



Dana and David Dornsife
College of Letters, Arts
and Sciences
Department of Psychology

Psychology 274Lg (52487)

Statistics

Spring 2020

Lecture Location: Seeley G. Mudd Building (SGM), Room 601

Days and Time: Tuesday & Thursday; 2:00 p.m. to 3:20 p.m.

ALL Lab Locations: Seeley G. Mudd Building (SGM), Room 631

Thursday Lab Time: 10:00 a.m. to 11:50 a.m.

Friday Lab Time: 12:00 p.m. to 1:50 p.m.

Online portion at <https://blackboard.usc.edu>

Instructor Information

Dr. Clayton L. Stephenson

Assistant Professor (Teaching) Psychology

clstephe@usc.edu

(213) 740-9019

Office Location: SGM, Room 525A

Office Hours: Monday & Friday from 1:30 p.m. –
3:30 p.m., Wednesday from 2:00 p.m. – 4:00 p.m.,
and by appointment

TA Information

Yichi Zhang

yzhang97@usc.edu

Syllabus

Official Course Description

Introduction to the use of statistics in psychology: basic ideas in measurement; frequency distributions; descriptive statistics; concepts and procedures in statistical inference.

My Course Summary

The word “statistics” is often associated with feelings of fear and dread, visions of incomprehensible equations, and thoughts of boredom. This class is designed to alleviate your fears and dread, to provide clarity of equations, and to provide you with the logic and practicality of statistics. Statistics is a key element that makes psychology a discipline worthy of being a true science; thus, statistics is one of the most important courses you will take in psychology or any scientific discipline. Without rigorous, systematic organization, analysis and interpretation of data, much of the theoretical and practical knowledge we have about perception, cognition, attitudes, learning, human development, stereotypes, and many other areas in psychology would not exist. Although this course is not content specific, the knowledge and content of the course can be applied to any content-specific course in psychology.

Recommended Preparation

PSYC 100

Teaching Objectives

- Provide you with the *logic* of each type of statistic.
- Provide students with meaningful skills and knowledge about statistics to help them advance in psychology and science.
- Guide and mentor students in interpreting and reporting statistics at a pragmatic level for use in academic and workplace settings.

Student Learning Objectives

After successfully completing this course, students will be able to . . .

- recognize various statistical procedures and terminology.
- identify which statistical procedure(s) to use for hypothesis testing.
- understand the statistics used in academic articles.
- accurately interpret and describe, in plain English, inferential statistics.
- provide well-written summaries of statistical results.
- verbally present statistical results in a practical and meaningful manner.
- use various statistical analysis software with comfort and proficiency.

Required Texts and Materials

Cumming, G., & Calin-Jageman, R. (2017). *Introduction to the new statistics: Estimation, open science, and beyond*. New York, NY: Routledge.

Supplemental Readings. (Various dates). *Posted on Blackboard*.

NOTE: The textbook is available at the bookstore or online directly through the publisher at <https://www.routledge.com/Introduction-to-the-New-Statistics-Estimation-Open-Science-and-Beyond/Cumming-Calin-Jageman/p/book/9781138825529>.

Required Equipment

You are required to bring a calculator (your cell phone is okay) to class and lab section as long as it has a square root function. You do not have to purchase an expensive, fancy calculator. A good *example* of the type of calculator you will need is the Casio fx-260 Solar model (approximately \$10-15). You may use a graphing calculator if you already own one. You will also need a USB Flash Drive, Dropbox, or a Cloud Drive to save files you will create during labs.

NOTE: If you take hand written notes, then I highly suggest you use loose-leaf notebook paper and NOT spiral bound paper. Based on my experience as a student and, many of my previous students who took this class, found that loose leaf paper is truly easier and, in some cases, a necessity for taking notes in this class.

HELPFUL WEBSITES!

<http://wise.cgu.edu>

<http://www.ats.ucla.edu/stat/SPSS>

<http://www.socr.ucla.edu>

<http://www.amstat.org/publications/jse/v6n3/west.html>

Assessment	Due Date	Percent of Final Grade	Points (Each)
Bonus Prep 1	February 4 th	0 (individual grade)	0 – 3
Bonus Prep 2	February 25 th	0 (individual grade)	0 – 3
Midterm	March 12 th	15 (individual grade)	100
Bonus Prep 3	April 14 th	0 (individual grade)	0 – 3
Bonus Prep 4	April 28 th	0 (individual grade)	0 – 3
Final Exam	May 7 th , 2:00 p.m. – 4:00 p.m.	20 (individual grade)	100
Lab Assignments	Each Lab Session	25 (individual or group)	10-20
Homework Assignments	Weekly	15 (individual grade)	25
Applied Statistics Assignment	May 1 st by 11:59 p.m.	15 (individual grade)	100
Participation in Lecture	Continuous	10 (individual or group)	10

Exams

You will take a midterm and final exam. The exams will test your understanding of the major concepts in the course, and will focus on both the details and "the big picture." Both exams are based on a combination of lecture material, class discussions, textbook, video-presentations, assignments, and handouts. The "bonus-preps" are the best representation of what you can expect on the exams. The exams will consist of multiple-choice questions, word problems, and short essays. The final exam is *cumulative* and will include questions assessing your ability to *apply* the knowledge you obtained in the labs and lecture. ***NOTE: You will be asked to do some minor calculations on the midterm and final exam. These will be simplistic and will only require a calculator. If you show up 15 minutes or later on a bonus prep or exam day, then you will NOT be allowed to take the bonus prep or exam with the exception of verifiable emergencies.***

Homework Assignments

You will complete one homework assignment each week to help you remember, understand, and apply the material. The problems will consist of some calculations, word problems, or short answer questions. You should use the weekly assignments to study and prepare for bonus preps and examinations. It is ***your*** responsibility to know when assignments are due by continually checking the syllabus and Blackboard. ***Assignments become available one week before the due date and are due by Tuesdays by 11:59 p.m., with the exception of Chapter 6, which is due on a Thursday. See the Tentative Schedule for specific due dates for each assignment. Your 2 lowest homework grades will be dropped from the calculations of your overall grade.***

Applied Statistics Assignment

One of the primary goals in this class is to prepare you with skills for graduate school or a work position. The applied statistics assignment is designed to provide you with a realistic problem that you might come across outside of the classroom. You will have the majority of the semester to complete the applied statistics assignment during lab and on your own time. ***The Applied Statistics Assignment is due by May 1st by 11:59 p.m.***

Weekly Lab Assignments

The lab assignments are designed for you to gain experience in applied aspects of inputting data into spread sheets, importing and exporting data, creating graphs and tables that adhere to the APA Publication Manual, using SPSS, reading SPSS output, interpreting the results in a

meaningful manner, and writing results so that the majority of people would understand your results. Some assignments will require you to work in small groups or individually. **Lab assignments are due by 11:59 p.m. five days after the day of the lab. That is, Thursday's labs are due Tuesdays by 11:59 p.m. and Friday's labs are due Wednesdays by 11:59 p.m. Your lowest lab will be dropped from the calculation of your overall grade.**

Participation in Lecture

Reading the assigned material and completing the assignments before class and lab are important to understanding the lecture topics and to participating in the discussions. Various *participation point questions* will be asked during class for which a response is expected, on paper, and discussions will be based on those questions. Exercises may occasionally be assigned in class in order to help you to understand the course material. These exercises may be worked on in class, or may be due at a later date. Lab participation will be graded based on the completion of a specific assignment or demonstration that will take place each lab. **Your lowest THREE participation grades will be dropped from the calculation of your overall grade.**

EXTRA CREDIT: Participate in Research Studies and Worksheets

Part of understanding the research process is being a participant in a study. You may participate in research studies conducted in the psychology department to earn extra credit. All points will be applied to your Applied Statistics Assignment. However, you *cannot* earn more than 100 points on your Applied Statistics Assignment, and any leftover extra credit points *will not* be applied to any other assignments. You can view and sign up for studies through the SONA system at <https://usc.sona-systems.com/>. You may complete up to 6 points of credit on SONA. Half of your points *must* be completed by participating in lab experiments and *not* survey research. For each study, you will fill out a worksheet about the study. The worksheet is posted on Blackboard under the link titled "Syllabus." Please note that your participation in research is voluntary and you have the right to NOT participate in research studies. If you do not want to participate in studies, then you may complete the alternative, which is writing three two-page papers (2 points each) on topics posted on Blackboard.

Grading Scheme

Please Note: I do NOT curve the grade OR offer extra credit beyond the SONA studies. Whatever grade you have on Blackboard is your grade in real-time that you earned to that date. I do round up (e.g., 93.45 = 93.5%) for your final grade. Finally, it is NOT appropriate for you to ask to make up an assignment at the end of the semester that was due past what is outlined in the late policy (see p. 9) or to ask for extra credit beyond the SONA studies, so please do NOT ask for either.

A = 100 - 93.5%; A- = 93.4 - 89.5%; B+ = 89.4 - 86.5%; B = 86.4 - 83.5%; B- = 83.4 - 79.5%; C+ = 79.4 - 76.5%; C = 76.4 - 73.5%; C- = 73.4 - 69.5%; D+ = 69.4 - 66.5%; D = 66.4 - 63.5%; D- = 63.4 - 59.5%; Below 59.5% = F

Instructor Student Communication and Blackboard

Blackboard (Bb) will be used to post announcements, send e-mails, and post all grades and course materials, so it is the student's responsibility to frequently visit the course on Blackboard (website: <http://blackboard.usc.edu>). Bb transactions will follow the below guidelines.

- 1) **Grades:** All grades and points will be posted on Bb one to two weeks after the completion of the exam, assignment, or activity. Grades will not be announced in class, via e-mail, or during office hours.
- 2) **Course Materials:** The syllabus, assignments, and supplemental reading material can be viewed and/or printed from Bb.
- 3) **Announcements:** Class announcements will be posted on Bb, as well as broadcasted in class.
- 4) **Email:** Any email communications from the instructor or TA will be sent via Bb or through the USC's email service. USC requires that all e-mail communication between the instructor and students be sent via an official USC e-mail address. *Any student communication delivered from a non-USC e-mail address will be automatically discarded (i.e., the email will not even be opened).*

Tentative Schedule of Topics and Assignments

	Lecture Topic(s)	Readings (Associated with Lecture Topics)	Special Notes or Due Dates for Major Assignments
WEEK 1			
Tuesday 01/14/2020	➤ Overview of Course	➤ Syllabus	➤ None
Thursday 01/16/2020	➤ Fundamentals	➤ Chapter 1	➤ None
WEEK 2			
Tuesday 01/21/2020	➤ Samples, Populations, Validity	➤ Chapter 2	➤ Chapter 1 Homework Due 1/21
Thursday 01/23/2020	➤ Scales of Measurement	➤ Chapter 2	➤
WEEK 3			
Tuesday 01/28/2020	➤ Distributions & Measures of Central Tendency	➤ Chapter 3	➤ Chapter 2 Homework Due 1/28
Thursday 01/30/2020	➤ Measures of variance	➤ Chapter 3	➤ None

WEEK 4

Tuesday 02/04/2020	<ul style="list-style-type: none"> ➤ Logic of z-scores ➤ Probability (P) 	➤ Chapter 4	<ul style="list-style-type: none"> ➤ Bonus Prep 1 ➤ Chapter 3 Homework Due 2/04
Thursday 02/06/2020	➤ Distribution of Sample Means	➤ Chapter 4	➤ None

WEEK 5

Tuesday 02/11/2020	➤ Confidence Intervals	➤ Chapter 5	➤ Chapter 4 Homework Due 2/11
Thursday 02/13/2020	➤ Effect Sizes	➤ Chapter 5	➤ None

WEEK 6

Tuesday 02/18/2020	➤ Logic of null hypothesis significance testing (NHST)	➤ Chapter 6	➤ Chapter 5 Homework Due 2/18
Thursday 02/20/2020	<ul style="list-style-type: none"> ➤ Type I and Type II Errors ➤ Logic of the t-test 	➤ Chapter 6	➤ None

WEEK 7

Tuesday 02/25/2020	➤ One-sample t -test	➤ Chapter 6	➤ Bonus Prep 2
Thursday 02/27/2020	➤ Independent samples t -test	➤ Chapter 7	➤ Chapter 6 Homework Due 2/27

WEEK 8

Tuesday 03/03/2020	➤ Independent samples t -test	➤ Chapter 7	➤ Chapter 7 Homework Due 3/03
Thursday 03/05/2020	➤ Paired samples t -test	➤ Chapter 8	➤

WEEK 9

Tuesday 03/10/2020	➤ Paired samples t -test (cont.)	➤ Chapter 8	➤ Chapter 8 Homework Due 3/10
Thursday 03/12/2020	➤ Midterm	➤ Covers Chapters 1 – 8	➤ Midterm

WEEK 10

Tuesday 03/17/2020	➤ Spring Break!	➤ None	➤ N/A
Thursday 03/19/2020	➤ Spring Break!	➤ None	➤ N/A

WEEK 11

Tuesday 03/24/2020	➤ Logic and notation for the ANOVA ➤ One-way ANOVA	➤ Chapter 14	➤
Thursday 03/26/2020	➤ Repeated- Measures ANOVA	➤ Chapter 14	➤ None

WEEK 12

Tuesday 03/31/2020	➤ Logic of Two- Factor ANOVA	➤ Chapter 15	➤
Thursday 04/02/2020	➤ Two-Factor ANOVA (cont.)	➤ Chapter 15	➤ None

WEEK 13

Tuesday 04/07/2020	➤ Planning Studies	➤ Chapter 10	➤ Chapters 14 & 15 Homework Due 4/07
Thursday 04/09/2020	➤ Statistical Power	➤ Chapter 10	➤ None

WEEK 14

Tuesday 04/14/2020	➤ Meta-analysis I	➤ Chapter 9	➤ Bonus Prep 3 ➤ Chapter 10 Homework Due 4/14
Thursday 04/16/2020	➤ Meta-analysis II	➤ Chapter 9	➤ None

WEEK 15

Tuesday 04/21/2020	➤ Correlations	➤ Chapter 11	➤ Chapter 9 Homework Due 4/21
Thursday 04/23/2020	➤ CIs & Effect Sizes for Correlations	➤ Chapter 11	➤ None

WEEK 16

Tuesday 04/28/2020	➤ Regression	➤ Chapter 12	➤ Bonus Prep 4 ➤ Chapters 11 & 12 Homework Due 4/28
Thursday 04/30/2020	➤ Proportions ➤ χ^2 (chi-square)	➤ Chapter 13	➤ Applied Statistics Assignment Due May 1 st by 11:59 p.m.

WEEK 17

Thursday 05/07/2020	Final Exam: 2:00 p.m. to 4:00 p.m. in SAME CLASSROOM! Covers ALL Chapters
------------------------	--

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *SCampus*, the Student Guidebook, (www.usc.edu/scampus or <http://scampus.usc.edu>) contains the University Student Conduct Code (see University Governance, Section 11.00), while the recommended sanctions are located in Appendix A.

Statement on Plagiarism

Plagiarism, lazy writing, and cheating are violations of the Student Judicial Affairs & Community Standards and may be dealt with by both the instructor and the university. Plagiarism is defined as, "the act of presenting the ideas and writings of another as one's own." Lazy writing is defined as, "using quotes or paragraphs with the proper citation, but are used in a manner that a paper is stitched together and clearly has little or no original writing." Cheating is defined as, "the act of obtaining or attempting to obtain credit for academic work through the use of any dishonest, deceptive, or fraudulent means." In instances of academic dishonesty, the instructor will take appropriate action as outlined in the Academic Integrity Review Process (SJACS 14.10). For more information on avoiding plagiarism or lazy writing, see Chapter 1, Section 1.10 in the APA Publication Manual or visit http://www.usc.edu/student-affairs/student-conduct/ug_plag.htm.

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me, or to the TA, as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. Website and contact information for DSP: http://sait.usc.edu/academicssupport/centerprograms/dsp/home_index.html; Phone: (213) 740-0776; TDD Only: (213) 740-6948; Fax: (213) 740-8216; email: ability@usc.edu.

Tentative Schedule of Labs

Week	Lab #	Topic
1	NO LAB	<ul style="list-style-type: none"> ➤ N/A ➤ First Week
2	LAB #1	<ul style="list-style-type: none"> ➤ Using SPSS ➤ Entering data ➤ Exporting Output
3	Lab #2	<ul style="list-style-type: none"> ➤ Lab report guidelines ➤ Tips and tricks using Word ➤ Identifying descriptive stats
4	Lab #3	<ul style="list-style-type: none"> ➤ z-scores ➤ Survey Distribution
5	Lab #4	<ul style="list-style-type: none"> ➤ Distribution of sample means ➤ CIs & Effect Sizes
6	Lab #5	<ul style="list-style-type: none"> ➤ Survey data cleaning & organizing ➤ Descriptive statistics for survey data ➤ Creating graphs
7	Lab #6	<ul style="list-style-type: none"> ➤ Is your sample different from the population?
8	Lab #7	<ul style="list-style-type: none"> ➤ How different are two groups?

Week	Lab #	Topic
9	Lab #8	<ul style="list-style-type: none"> ➤ How different are three or more groups?
10	NO LAB	<ul style="list-style-type: none"> ➤ N/A ➤ Spring Break!
11	Lab #9	<ul style="list-style-type: none"> ➤ Does one IV depend on another IV?
12	Lab #10	<ul style="list-style-type: none"> ➤ Do behaviors change over time or in different conditions?
13	Lab #11	<ul style="list-style-type: none"> ➤ Variables covarying ➤ Work on Applied Statistics Assignment
14	Lab #12	<ul style="list-style-type: none"> ➤ Variables predicting other variables ➤ Work on Applied Statistics Assignment
15	Lab #13	<ul style="list-style-type: none"> ➤ Work on Applied Statistics Assignment

Course Notes

- 1) Late Assignments: Assignments cannot be made up. Any assignments turned in late will receive a 5% reduction each day for the first two days turned in late. For the following five days (i.e., after the first two days) the late assignment will result in a 10% reduction for each day it is late. After seven days, an assignment cannot be turned in and will result in a grade of zero. Students who experience emergencies that prevent them from attending class on days when an exam is scheduled will be required to provide original documentation verifying the emergency. *USC athletes should meet with me as soon as possible regarding their scheduled athletic events that may conflict with course requirements.*
- 2) Email: In general, I am able to respond to your emails within 24 hours or less. However, I typically do not respond to emails between 5:00 p.m. on Fridays to 8:00 a.m. on Mondays (i.e., the weekend). I will do my best to email over the weekend if it is urgent, but please note that I cannot guarantee it.
- 3) Feedback: I will make every attempt to return exams and assignments in a reasonable time by returning them no later than two weeks after the due date.
- 4) Appeal Process: If you find that your answer in an assignment or exam was incorrect, but you think it is correct, you can appeal the decision in writing. The written appeal must have supporting documentation (e.g., reference to a class reading). The appeal cannot be based on your opinion or personal experience, but rather based on the course materials. Appeals must be delivered to the instructor no later than one week after the grade is posted. Appeals will not be accepted via email and no late appeals will be accepted.
- 5) Cell Phone and Electronic Device Policy: You may use a tablet or laptop to take notes as long as you are not watching videos or doing anything else that would be distracting to your peers around you. Finally, **no** class or lab sessions may be video or audio recorded unless you have a specific accommodation provided by DSP for such needs. Please do not take any calls during class and silence your phones.
- 6) Course Participation: Your best bet at remembering and understanding the material is to complete the required readings BEFORE class and to complete the end of the chapter questions as scheduled. You should be prepared for discussion or completion of the participation assignments in class and lab for each week to help your process in preparing for the exams. Also, keep in mind that you may need to do *multiple* readings of the textbook and distribute your studying over many days (weeks?) to properly prepare for the exams.
- 7) University Escort Service: If you feel that you would like to be escorted to your vehicle, bus, or campus residence after 5:00 p.m., do not hesitate to call (213) 740-4911.

Special Notes

- 1) This course is challenging and 100% attendance is expected of all students. It is clear that students who attend class regularly, keep up with the readings, complete the assignments with full effort, and who do not leave studying until the last moment typically find that they enjoy the course more and achieve at least a C or better in this course. As in any course, a B is considered above average (i.e., good) and **an A is exceptional work**. It is especially important that you be on time for class, have completed your reading assignments prior to class-time, and that you are prepared.
- 2) Not all lecture material will cover the same information in the textbook. ***Please take a moment to think about the implications of the previous statement.*** It means that you will be solely responsible for reading and studying the textbook material for the exam even though it is not covered in the lectures.

- 3) *All assignments in this course are expected to be word-processed and graphs/tables should be computer-generated, unless otherwise instructed.*
- 4) All students are expected to have access to the student computer network. It is your responsibility to ensure that your access is up-to-date during the semester.
- 5) **All assignments should be completed using APA-style, including the use of a title page that adheres to the APA publication manual.** Assignments for class or lab are due either at the beginning of class, lab, or the designated due date and should be submitted electronically on Bb unless otherwise specified. Word-processing and data management software are available in several computer labs on campus.
- 6) Tutors are available for this course through Learning Support Services (LSS). If you should find that you are not doing as well in this course as you would like, please see your lab instructor or me immediately. *We will help you: It is our job!* You can also arrange short-term or long-term tutoring through the LSS at <https://undergrad.usc.edu/services/tutoring/>. The Writing Center is also available to tutor students who are having difficulty with writing. For assistance, visit their website at <https://dornsife.usc.edu/writingcenter/> or call (213) 740-3691.
- 7) If you should find that you are not doing as well in this course as you would like, please see me immediately. I will help you as best I can. If you need help consistently throughout the semester, you can arrange for short-term or long-term tutoring through the LRC. The Writing Center is also available to tutor students who are having difficulty with writing. For assistance, visit their website at <http://college.usc.edu/writingcenter/> or call (213) 740-3691.

Emergency Preparedness/Course Continuity in a Crisis

In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies. See the university's site on [Campus Safety and Emergency Preparedness](#).

Statement of Course Content as a Copyright

It is important to know that all material presented in class, labs, or discussion sent via email or posted on Top Hat and/or Blackboard is "all rights reserved" by the course instructor. In addition, some of it is copyrighted and distributed by a publishing corporation for in-class use only. ***You may not store, post, or distribute any course materials – on paper or electronically – for use by any student not presently enrolled in this course.*** Out of fairness to all current and future students, please do your part to protect our course content.

Syllabus as a Contract

The purpose of this syllabus is to provide a contract between me (the instructor) and you (the student). By enrolling in this class, you agree that you have read, understand, and will adhere to the syllabus guidelines and complete the assignments given in the class. I reserve the right to change the schedule of topics and readings and I will give notice to you of such changes well in advance of those changes.



The Super Statistician

What is it?

A super statistician is someone who shows excellence in statistics beyond memorization of the material and demonstrates application of the content. Throughout the class, I will present challenge questions or optional assignments that, if you complete successfully, will earn you a super statistician status.

Who can earn this status?

Anyone in this class may work to earn this status, but I will choose only *four* people who have shown excellence in the course through assignments, exams, participation, discussion, and correctly completing the challenge questions or optional assignments.

What you do you earn?

A super statistician will earn a coveted Superman t-shirt. Have fun with the challenge!