

# Statistical Principles of Psychological Research

PSYC 210, Sec. 001

## Student Learning Goals

- Describe and explain concepts and techniques in descriptive and inferential statistics
- Use statistical techniques to make sense of data
- Use Excel and SPSS for data analysis
- Determine the appropriate statistics and hypothesis test for a given research design and/or data set
- Interpret statistics to describe clearly what they tell us about the research results and/or data set
- Read research articles published in peer-reviewed psychology journals
- Overcome some of the negative feelings you might have about statistics

## Philosophy of teaching and learning

- Watching someone else do statistics is not the best way to learn statistics. To gain a genuine understanding of concepts and to acquire real skills, you have to try to do stats yourself. Effort, practice, and persistence are the keys to becoming good at anything, including statistics.

## Course Resources

- **Required Materials**
  - Lecture notes
    - The lecture notes on Sakai are required reading. We will use these notes instead of a textbook.
  - Sakai Site
    - Go to Sakai.unc.edu, log in and click on the link to PSYC210.001.SP16 to use our Sakai site. Please familiarize yourself with the organization of the site because you will use it often. On Sakai, you will have access to the syllabus, lecture notes, practice problems, old exams, and your grades. Announcements will be posted on Sakai so be sure your settings are adjusted to show announcements. Quizzes are taken on Sakai, and assignments will be submitted on Sakai.
  - A simple four-function calculator. Purchase one at a dollar store for \$1.
    - Please bring your calculator to every class meeting. Not permitted during tests: Cell phone calculator, graphing calculator, calculator with a data key, or any calculator with programmable memory.
  - A flash drive to save SPSS data sets and output
    - Any flash drive will do as long as it has some open storage space. The files you save are relatively small, and they will use less than 0.25 GB of space. Have this flash drive on hand for each SPSS assignment.
- **Optional Materials**
  - There is no required textbook. On Sakai, there are links to free online textbooks which are optional resources.

## Grades

Points can be earned from the following:

Lecture notes printed in 3-ring binder	= 3 points
Class survey	= 1
Class contacts (2 pts for lecture, 2 pts for recitation)	= 4
Online quizzes	= 26
Computer assignments	= 6
Recitation	= 6
Midterm exam	= 10
Final exam prep	= 4

Final exam	= 40
Point Total	= 100 points

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Your course grade will be determined by the total number of points you earn. There will be NO CURVE. At the end of the semester, a point total followed by any decimal from .01 to .99 will be rounded up to the next whole value.

Then this chart will be used to assign a letter grade:

94 – 100 = A	87 – 89 = B+	77 – 79 = C+	67 – 69 = D+
90 – 93 = A-	84 – 86 = B	74 – 76 = C	60 – 66 = D
	80 – 83 = B-	70 – 73 = C-	Less than 60 = F

## Course Requirements

- **Lecture**
  - The correlation between class attendance and grades in statistics courses is strong and significant. To learn stats well, you need to do more than merely show up. Stay awake, pay attention, and participate! Experimental research shows that actively working on problems causes students to understand the material better, retain more of it, and earn higher scores on tests. If you miss lecture, meet with your class contacts BEFORE the next lecture to discuss the class notes in depth and fill in any gaps.
- **Recitation**
  - Recitation time will be devoted to (1) reviewing statistical concepts, (2) interpreting statistics, and (3) becoming a skilled reader of SPSS output. You are expected to attend every required recitation meeting. To earn credit for recitation, you should (1) arrive on time, (2) stay for the entire recitation, and (3) participate actively by following all instructions from your TA, answering questions, and working in pairs or small groups when prompted. Please bring your lecture notes binder to recitation.
- **Lecture Notes in a 3-ring Binder**
  - At our first class meeting, I will provide you with a printed copy of the syllabus and notes for the first two lecture topics. After that, print the rest of the lecture notes and organize them in a 3-ring binder. Also put several sheets of blank paper in your binder to have in case you want to write down longer notes, questions, and additional examples. Show your binder to me or a TA on or before Friday, January 22 to earn 3 points.
- **Class Survey**
  - At the beginning of the semester, you can earn 1 point by completing an online survey. This survey is used to collect data for practice problems and computer assignments. All responses will be confidential and anonymous. Go to Quizzes on Sakai to get the link to the survey.
- **Class Contacts**
  - Students who feel connected to other members of a class do better in the class. To facilitate making connections with classmates, class time will be devoted to working collaboratively on examples, practice problems, and computer output. The people you get to know in class will be valuable resources for you to find out what happened during a class you missed. On Friday, January 15, I will give you a form to complete in lecture to list the names of students you've met in lecture who can serve as your contacts. In addition, you will complete another form in recitation listing your class contacts for your recitation section.
- **Computer Assignments**
  - The main goal of these assignments is to learn to use SPSS for basic data analysis. You will complete six computer assignments using SPSS which is available to you for free through UNC's Virtual Lab (virtuallab.unc.edu). Datasets and step-by-step instructions for each computer assignment will be on Sakai. You will submit computer assignment output files on Sakai.
- **Online Quizzes**
  - There will be 13 online quizzes to help you to work on and develop a better understanding of concepts in this course. You can and should look at your notes and collaborate with your classmates while working on the quizzes. Go to our Sakai site and click on the link for "Quizzes" to see the quizzes. Quizzes are 2 points each.
- **Exams**

- The midterm exam will include definitions, interpretations, and short answer items on the material covered prior to spring break. The final exam is a cumulative exam covering the entire course, and it will include approximately 50 multiple choice items and 5 short answer items. The final exam is cumulative because statistics is cumulative and it is important to learn and retain all of the material to be prepared courses that have PSYC 210 as a prerequisite.

## **For students working with Accessibility Resources & Services**

- Please contact your instructor as soon as possible to confirm your accommodations.

## **Class Policies**

- **Academic Honesty**

- The Honor Code is in effect at all times to ensure the integrity of our learning experiences. Students must sign a pledge on each exam to state that they have complied with the Honor Code. For our exams, this means that you take them without help of notes, books, other people, or any other kind of external aid. It also means that you reduce cheating by protecting your exam from view.
- In addition, academic honesty means that you complete assignments in this course through your own efforts. You may not copy the work of another student, and you may not do the work for someone else. It is a violation of the Honor Code to get a copy of someone else's computer output and present it as your own. It is also a violation for you to copy your output for someone else to submit as their own work.
- For quizzes, you are encouraged to collaborate and use course materials to help you understand concepts and problems. You are allowed to look at your notes as much as you would like, and you are allowed to discuss quiz items and possible answers with your classmates, me and/or your TA.

- **Electronics in the Classroom**

- Please put away your laptop, tablet, e-reader, cell phone, or whatever your device is. To get the most out of class, bring your 3-ring binder with lecture notes and blank paper.

- **Final Exam Conflicts**

- If you have three exams within 24 hours and you want to reschedule our final exam, then see an academic advisor for an exam excuse form. The make-up final exam will be at 8:00 AM on Wednesday, May 4 (second reading day). Please give Dr. Jordan your exam excuse on or before our last lecture.

- **Late Computer Assignments**

- Each computer assignment output file must be submitted on Sakai by 11 PM on the date it is due. There is a 55-minute grace period after which it will be marked late. Late penalty = -0.5 point.

- **Late Quizzes**

- Each quiz should be submitted by 11 PM on the day it is due, but there is a grace period of 59 minutes. Your quiz will not be marked late as long as it is submitted by 11:59 PM. Late penalty = -1 point. Each quiz also has a late deadline which is usually 3 days after the original deadline. After the late deadline passes, quizzes are automatically removed from Sakai and cannot be reinstated. It is your responsibility to deal with any computer, internet or power problems that might interfere with completion of a quiz. Plan to submit every quiz early to give yourself time to recover in case something goes wrong.

- **Midterm Exam Make-Up**

- If you cannot take the midterm exam on March 9, then the make-up will be given on Friday, March 11 at 8:00 AM in our regular lecture classroom. No note, documentation, or excuse of any kind is necessary for you to take the make-up. This is the only time the make-up is offered. There is no early midterm exam make-up and there is no individual scheduling of make-up exams.

- **Missed Recitation**

- You must attend the recitation that you enrolled yourself in. There are seven required recitations (see schedule below), and you can earn one point per recitation when you attend and participate fully. Overall, recitation is worth 6 points. Therefore, you can miss one recitation without it affecting your grade. There are no make-ups for missed recitations.

**PSYC 210: Recitation Meeting Calendar (Required recitations are marked in bold print.)**

Recitation Dates	Topic	Assignment Due
January 12 & 14	No Recitation	
<b>January 19 &amp; 21</b>	Introductions; Variables & Data	None
January 26 & 28	Optional: Using Virtual Lab	Bring flash drive & laptop
<b>February 2 &amp; 4</b>	Descriptive statistics	<b>Computer assignment 1</b>
February 9 & 11	No Recitation	
<b>February 16 &amp; 18</b>	Correlation	<b>Computer assignment 2</b> Due by 11 PM on Feb. 15
<b>February 23 &amp; 25</b>	Regression	<b>Computer assignment 3</b> Due by 11 PM on Feb. 22
March 1 & 3	Review for Midterm Exam	
March 8 & 10	Optional: Review/ Q&A	
March 15 & 17	Spring Break: No recitation	
March 22 & 24	Go over Midterm Exam	
<b>March 29 &amp; 31</b>	<b>Hypothesis testing with r and t</b>	<b>Computer assignment 4</b> Due by 11 PM on Mar. 28
April 5 & 7	Optional: Review/ Q & A	
<b>April 12 &amp; 14</b>	<b>ANOVA</b>	<b>Computer assignment 5</b> Due by 11 PM on April 11
<b>April 19 &amp; 21</b>	<b>Chi-square test</b>	<b>Computer assignment 6</b> Due by 11 PM on April 18

**PSYC 210: Lecture meetings and quiz due dates**

Date	Lecture Topic	Quiz	Recommended Practice Problems
Monday, 1/11	Introduction and key terms		
Wednesday, 1/13	Key terms		Types of Variables
Friday, 1/15	Frequency distributions		
Monday, 1/18	No Class – Holiday		
Wednesday, 1/20	Frequency distributions	Quiz 1	Percentile and percentile rank
Friday, 1/22	Central Tendency		
Monday, 1/25	Central Tendency	Quiz 2	
Wednesday, 1/27	Variability		
Friday, 1/29	Variability		Descriptive Statistics
Monday, 2/1	z-scores	Quiz 3	Z-scores
Wednesday, 2/3	Normal distribution		Normal distribution
Friday, 2/5	Correlation		
Monday, 2/8	Correlation	Quiz 4	Scatterplot and r
Wednesday, 2/10	Correlation		Correlation
Friday, 2/12	Regression		
Monday, 2/15	Regression	Quiz 5	Regression
Wednesday, 2/17	Regression		
Friday, 2/19	Probability		

Monday, 2/22	Probability	Quiz 6	Probability
Wednesday, 2/24	Sampling distributions		
Friday, 2/26	Sampling distributions		Sampling distribution demo
Monday, 2/29	Hypothesis testing	Quiz 7	Null hypothesis
Wednesday, 3/2	Hypothesis testing		Steps of hypothesis testing
Friday, 3/4	Estimation		
Monday, 3/7	Estimation	Quiz 8	Estimation
Wednesday, 3/9	Midterm Exam		
Friday, 3/11	Midterm Exam Make-up		
Monday 3/14-Friday 3/18	No class – Spring Break		
Monday, 3/21	t-test		t-test
Wednesday, 3/23	t-test		
Friday, 3/25	No Class – Holiday		
Monday, 3/28	t-test	Quiz 9	
Wednesday, 3/30	One-way analysis of variance		ANOVA
Friday, 4/1	One-way Anova		
Monday, 4/4	One-way ANOVA	Quiz 10	
Wednesday, 4/6	Two-way analysis of variance		2-way ANOVA
Friday, 4/8	Two-way ANOVA		
Monday, 4/11	Two-way Anova	Quiz 11	
Wednesday, 4/13	Chi-square test		2-way ANOVA or chi-square?
Friday, 4/15	Chi-square test		Chi-square tests
Monday, 4/18	Reading journal articles	Quiz 12	
Wednesday, 4/20	Choosing the right stats		
Friday, 4/22	Choosing the right stats		Choosing statistics
Monday, 4/25	Final Exam prep Part 1	Quiz 13	
Wednesday, 4/27	Final Exam prep part 2		
Tuesday, May 3	Final Exam Starts at 4:00PM		

*This syllabus is subject to change. Any changes will be announced in lecture and on Sakai.*