

Introduction to Statistics (Psyc 274) – Fall 2022

****This syllabus is subject to change throughout the semester****

Bryan Shilowich, Ph.D.

Lecture: MW 8:30-9:50am , GFS 207

Office: SGM 535; e-mail: shilowic@usc.edu

Office hours: By appointment, please email me.

Lab sections: SGM 631, Fridays 10:00-11:50am, 12:00-1:50pm

(may be switched to online depending on popular vote)

Statistics: Initial Comments

All fields of knowledgeable endeavor use the basic principles of science. They rely on a simple directive: formulate hypotheses that can be tested with observable data. Statistics are a necessary component of this effort; they provide a valid means to organize & summarize data, test hypotheses of interest, and interpret the results of those tests. In fact, analysts from any field of endeavor will use statistics to try to understand how real world events or variables may be related to each other. Statistics enable us to examine large, even overwhelming amounts of data to determine whether the data offers any meaningful, interpretable information or not.

Course Objectives

It is our goal in this course to begin to understand how and why statistics work. To realize this goal, Psyc 274 offers a series of introductory lectures, readings with representative statistical problems, and lab assignments; all of this is designed to help you become broadly familiar with *quantitative statistics* as they are calculated and interpreted in the social sciences. The important topics to be addressed will include such concepts as 1. scales of measurement and their central tendency, 2. variance, 3. hypothesis testing, 4. assumptions of analysis and ideas about distribution normality, 5. analysis of variance, 6. correlation, 7. regression, and 8. non-parametric tests. Our primary objective will be to understand these topics in a broad conceptual way while also learning how to execute specific statistical calculations. Our parallel objective will be to understand the purpose of the different statistical tests and the information that analysts hope to obtain when implementing such tests.

Recommended Preparation

“Introduction to Psychology” (Psyc 100) and “Foundations of Statistics” (Math 114) are recommended as coursework to prepare for Psyc 274.

Required Texts

Salkind & Frey. (2010). *Statistics for People Who (Think They) Hate Statistics – 7th Ed.* Thousand Oaks, CA: Sage Pub.

Evaluation Criteria

Grades for this course are based on five major components. The weighted importance for each component on your final total course grade will be as follows:

Mid-term examination I	20 %
Mid-term examination II.....	20 %
Final Examination (comprehensive, heavier on the uncovered material).....	25 %
Lab	20 %
“Weekly” Quizzes.....	15 %

Cut-Points for Letter Grades

In percentages your letter grade will be assigned as follows:

A = 93.5 (and above), A- = 89.5 to 93.4,
B+ = 86.5 to 89.4, B = 82.5 to 86.4, B- = 79.5 to 82.4,
C+ = 76.5 to 79.4, C = 72.5 to 76.4, C- = 69.5 to 72.4
D = 60 to 69.4, F = below 60.

Hybrid Classroom

Given the pandemic wildness, students may not be able to attend all lectures live. Thus, all live lectures will have an accompanying Zoom session. The Zoom will be recorded and accessible.

Tune at this link: <https://usc.zoom.us/j/91993473204?pwd=bCs3ZE9SeHdzT2VaUUJsczlQSGVsdz09>

Zoom password: 6f131375Gq

Blackboard and Email

I communicate almost exclusively through blackboard announcements. Each announcement is also sent immediately to your inbox. Please check your email and blackboard regularly! Also PLEASE write “274”

or “Stats 274”, “Stats” etc. in the email subject heading if you email me.

Examinations

There will be two mid-term examinations and one final exam (see course schedule for dates). The examinations will test your understanding of the major concepts in the course and focus on both statistical calculations and the "big picture." All examinations are based on a combination of lecture material, class discussions, textbook information, assignments, and handouts. In general, first focus on the material covered in lectures and labs; use the other sources to supplement your understanding.

Attendance and Participation

Our understanding of statistics increases incrementally in a continuous step-wise fashion over time. You *must* come to lecture and take part in the discussions if you hope to realize this incremental growth. We cover a broad range of statistical concepts in Psych 274. The content is not difficult to understand if you read the text and come to lecture prepared to take part in the discussions.

However, given the hybridized nature of this Fall 2022 still-pandemic semester, I will not have an Attendance or Participation grade per se. Just know that you get out of the course what you put in; students who rarely show up rarely do well, it's as simple as that.

Quizzes

In lieu of monitored participation, there will be (roughly) weekly quizzes. They are not on the schedule below, but there should be one, taken on blackboard, on the first lecture day of every week, covering the material since the last quiz. The quizzes will be short - about 15 minutes - and relatively easy; they will most often be multiple choice, with an occasional short answer. The quiz question format will be similar to the exams, and thus serve as a great study tool to make sure you're on track (as well as providing me with clues along the way as to areas that need refreshing in the lectures). Since they will be taken online, I'll announce that they are up via blackboard, and you'll have 24 hours to complete it.

Lab

The lab assignments have been designed to help you gain further experience with the statistical concepts that are discussed during lecture. The goals of the lab are: (1) to utilize a “hands-on” mode of learning, interacting with computer strategies, to reinforce basic statistical concepts; (2) to become knowledgeable about how to organize data and execute statistical analyses when using computer programs; and (3) to become literate with respect to SPSS and, to some extent, Excel.

The main focus will be SPSS. SPSS is available for you to download on your home computer, or you can use any on-campus computer. The lab format consists of a weekly walkthrough, in which you apply some of the analysis techniques we learn about in lectures to some actual data. Every week there will be a lab assignment due, which will be similar to that week's lab.

On the Issue of Excuses and Such

I do not have a very strict policy on lateness, medical excuses, family excuses, etc. In general I can and will be lenient. *Especially* if permission is asked and granted *before* something is due. Please do NOT miss a quiz, exam, etc., and ask to make it up two weeks later with no notice. The lab assignment lateness policy will be up to your TA.

Being timely and punctual - managing your time and attention to get everything done, regardless of how insurmountable it all seems - is a fundamental life skill that will benefit you in everything that you do. Since this course is linear, with each lesson adding to the prior lessons, take care not to fall behind. Any given lecture will not make full sense unless you're caught up.

Academic Dishonesty

Students are held to the highest standards of ethical conduct. All the materials presented for this course in lecture, lab, discussion, sent via email, or posted on Blackboard are “all rights reserved” by the course instructor. Some of it may be copyrighted and distributed by a publishing corporation for in-class use only. You should be aware that it is a violation of student ethics to store, post, distribute, sell, or purchase any course materials with the intent of offering that material to or receive it from any student who is not presently enrolled in this course (applicable to commercial Internet sources). You may not submit work for this class that you or anyone else has presented, even in part, for this or another class. You should be especially vigilant with regard to plagiarism (presenting someone else's ideas as your own, whether deliberately or accidentally - in whole or in part).

Disability Services and Programs

To receive accommodations in the academic environment, students with disabilities and/or special needs must be registered with the University DSP. A letter verifying approved accommodations can be obtained from DSP when adequate documentation supporting a need for accommodation is filed. DSP is open Monday-Friday, 8:30-5:00; their phone number is (213) 740-0776. Students with approved accommodations from DSP should meet with Dr. Shilowich as soon as possible after receiving their letter of approval. Requests for accommodations can be submitted at any time during the semester but may not be applied retroactively to work completed prior to approval.

Psyc 274 Course Schedule

Wk #	Dates	Lectures	Labs	Assigned Readings
1	8/22 8/24	Introduction to class Descriptive Statistics of Sample Data	NO LAB	<u>Reference: Text</u> Chptr. 1,2
2	8/29 8/31	Descriptive Statistics continued Measures of Central Tendency & Variability	NO LAB	<u>Reference: Text</u> Chptrs 2,3
3	9/5 9/7	(No class, Labor Day) Measures of Central Tendency & Variability	Lab 1: Introduction to the Lab and Lab computer software	<u>Reference: Text</u> Chptr 3,4
4	9/12 9/14	Constructing Visual Summaries of Distributions Correlations	Lab 2: Scales, Distributions, and Graphs	<u>Reference: Text</u> Chptr 4,5
5	9/19 9/21	Reliability, Validity Hypothesis Testing	Lab 3: Correlations and Reliability	<u>Reference: Text</u> Chptr 6,7
6	9/26 9/28	*Mid-Term exam online 9/26* Exam discussion Begin significance testing	Lab 4: Measures of Central Tendency and Dispersion	<u>Review for Exam</u> Chptrs 1-7 Weds class: Chap 8
7	10/3 10/5	Significance; null hypotheses Z-tests	Lab 5: Characteristics of Normal Distributions	<u>Reference: Text</u> Chptrs 9
8	10/10 10/12	Z-tests understanding p values	No Lab: Fall Recess	<u>Reference: Text</u> Chptrs 9, 10
9	10/17 10/19	One sample Z and T tests	Lab 6: Hypothesis Testing	<u>Reference: Text</u> Chptrs 10, 11
10	10/24 10/26	Independent samples t-tests Paired samples T-testing	Lab 7: Testing Group Differences with T-tests	<u>Reference: Text</u> Chptrs 11, 12

Wk #	Date	Lectures	Labs	Assigned Readings
11	10/31 11/2	One Factor, Between Subject Analysis of Variance Designs	Lab 8: One Way Analysis of Variance	<u>Reference: Text</u> <i>Chptrs 13</i>
12	11/7 11/9	Finish One way ANOVA, Review <i>*Mid-Term exam online 11/9*</i>	No Lab	<u>Reference: Chap 13</u> Review Readings for <u>Exam</u> <i>Chptrs 9-13</i> <u>Reference: Text</u> <i>Chptr 14</i>
13	11/14 11/16	Two-Factor ANOVA Chi-squared	Lab 9: Two Factor ANOVA	<u>Reference: Text</u> <i>Chptrs 14 (for</i> <i>Monday)</i> <i>Chapter 17 (for</i> <i>Weds)</i>
14	11/21 11/23	Linear Regression No Class Weds for Thanksgiving	No Lab	<u>Reference: Text</u> <i>Chptrs 15, 16</i>
15	11/28 11/30	Finish Regression, wrap up <u>Review of the Course</u>	Lab 11: Regression	Chapter 18 <u>Reference:</u> <i>Readings,</i> <i>Lectures,</i> <i>Homework,</i> <i>Mid-Terms,</i> <i>and Lab</i> <i>Work</i>
Final Exam		<u>Final Exam Wednesday 12/7</u>		Cumulative Exam