

Introductory Statistics for Behavioral Scientists

Summer 2020

Instructor Info

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Course Info

Introductory Statistics for Behavioral Scientists (PSYCH 1610)

Monday, Tuesday, Wednesday, Thursday – 9:00 a.m. – 11:05 a.m.
Prerequisites: PSYC W1001 or PSYC W1010 or the equivalent

Online Information

Zoom Meeting: [???](#)

Meeting ID: ???

Zoom password: psych1610

Office Hours

The office hours are to be determined. I encourage you to set up at least one meeting (or more) - it provides a wonderful opportunity for a one-on-one discussion regarding thoughts and ideas related to the course material.

Required Texts

Nolan, S., & Heinzen, T. (2018). *Essentials of statistics for the behavioral sciences*, 4th Edition. Macmillan.

General Information

An exploration into the statistical analyses used in different areas of psychological science. Emphasis will be on statistical methods used in psychological research related to design, analysis, and the reporting of results.

Course Website

You can access the course website on CourseWorks. We will use the course website extensively, so you should check it regularly. I will disseminate readings, make announcements, provide feedback, and post links to additional material online.

Classes

Each class will consist of a lecture covering essential course material, classroom exercises, and a review of the material presented in previous classes. Questions and discussion during lectures is often times crucial in understanding concepts. Student contributions during lectures are highly encouraged.

Learning Outcomes (Course Goals):

In this course, we will explore and come to understand the statistical methods most commonly used in behavioral sciences. By the semester's end, not only will you learn a great deal about statistical analyses, but I hope that you will also become even more sensitized to the ways in which you think about and read about others' research (e.g. asking questions about the basis of conclusions, implications beyond the lab, etc.). And perhaps best of all, this course should also continue to enhance your ability to think critically and scientifically when addressing psychological and statistical problems in everyday life.

This course should help you:

1. Understand statistical methods used in psychological research to analyze data. This includes learning the strengths and weaknesses of each approach as well as learning when it is appropriate to use each method.
2. Further develop your skills in producing and reviewing scientific research. This includes learning how to (1) analyze data, (3) interpret data, and (4) report findings.
3. Learn how to be a more critical consumer of information.

Calculator and Statistical Software

You should bring a calculator to every lecture, as we will be doing various statistical calculations throughout the semester. Furthermore, throughout the course, we will touch on how to use SPSS to analyze data. I do not require (or even suggest) that you purchase SPSS for your own use. There are a number of PC computers on campus that

have SPSS including ones in the library and in the departmental computer lab located at XXX.

Evaluation

Tests. There will be 5 exams in this course to assess your comprehension of the material that is covered in the lectures and text. Only the four exams that you perform the best on will be included in calculating your final grade. The dates for the tests can be found in the Class Schedule below. Due to the fact that methodological and statistical concepts build off one another, you can expect every test to be cumulative and include any material that we have covered. However, material on the test will focus primarily on information that was covered since the last test. For the first part of the test (conceptual/mathematical), you will be able to use one index card (3" by 5" and double-sided) filled with any equations, definitions, examples, etc. that you find helpful. This card must be hand-written by you and turned in with your test. The second part of the test (applied) will give you the chance to use SPSS to analyze and interpret real data using the skills that you have acquired in the labs. For this second part, you will be able to use all of your notes (including any handouts that I have passed out or anything that is hand-written by you). You will need to study hard and be organized for the tests. There will be a lot required of you in a short amount of time.

There will be no make-up tests; each student is required to take tests when they are scheduled. Each test will be worth 20 points. If for some reason you must miss a test or are not happy with one of the test grades that you earn, you may take an in-class cumulative final exam during the scheduled final exam time to replace your grade on that test. Together, your tests will make up 80 points (80%) of your final grade in the course.

Homework. As with any college course, you should plan to spend at least 3 hours outside of class for every hour you spend in class. For this class, I am expecting that you will be spending at least 15 hours a week outside of class studying your notes, reading the textbook, reviewing the SPSS procedures and applets we use in lab, working on your research papers, and working homework problems. I firmly believe that the best (and possibly the only) way of learning how to conduct statistical analyses is to work problems over and over again. For every statistical topic that we discuss, I will assign some required homework problems from your textbook. You may or may not turn in these problems to me, but I will expect that you know how to do all of them. We will talk about some of these problems in class, so bring your answers with you and be prepared to explain them to your classmates. Completion of these homework problems will be worth 20 points (20% of your final grade in the course). However, the number of problems that it takes to firmly grasp the concepts varies greatly among students. The few problems that I assign represent the bare minimum number of homework problems that you should do. It is your job to continue working problems

until you understand the material (although I am always willing to help you if you become stuck). If you need additional problems to help you master the material, you can work the odd numbers problems in your textbook (the answers are in the back of the book so that you can check your work), or ask me for additional practice problems

Class Schedule

Class Date	Chapter/Topic	Lecture/Discussion	Homework
7/6/19		Course Introduction	
7/7/19	Chapter 1	<u>Lecture:</u> Introduction to Statistics and Research Design <u>Handout:</u> 1-1	<u>Assigned:</u> Question Set A
7/8/19	Chapter 2	<u>Lecture:</u> Frequency Distributions <u>Handout:</u> 2-1	
7/9/19	Chapter 3	<u>Lecture:</u> Visual Displays of Data <u>Handout:</u> 3-1	
7/13/19	Chapter 4	<u>Review:</u> Question Set A <u>Lecture:</u> Central Tendency and Variability <u>Handout:</u> 4-3	<u>Due:</u> Question Set A
7/14/19	Exam I		
7/15/19	Chapter 5	<u>Lecture:</u> Sampling and Probability <u>Handout:</u> 5-2	<u>Assigned:</u> Question Set B
7/16/19	Chapter 6	<u>Lecture:</u> The Normal Curve, Standardization, and Z-Scores <u>Handout:</u> 6-2, 6-3	
7/20/19	Chapter 7	<u>Lecture:</u> Hypothesis Testing with Z-Test <u>Handout:</u> 7-1	
7/21/19	Chapter 7	<u>Review:</u> Question Set B <u>Lecture:</u> Hypothesis Testing with Z-Test	<u>Due:</u> Question Set B
7/22/19	Exam II		
7/23/19	Chapter 8	<u>Lecture:</u> Confidence Intervals, Effect Size, and Statistical Power <u>Handout:</u> 8-1, 8-2	<u>Assigned:</u> Question Set C
7/27/19	Chapter 9	<u>Lecture:</u> The Single-Sample T-Test and the Paired Samples T-Test <u>Handout:</u> 9-1, 9-3	
7/28/19	Chapter 10	<u>Review:</u> Question Set C <u>Lecture:</u> The Independent Samples T-Test <u>Handout:</u> 10-1, 10-3	<u>Due:</u> Question Set C
7/29/19	Exam III		
7/30/19	Chapter 11	<u>Lecture:</u> One-Way ANOVA	<u>Assigned:</u> Question Set D
8/3/19	Chapter 11	<u>Lecture:</u> One-Way ANOVA	

8/4/19	Chapter 12	<u>Lecture:</u> Two-Way Between Groups ANOVA	
8/5/19	Chapter 12	<u>Review:</u> Question Set D <u>Lecture:</u> Two-Way Between Groups ANOVA	<u>Due:</u> Question Set D
8/6/19	Exam IV		
8/10/19	Chapter 13	<u>Lecture:</u> Correlation	<u>Assigned:</u> Question Set E
8/11/19	Chapter 14	<u>Lecture:</u> Regression <u>Handout:</u> 14-2	
8/12/19	Chapter 15	<u>Lecture:</u> Nonparametric Tests <u>Handout:</u> 15-4	<u>Due:</u> Question Set E
8/13/19	Exam V		