

San José State University
Department of Sociology and Interdisciplinary Social Science
SOCI 15: Statistical Applications in the Social Sciences
Section 1 Fall 2024 (47599 & SOCS 49703)

Course and Contact Information

Instructor:	Jose Bautista
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Office Hours:	Monday, 5:00 – 6:00 PM
Class Days/Time:	6:00 – 8:45 PM
Classroom:	DMH 226A
Prerequisites:	GE Area: B4 Prerequisite: Math Enrollment Category M-I, M-II, or M-III, or completion of a GE Area B4 course with a grade of C- or better. Co-requisite weekly supported instruction required for Enrollment Category M-III, and recommended for M-II.
GE/SJSU Studies Category:	Core G.E. Area B4 Mathematical Concepts. Please note that only a C or better in the course satisfies the G.E. requirement. Grades of C-and below do not. Semester grades of C to D- are passing and earn three units credit, but they do not satisfy the Area B4 Mathematical Concepts requirement.

Course Format

Lecture

Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on Canvas. Canvas Learning Management System course login website at <http://sjsu.instructure.com>. You are responsible for regularly checking with the messaging system through MySJSU on Spartan App Portal <http://one.sjsu.edu> to learn of any updates.

Course Description

Introduction to statistical applications, particularly statistical inference, including central tendency, variation, normal distributions, probability, estimation, hypothesis testing, measures of association, correlation, linear regression and the analysis of variance. GE Area: B4 Prerequisite: Math Enrollment Category M-I, M-II, or M-III, or completion of a GE Area B4 course with a grade of C- or better. Corequisite weekly supported instruction required for Enrollment Category M-III, and recommended for M-II.

GE Learning Outcomes (GELO) (Delete if not applicable)

Upon successful completion of this GE course, students will be able to:

1. Use mathematical methods to solve quantitative problems. Throughout the course, we will use basic mathematical operations and a calculator to solve statistical problems. You should be familiar with basic algebraic operations as we will use statistical formulas to solve statistical problems. Test items will typically include multiple choice questions, quantitative problems requiring calculations, and short answer word problems.
2. Use mathematics to solve real life problems. Practice problems, homework problems, and test questions will reflect true-to- life situations and contemporary events.
3. Arrive at conclusions based upon numerical and graphical data. Students will gain familiarity with the organization and representation of quantitative data in various forms. Students will learn to read and interpret statistical output including tables, graphs, rates, percentages, and measures of central tendency and spread.
4. Apply mathematical concepts in one or more areas. After covering introductory concepts and procedures, the course will focus on probability and statistical inference. These concepts and methods are central to statistical analysis. By applying statistical inference, students will see how analytical techniques underscore many of the claims that they learn in Sociology courses.
5. Incorporate issues of diversity. Classroom examples and test items will frequently deal with issues of diversity. Expect examples that incorporate variations or diversities of race, ethnicity, national origin, religion, sex, physical abilities, age, marital status, citizenship, economic levels, and sexual orientation.
6. In clear and concise language, you will be interpreting your results both in assignments and when responding to questions on your exams. Your writing skills are important. The thoroughness of your explanations, your coherence and your conciseness will be considered in evaluating this part of your work.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

1. Understand the different measurement scales, their uses and limitations.
2. Describe and interpret data through tables and graphs
3. Understand the meaning and usage of descriptive statistics including Mean, Median, Mode, Standard Deviation and Variance
4. Select the appropriate techniques to use given a particular set of data or research question.
5. Critically evaluate statistical results in the media, professional literature, and other areas of your life.
6. Calculate descriptive statistics including Proportion, Percentage, Mean, Median, Mode, Standard Deviation and Variance
7. Calculate inferential statistics including z-test, t-test, chi-square, correlation, and One-way ANOVA

Required Texts/Readings

Textbook

ESSENTIALS OF SOCIAL STATISTICS FOR A DIVERSE SOCIETY

Author: LEON-GUERRERO

ISBN: 9781544372501

Edition/Copyright: 4th / 2020

Publisher: SAGE

Available at bookstore <http://sjsu.bncollege.com/>

Other materials

- You will need access to the web to use Canvas and Zoom to meet online, take exams, and post assignments and download materials.
- I would like to encourage you to turn your video camera on during class time so I can get to know you better. I understand you may not wish to for a variety of reasons. So how about a compromise. Use your camera as much as you can, but feel free to turn it off when you need to, to take a break, to attend to a needy cat, whatever. A lot of what we will do in class will be interactive, so being able to see you will help both of us to connect better, and for you to succeed in class.
- Calculator (should be able to do square roots, and you should be comfortable using it).

Course Requirements and Assignments (Required)

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus. More details about student workload can be found in [University Syllabus Policy S16-9](#) and [Syllabus Information web page](#) at <http://www.sjsu.edu/gup/syllabusinfo/>

Exams: Three exams. Lowest score is dropped. Each exam is worth 100 points.

Exam 1 (Chapters 1-3): 100 points

- The Research Process
- Measurement Scales
- Frequency Distributions
- Proportions and Percentages
- Cumulative Distributions
- Rates
- Pie Charts, Bar Graphs, Histograms, Line Graphs
- The Mode, The Median, The Mean
- The Shape of the Distributions
- The Range, The Interquartile Range, Variance, Standard Deviation

Exam 2 (Chapters 4-7): 100 points

- The Normal Distribution
- Standard (Z) Scores
- The Standard Normal Distribution
- The Standard Normal Table
- Transforming Proportions (or Percentages) Into Z Scores
- The Concept of the Sampling Distribution

- The Sampling Distribution of the Mean
- The Central Limit Theorem
- Assumptions of Statistical Hypothesis Testing
- Stating the Research and Null Hypotheses
- Probability Values and Alpha
- Hypothesis Testing
- Errors in Hypothesis Testing
- Z-tests

Exam 3 (Chapter 7-8): 100 points

- T-test for one sample
- T-test for independent samples
- T-test for dependent samples
- Bivariate Tables
- Chi-Square

Quizzes: Eleven quizzes. Lowest score is dropped. These will be online, and you will have a week to do each of them. Each quiz is worth 20 points.

Quiz	Chapter	Due by 11:58 PM on
Quiz 1	Chapter 1	1-Sep
Quiz 2	Chapter 2	15-Sep
Quiz 3	Chapter 3	22-Sep
Quiz 4	Chapter 4	29-Sep
Quiz 5	Chapter 5	13-Oct
Quiz 6	Chapter 6	20-Oct
Quiz 7	Chapter 7	27-Oct
Quiz 8	Chapter 8	3-Nov
Quiz 9	Chapter 8	17-Nov
Quiz 10	Chapter 9	24-Nov
Quiz 11	Chapter 11	8-Dec

Final Examination or Evaluation

Final Exam: About 50% comprehensive, and worth twice as much as the midterms. You will have the complete Final Examination period available to complete the final exam. Final exam is worth 100 points.

Final Exam (Review plus Chapters 9 & 10): 100 points

- Topics covered in exams 1-3
- One-way ANOVA
- Regression
- Correlation
- The Scatter Diagram
- Linear Relationships and Prediction Rules

Data analysis paper: 100 points

- Apply all of the techniques learned during the semester to analyze a given data set.
- Write a 500 word paper on your findings, including the use of graphical and tabular data representations, to report descriptive statistics, inferential tests, and make predictions.
- The paper is due on the same day as the final exam takes place. May 20 at 5:15 PM.

Grading Information

Grades are given on the basis of points earned.

Determination of Grades

3 Exams, 100 points each	300	(33%)
Lowest Exam score	-100	

11 Quizzes, 20 points each	220	(33%)
Lowest Quiz score	-20	

Final Examination & Paper	200	(33%)
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TOTAL	600	
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90% (540 points) or above gets an A

80% (480 points) or above gets an B

70% (420 points) or above gets an C

60% (360 points) or above gets an D

less than 60% (less than 540 points) gets an F

Plus or minus grades may be given at instructor's discretion for borderline grades.

Extra credit opportunities are usually available as a part of the regular midterm exams, or for taking part in activities.

Classroom Protocol

I am committed to your success in this course, but it is your responsibility to keep up with the readings and assignments, to ask questions in class or during office hours if you don't understand the material, and to come to class fully prepared. As the student, it is your responsibility to:

- Attend class regularly. Ever experience a streaming video over a bad network? The video keeps stopping and then starting again at a later point, only to stop again... You only get parts of the video, so it's not easy to make sense of it. If you don't attend to the class regularly, you will miss parts of the story, and things will not make sense.
- Avoid distractions. You might intend to take notes with your laptop in class, but ah those cat videos call to you. Write your notes on paper (especially in a class where you need to draw equations and graphs.)
- Have a regular calculator so you don't need to use your phone in class. Use the same calculator during lectures as you will use on the exams. Not all calculators work the same way, so if you have one that you use regularly, you will be more comfortable with it, and less likely to make errors.

- Be prepared I. Make sure you have the tools you will need for class: paper, pencils, eraser, a small ruler, and a calculator. If you use other tools like highlighters make sure you have those also.
- Be prepared II. Complete reading assignments. We will cover about one chapter per week. You should read the assigned chapter and review associated materials before each week's lecture to be better prepared to learn and apply the material in class.
- Be prepared III. Have all handouts needed. Most weeks we use handouts during lecture. You will find these posted on Canvas, and should have copies of them during class.
- Have integrity. Make sure your work is your work. If you need help, please ask for it. You will feel much better when your achievement is your own. Also, it goes against the school's code of conduct, so cheating and plagiarism will not be tolerated. Read more about the University's Academic Integrity Policy S07-2 at <http://www.sjsu.edu/senate/docs/S07-2.pdf>. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at <http://www.sjsu.edu/studentconduct/>. Cheating on exams or plagiarism (presenting the work of another as your own) can result in a failing grade and sanctions by the University.
- Be informed. Know the due dates for quizzes and exams, and school deadlines and policies for dropping. Refer to the current semester's Catalog Policies section at <http://info.sjsu.edu/static/catalog/policies.html>. Add/drop deadlines can be found on the current academic year calendars document on the Academic Calendars webpage at http://www.sjsu.edu/provost/services/academic_calendars/. The Late Drop Policy is available at <http://www.sjsu.edu/aars/policies/latedrops>. Students should be aware of the current deadlines and penalties for dropping classes.
- Inform me of any accommodations needed. If you have a documented disability and are in need of course adaptations and/or accommodations, please contact me as soon as possible. Presidential Directive 97-03 at http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at <http://www.sjsu.edu/aec> to establish a record of their disability. If you think you might or know you will require alternative testing arrangements, you must register with the AEC at the start of the semester.
- You must obtain my permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings, and materials developed by the instructor for the class, are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material without instructor consent.

University Policies

Per University Policy S16-9 (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant information to all courses, such as academic integrity, accommodations, dropping and adding, consent for recording of class, etc. is available on Office of Graduate and Undergraduate Programs' [Syllabus Information web page](#) at <http://www.sjsu.edu/gup/syllabusinfo/>

SOCI 15 / Introduction to Statistics, Fall, 2024, Course Schedule

Below is a rough schedule. For the official up-to-date course calendar check Canvas.

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1	26-Aug	CHAPTER 1: The What and Why of Statistics
2	2-Sep	Labor Day
3	9-Sep	CHAPTER 2: The Organization and Graphic Presentation of Data
4	16-Sep	CHAPTER 3: Measures of Central Tendency and Variability
5	23-Sep	CHAPTER 4: The Normal Distribution & Exam 1 Review
6	30-Sep	Exam 1 – Chapters 1-3
7	7-Oct	CHAPTER 5: Sampling and Sample Distributions
8	14-Oct	CHAPTER 6: Estimation
9	21-Oct	CHAPTER 7: Testing Hypotheses: Z-tests
10	28-Oct	CHAPTER 7: Testing Hypotheses: t-tests & Exam 2 Review
11	4-Nov	Exam 2 – Chapters 4-7 (Z-tests)
12	11-Nov	CHAPTER 8: The Chi-Square Test and Measures of Association
13	18-Nov	CHAPTER 10: Regression and Correlation & Exam 3 Review
14	25-Nov	Exam 3 – Chapters 7 (t-tests)-8
15	2-Dec	CHAPTER 9: ANOVA
16	9-Dec	Semester wrap-up & Final Exam Review
Final Exam	16-Dec	Final Exam - 5:15-7:30 PM