>
<b>Week 9</b>			
5/28	Memorial Day <b>No Class</b>		
	Lab 9		<b>HW 8 Due</b>
5/30	Chi-Square	Ch. 17	
<b>Week 10</b>			
6/4	Which Test? Review & Recap		
	Lab 10		<b>HW 9 Due</b>
6/6	<b>Quiz 5 &amp; Comprehensive Makeup Quiz</b>		<b>Quiz 5 &amp; Makeup Quiz</b>

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### **HOMWORK ASSIGNMENTS**

*\*Homework assignments subject to change*

*Put your name and your TA's name on all homework, and please staple (any unstapled homeworks **will be marked down ½ points**). All work must be neat and legible. If we cannot read it, we cannot 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/PASW 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 even-numbered problems in the back. Use these for extra practice or to check your work.

#### **Homework 1: Introduction to Concepts, Scaling, & Visual Representations of Data (15 pts)**

- Ch 1: 1, 15, & 25
- Ch 2: 13, 27abc, & 30\*  
 Question 30\* can be completed EITHER by Hand **or** using SPSS/PASW. Be sure to include the output, clearly identify which parts of the output go with the homework question and label your axes!

Points: 2 pts – Ch 1: 1, 15, & 25 as well as Ch 2: 13  
 3 pts – Ch 2: 27abc  
 4 pts – Ch 2: 30

#### **Homework 2: Central Tendency & Variability (15 pts)**

- Ch 3: 11 & 27abc
- Ch 4: 9, 11ade\*, 21abc, & 35



Question 11ade\* must be completed BOTH by Hand **and** using SPSS/PASW. Be sure to include the output, clearly identify which parts of the output go with the homework question (i.e. which part of the output corresponds to which letter part of question 11). In addition, you must include an APA style conclusion sentence.

- Points: 1 pts – Ch 4: 9  
 2 pts – Ch 3: 11 & Ch 4: 35  
 3 pts – Ch 3: 27abc & Ch 4: 21abc  
 4 pts – Ch 4: 11ade\*

### **Homework 3: z-Scores & the Normal Curve (15 pts)**

- Ch 6: 13abcd, 17abcd, & 27abc
- Ch 7: 5, 23abc\*, 25abcdef, & 31ab  
 Question 23abc\* can be completed EITHER by Hand **or** using SPSS/PASW. Be sure to include the output (if using SPSS/PASW), clearly identify which parts of the output go with the homework question. In addition, you must include an APA style conclusion sentence.

- Points: 1 pts – Ch 7: 5  
 2 pts – Ch 6: 13abcd, 17abcd, 27abc, & Ch 7: 31ab  
 3 pts – Ch 7: 23abc\* & 25abcdef

### **Homework 4: Introduction to Hypothesis Testing, Z-Test (15 pts)**

- Ch. 8: 3, 4, 7, 15abcd, 19abcd, 23ab\*, 25abcd, & 31  
 Question 23ab\* must be completed using SPSS/PASW. Be sure to include the output, clearly identify which parts of the output go with the homework question. In addition, you must include an APA style conclusion sentence for both Questions 23ab\* and 31.

- Points: 1 pts – Ch 8: 3, 4, & 7  
 2 pts – Ch 8: 15abcd, 19abcd, & 25abcd  
 3 pts – Ch 8: 23ab\* & 31

### **Homework 5: One-Sample & Independent-Samples t-tests (15 pts)**

- Ch. 9: 3, 11ab, 13abcd, 17ab, 18ab\*, & 21a\*  
 Question 17ab must be completed by hand, and you must include an APA style conclusion sentence.  
 Questions 18ab\* & 21a\* must be completed using SPSS/PASW. Be sure to include the output, clearly identify which parts of the output go with the homework question. In addition, you must include an APA style conclusion sentence for both Questions 18ab\* and 21a\*.

- Points: 1 pts – Ch 9: 3  
 1.5 pts – Ch 9: 11abc  
 2 pts – Ch 9: 13abcd  
 3 pts – Ch 9: 17ab

3.5 pts – Ch 9: 21a\*  
4 pts – Ch 9: 18ab\*

### **Homework 6: Related-Samples t-test, Confidence Intervals (15 pts)**

- *Ch. 10:* 1, 7, 13abcd, 19ab\*, & 25  
Question 19ab\* must be completed using SPSS/PASW. Be sure to include the output, clearly identify which parts of the output go with the homework question. In addition, you must include an APA style conclusion sentence.
- *Ch. 11:* 3, 11, 13abcd, 19abcd, 23ab, & 31ab

Points: ½ pts – Ch 10: 1 & 7 as well as Ch 11: 3 & 11  
1 pts – Ch 10: 25  
2 pts – Ch 10: 13abcd & 19ab\* as well as Ch 11: 13abcd, 19abcd, 23ab, & 31ab

### **Homework 7: One-Way ANOVA, Between and Within Groups (15 pts)**

- *Ch 12:* 5, 13abc, & 17
- *Ch 13:* 3, 13abcd, 23ab, & 31ab\*  
Question 31ab\* must be completed using SPSS/PASW. Be sure to include the output, clearly identify which parts of the output go with the homework question. In addition, you must include an APA style conclusion sentence.

Points: 1 pts – Ch 12: 5 & Ch 13: 3  
2 pts – Ch 12: 17 as well as Ch 13: 13abcd & 23ab  
3 pts – Ch 12: 13abc  
4 pts – Ch 13: 31ab\*

### **Homework 8: Two-Way ANOVA (15 pts)**

- *Ch 14:* 5, 15, 23ab\*, 25ab, 31ab, & 33ab  
Question 23ab\* must be completed using SPSS/PASW. Be sure to include the output, clearly identify which parts of the output go with the homework question. In addition, you must include an APA style conclusion sentence for both Questions 18ab\* and 33ab.

Points: 1 pts – Ch 14: 5 & 15  
3 pts – Ch 14: 25ab, 31ab, & 33ab  
4 pts – Ch 14: 23ab\*

### **Homework 9: Correlation & Regression (15 pts)**

- *Ch 15:* 3, 5, 17ab, & 23abc\*  
Question 23abc\* must be completed using SPSS/PASW. Be sure to include the output, clearly identify which parts of the output go with the homework question. In addition, you must include an APA style conclusion sentence.

- *Ch 16*: 11, 13abc, 15abcd, & 23

Points: 1 pts – Ch 15: 3 & 5 as well as Ch 16: 11 & 23

2 pts – Ch 15: 17ab & Ch 16: 15abcd

3 pts – Ch 16: 13abc

4 pts – Ch 15: 23abc\*