USC University of Southern California

Economics 317, 26094R
Introduction to Statistics for Economists

Units:	4
Term—Day—Time:	Fall 2023, Tue, Thu 12:00-1:20 pm.
Location:	KAP-144
Instructor:	Manochehr Rashidian, Personal Zoom ID # 594 296 5704
Office Hours:	2:00-3:00 Mon, Wed KAP-116B
	If my office hours are not convenient for you, I am also available by appointment.
Contact Info:	rashidia@usc.edu
Teaching Assistant:	TBD
Office Hours:	TBD
Contact Info:	TBD

Course Description

This course is designed to provide the students with basic knowledge of statistics. We will focus on many applications of descriptive and inferential statistics. The topics covered in this course are divided into four parts. The first part of this course focuses on data collection and data description. The second part deals with the theory of probability and its applications. This part will emphasize understanding the concept of "sampling distribution" and its applications. Making inferences about population parameters is the focus of the third part of the course. In this part, students will learn about confidence intervals and hypothesis testing for single and multiple population parameters. The final part of this course pays attention to regression analysis, estimations, and predictions.

Learning Objectives

This course aims to familiarize the students with the concepts mentioned above and provide them with the necessary background to use them as decision-making tools. After completion of this course, students will be able to perform the following tasks:

- Data collection
- Estimating the population's unknown parameters
- Making inference about a single population's parameters
- Making inferences about several populations' parameters
- Modeling relationships that are usable in linear regression
- Estimating and testing linear models and interpreting the results

Prerequisite: MATH 118 or MATH 125

Course Notes

1- To prevent disruptions in lectures, students should come to class on time.
2- There are no special accommodations for students in different time zones. All homework assignments' due dates and exam schedules are Pacific Standard Time.
3- Attending the lectures is crucial to your learning, and I strongly encourage students to attend the lectures and participate in class discussions. Missing class will reduce your class participation points.
4- Students are advised to take notes during lectures because exam questions are mainly on the subjects discussed in class. You should also know that your class notes are not substitutes for the textbook.
5- Lecture notes, whenever available, will be posted on the Blackboard.
6- I will post the solutions for all homework assignments and exams on the Blackboard.

7- You should check your grades on the Blackboard regularly, and if you see any discrepancies, inform the instructor or your TA immediately.
8- If deteriorating covid conditions force the university to move the classes online, we will use Zoom for lectures and office hours and Blackboard for exams and homework assignments. If you need help with Zoom or Blackboard, use the following technology support links:

USC Technology Support Links
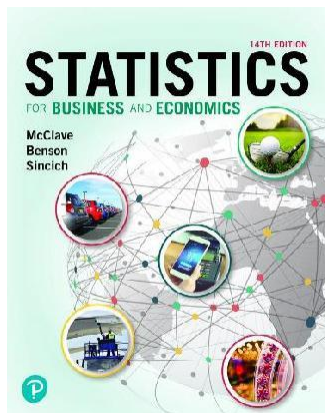Zoom information for students
Blackboard Help for students
Software available to USC Campus

Required Materials
Required Readings and Supplementary Materials

Statistics for Business and Economics by McClave, Benson, and Sinsich. 14th Edition. Pearson-Prentice Hall.
Textbook website:
https://www.pearson.com/us/higher-education/program/Mc-Clave-My-Lab-Statistics-with-Pearson-e-Text-Access-Card-for-Statistics-for-Business-and-Economics-18-weeks-14th-Edition/PGM100003053996.html

Supplemental materials, such as the solution manual and software offered on the book's website, are not required for the course.

Gretl Software:
Windows   **https://sourceforge.net/projects/gretl/postdownload**
MAC   **http://gretl.sourceforge.net/osx.html**

Description and Assessment of Assignments

The homework assignments from the chapters' exercises, and the due dates, are on the syllabus. Due dates for the homework assignments are tentative and subject to change; Any change will be announced in class and posted on Blackboard. In addition to the textbook problems, I will assign more problems from the class lectures, which I will either post on the Blackboard or present in class. Homework assignments must be submitted on time and preferably typewritten. There will be no credit for any late homework submitted after we post the solutions on the Blackboard. We will have four quizzes, two midterms, and a final exam. The quiz with the lowest grade will be dropped, and the remaining three will count toward your total score. Although these quizzes are non-cumulative, most chapters build on previous ones; hence, students should carefully review the earlier chapters to do well on the quizzes. The quizzes consist of multiple-choice questions and problems. The midterm exam is cumulative and consists of only problems and questions. The final exam is the same format as the midterm exam, and it will cover most of the chapters.

Grading Breakdown

The course will be graded on a regular scale of 100% unless the class average falls short of my expectations. In that case, I will use a curve based on the average grade of students who complete the course. The class average is usually a B.

Weights for homework and exams are

Activity	Possible points of grade
Homework and class participation	15
Quizzes	30 (10 each)
Midterm exam	25
Final exam	30
Total	100

Assignment Submission Policy

The due dates for homework assignments are in the following course schedule. Any changes in the due dates will be announced in class or posted on Blackboard. Students must turn in their homework as instructed by their TA. If you need any special accommodations for submitting your assignment or taking the exam, let me know in advance.

Course Schedule: A Weekly Breakdown (all dates except the final exam are tentative and subject to change)

	Topics/Daily Activities	Readings and Homework Assignments (points)	Due Dates
Week 1	(chapter 1) Fundamental elements of statistics, Types of data, Basic definitions (chapter2, 2.1-2.8) Describing qualitative and quantitative data, Measures of central tendency, variability, and relative standing	Chapter 1, # 20, 38 (0.4) Chapter 2, # 6, 16, 30, 70, 74, 104, Class problem set (1.2)	
Week 2	Interpreting mean and standard deviation, Chebychev's rule, and Empirical rule (chapter 3, 3.1-3.6) Probability theory, Unions and intersections	Chapter 3, # 6, 18, 38, 62, 122, Class problem (1.2)	
Week 3	Probability Theory, Independent events, Conditional probability, Random sampling (chapter 4) Probability distributions for discrete and continuous random variables, Measures of central tendency and variability for random variables Binomial distribution, Uniform distribution, Normal distribution, and its	Chapter 4, # 12, 22, 36, 56, 66[*], 68*, 94, 120, 136[*], Class problem set 9 (1.6)	
Week 4	properties, The standard normal distribution, Normal approximation to Binomial distribution **Quiz 1**		

	(chapter 5)	
Week 5	Sampling distribution of the sample mean and sample proportion, Central limit theorem,	Chapter 5, # 4, 24, 50, 72, Class problem set (1.0)

	(chapter 6)	
Week 6	Large and small sample confidence intervals for a population mean, population proportion, and population variance	Chapter 6, # 18, 28, 44, 56, 70, 96, Class problem set (1.5)

	(chapter 7, skip 7.8)	
Week 7	Introduction to Hypothesis Testing, Large sample hypothesis testing for a population mean, p-value, and interpretation of the p-value **Quiz 2**	Chapter 7, # 40, 54, 60, 70, 94, Class problem set (1.3)

	Small sample hypothesis testing for a population mean	
Week 8	Hypothesis testing for population proportion and population variance (Chapter 8) Comparing two population means, Confidence intervals for differences in the two population means, Determining the desired sample size Hypothesis testing for equality of means with independent and paired Sampling	Chapter 8, # 14, 40, 52, 66, 82, Class problem set (1.6)

Week 9	Comparing and hypothesis testing for equality of population variances, Comparing two population proportions, determining the desired sample size, Hypothesis testing for equality of two population proportions **Midterm**	

	(Chapter 9, 9.2 only)	Chapter 9, # 26, 32, Class problem set (0.7)
Week 10	Analysis of variance, Comparing multiple populations means (Chapter 10) Multinomial experiments and contingency tables, Testing category probabilities, one-way and two-way tables	Chapter 10, # 8, 18, 28, 38, Class problem set (1.0)

	(chapter 11)	
Week 11	Simple linear regression, Basic assumptions Simple linear regression, Fitting the model **Quiz 3**	Chapter 11, #14, 22, 36, 56, 96, Class problem set (1.7)

Week 12	Estimating the unknown parameters using the method of OLS Confidence intervals and hypothesis testing for intercept and slope	

Week 13   Correlation and regression, R^2, and its interpretation,
           Predictions and prediction intervals
           (chapter 12, 12.1-12.9)   Chapter 12, # 14, 34,
           Multiple regression, Basic assumptions of multiple regression,   44, 60, 74, 84, 106,
           Quiz 4   Class problem set (1.8)

Week 14   Estimation and interpretation of the parameters,
           Prediction using Multiple regression

Week 15   Evaluating overall model utility, Interaction models, Quadratic models,
           Qualitative (Dummy) variable models, Models with both quantitative
           and qualitative variables, Comparing nested models

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Final   **Tuesday, December 12th,**
Exam   **11:00 am- 1:00 pm**

Policy on Missed Exams

Students must take the exams as scheduled. There will be no makeup exams unless the student has a valid medical excuse and can provide documentation for such a reason, or if a student cannot take the exam because of extenuating circumstances, and prior arrangements are made with the instructor. Students will receive zero credit for unexcused missed exams. The student will receive an F for the course if the final exam is missed for unexcused absence regardless of the student's performance during the semester. If a student has a valid reason for missing the final exam and can document it, they will receive an incomplete grade.

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press "0" after hours – 24/7 on call
studenthealth.usc.edu/sexual-assault
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298 equity.usc.edu, titleix.usc.edu
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298 usc-advocate.symplicity.com/care_report
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity |Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776
dsp.usc.edu
Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support and Intervention - (213) 821-4710
campussupport.usc.edu
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101
diversity.usc.edu
Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call dps.usc.edu, emergency.usc.edu
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu
Non-emergency assistance or information.