Course Description

In this course, we will begin with a review of univariate descriptive statistics and then shift to making statistical inferences. We will continue the practice of statistical inference with a focus on bivariate relationships and conclude with an exploration of multivariate modeling. Throughout the course we will emphasize the logic underlying statistical analyses and their application to sociological research. The goals of this course are to familiarize graduate students with the foundations of statistical analyses applied to social scientific research as well as the statistical software that performs these analyses. This course is designed to prepare students for advanced statistical techniques most commonly practiced by social science researchers broadly. Finally, this course should allow students the opportunity to link statistical analysis to a literature review.

Course Objectives

<table>
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<tr>
<th>Program Learning Outcomes</th>
<th>Course Learning Outcomes</th>
<th>Assessment Method</th>
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<tbody>
<tr>
<td>Critical Thinking</td>
<td>Students will use mathematics to solve real life problems. Practice problems and tests questions will be, in most cases, derived from everyday life. After covering introductory concepts and procedures, the course will focus on probability and statistical inference. These concepts and methods are central to statistical analysis. Students will select appropriate statistical methods for analyzing combinations of two nominal, ordinal, and/or interval variables. By applying statistical inference, students will see how analytical techniques underscore many Sociological concepts.</td>
<td>Discussion, Presentations, Exams, Labs</td>
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</table>
| Communication                                                                 | Students will be able to articulate insights generated from statistical concepts and analysis. Students will conduct and describe univariate, bivariate, and multivariate statistical analyses using Stata. Students will be able to do and communicate the following:  
  o conduct and interpret ordinary least squares (OLS) regression analyses in Stata  
  o explain and implement the concept of statistical control  
  o be familiar with and able to articulate the logic underlying logistic regression | Class discussion, Presentations, and Labs |
| Evaluate Empirical Sociological Research | Students will read and evaluate empirical sociological research. They will become familiar with the organization and representation of quantitative data in various forms: tables, graphs, rates, percentages and statistical software output. They will draw conclusions from numerical and graphical data. Students will summarize data using measures of central tendency and dispersion, diagnose the fit of linear and nonlinear regression models, and perform appropriate diagnostic tests for OLS analyses. | Class discussion, Presentations, and Labs |
| Valuing Diversity and Global Awareness | Students will understand how identities such as race, class, gender, age, sexual orientation, religion, and nationality contribute to a range of social experiences. Classroom material will frequently deal with issues of diversity. Finally, students will conduct a small-scale independent research project with an adequate literature review and an appropriate research design and strategy, which will include demographic variables. | Class discussion, Group work, Presentations, and Lab |
| Writing Component | In clear and concise language, students will interpret statistical results both in assignments and when responding to short answer/and or essay questions on exams. The thoroughness of their explanations, including coherence and conciseness, will be considered in evaluating this part of their work. Additionally, students will write Stata command (do) files and interpret Stata output for descriptive statistics and graphs, comparing two means/proportions, ANOVA, and OLS regression. | Assignments, Exams and Presentations |
Course Materials

Textbooks and Readings


The following text is recommended for the latter third of the course, brief selections from this text will be made available online:


Other readings will be made available online

Software
A central component of this course will be the use of the statistical software package Stata to analyze quantitative data. Our class will have access to a lab in which all of the computers are equipped with Stata. You may also purchase a copy of Stata for your PC or Mac. If you wish to purchase Stata, place the order on-line at http://www.stata.com. There are a variety of sizes and licensing agreements available. Stata/SE will accommodate large datasets such as the General Social Survey, which we will use throughout the course.

Stata Support
The following online resources may be helpful for using Stata:
http://www.ats.ucla.edu/stat/stata/
http://www.princeton.edu/~otorres/Stata/

Tools
Calculator with a square root function and a stapler.

Classroom Protocol:
• Do the required reading before class and as needed.
• Follow the student code of conduct.
• Do your own work on the assignments, projects and exams.
• Active participation in class discussion and classroom activities is expected. Please do not make a habit of: arriving to class late, emailing, talking or text messaging during class and/or otherwise making it known that you are not engaged.
• Attendance is mandatory. Please let me know as soon as possible, preferably before class, if you will be unable to attend, particularly for excused absences. Excused absences are allowed only with official documentation (doctor’s note, police report, funeral notice, etc.)
provided immediately upon your return. Absence is not an acceptable excuse for ignorance of the course content, assignments, or exam dates. Emails with any variation of the following question will be frowned upon: “Did I miss anything important?”

- **Lack of planning on your part does not constitute an emergency on my part.**
- Email Correspondence: Please provide your name and course name in each email. Emails without this information may not be responded to. I WILL NOT send you any information about your grade or performance in this class through email. If you want to know how you are doing, please attend office hours. I will try to respond to emails as soon as possible, but I have a 24-hour email response policy, effective 9-5 p.m., Monday through Thursday. This means that if you email me Thursday night at 4 p.m. you may not get a response until Monday at 4 p.m.

**Course Requirements**

**In-Class Exercises**

In-class exercises (including lab) will serve as low-stakes opportunities to practice implementing statistical techniques. They will be evaluated on a complete/not complete basis. You must be present in order to participate. In order to benefit the most from these exercises you should complete the assigned readings prior to the class meetings and bring your scientific calculator and text. Lab exercises will require you to analyze data using statistical software. Labs must be formatted in a Word document.

**Homework Assignments***

Homework assignments will be an extension of material introduced in class. They will require you to implement statistical techniques and concepts with or without the use of software (specified in the assignment). Homework must be submitted at the beginning of class on the day they are due.

**Presentation and Paper**

During the latter part of the semester, you will conduct a literature review to link to your statistical analysis. You will present your findings to the class. Details of this assignment will be made available at an appropriate time during the semester.

**Final Exam**

The final will include both conceptual and applied material from the course and for those of you taking the methods exams, will serve as half of the Departmental Methods Exam.

**Recording of Class and Public Sharing of Instructor Material**

- Recording of lectures is **not** allowed in this course.
- Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions.
Assignments and Grading Policy

A total of 350 points is possible for this course:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation and Paper</td>
<td>75 pts</td>
</tr>
<tr>
<td>In-Class exercises</td>
<td>75 pts</td>
</tr>
<tr>
<td>4 Homework Assignments</td>
<td>100 pts</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100 pts</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>350 pts</strong></td>
</tr>
</tbody>
</table>

Grades will be calculated as follows:

- 338 - 350 = A+
- 331 - 337 = A
- 315 - 330 = A-
- 303 - 314 = B +
- 293 - 302 = B
- 280 - 292 = B -
- 268 - 279 = C +
- 258 - 267 = C
- 245 - 257 = C -
- 233 - 244 = D +
- 223 - 232 = D
- 209 - 222 = D -
- 000 - 208 = F

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University Policies

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. 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/policy/. Students should be aware of the current deadlines and penalties for dropping classes. Information about the latest changes and news is available at the Advising Hub at http://www.sjsu.edu/advising/.

Academic integrity

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The University Academic Integrity Policy S07-2 at http://www.sjsu.edu/senate/docs/S07-2.pdf requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and
Ethical Development. The [Student Conduct and Ethical Development website](http://www.sjsu.edu/studentconduct/) is available at http://www.sjsu.edu/studentconduct/.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified.

**Campus Policy in Compliance with the American Disabilities Act**

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. [Presidential Directive 97-03](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)](http://www.sjsu.edu/aec) at [http://www.sjsu.edu/aec](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 beginning of the semester.

**Accommodation to Students' Religious Holidays**

San José State University shall provide accommodation on any graded class work or activities for students wishing to observe religious holidays when such observances require students to be absent from class. It is the responsibility of the student to inform the instructor, in writing, about such holidays before the add deadline at the start of each semester. If such holidays occur before the add deadline, the student must notify the instructor, in writing, at least three days before the date that he/she will be absent. It is the responsibility of the instructor to make every reasonable effort to honor the student request without penalty, and of the student to make up the work missed. See University Policy S14-7 at [http://www.sjsu.edu/senate/docs/S14-7.pdf](http://www.sjsu.edu/senate/docs/S14-7.pdf).

**Student Technology Resources**

Computer labs for student use are available in the [Academic Success Center](http://www.sjsu.edu/at/asc/) located on the 1st floor of Clark Hall and in the Associated Students Lab on the 2nd floor of the Student Union. Additional computer labs may be available in your department/college. Computers are also available in the Martin Luther King Library.

**SJSU Peer Connections**

Peer Connections, a campus-wide resource for mentoring and tutoring, offers small group, individual, and drop-in tutoring for a number of undergraduate courses. Consultation with mentors is available on a drop-in or by appointment basis. Workshops are offered on a wide variety of topics. Peer Connections is located in three locations: SSC, Room 600 (10th Street Garage on the corner of 10th and San Fernando Street), at the 1st floor entrance of Clark Hall, and in the Living Learning Center (LLC) in Campus Village Housing Building B. Visit [Peer Connections website](http://peerconnections.sjsu.edu) at [http://peerconnections.sjsu.edu](http://peerconnections.sjsu.edu) for more information.
SOCI: 204 Quantitative Data Analysis Course Schedule

I may adjust the course schedule as the semester progresses. A current syllabus will always be available under the course “Files” on Canvas. All readings should be completed prior to the class meeting for which they are assigned. There will be no assignment extensions baring exceptional and documented circumstances.

**Week 1: January 26th: Introduction**

**January 28th: Sampling, and Measurement**

Philips Chapter 1  
Longest Chapters 1-3 (W LAB)

**Week 2: Introducing STATA**  
**February 2nd & 4th**

Longest Chapters 8 & Appendix A (M/W LAB)

**Week 3: Frequency Distributions**  
**February 9th & 11th**

Philips Chapter 2 (M LECTURE)  
Longest Chapter 4 (W LAB)

**Week 4: Descriptive Statistics – Central Tendency and Dispersion**  
**February 16th & 18th**

Philips Chapter 3 and 4 (M LECTURE)  
Longest Chapter 4 (W LAB)  
*HW #1 Due Monday 2/16*

**Week 5: Interpreting Individual Measures and Correlation**  
**February 10th & 12th**

Reading: Philips Chapter 5 and 6 (MW LECTURE)  
Longest Chapter 7 pg. 158-170 (W LAB)

**Week 6: Statistical Inference – Point Estimation and Confidence Intervals**  
**February 23rd & 25th**

Reading: Philips Chapter 7 and 8 (M LECTURE)  
Reading: Longest Chapter 6
Week 7:  
March 2nd

TBA: Class will have an alternate format

March 4th  Comparing Two Groups, Means and Proportions

Reading: Philips Chapter 9

Week 8: Association between Categorical Variables and ANOVA

March 9th & 11th

Reading: Philips Chapter 10 (M LECTURE)
Reading: Longest Chapter 5 (W LAB)

HW #2 Due Monday 3/9

Week 9: Exploring “R”

March 16th & 18th

with Eliza Evans (LAB)

Week 10:
March 24th & 26th

SPRING RECESS

Week 11: SPRI Lab and Training
March 30th & Apr. 1st

Meet in CCB 100

Week 12: Multivariate Regression Modeling and Diagnostic Statistics
April 6th and 8th

Reading: Philips Chapter 11
Reading: Longest Chapter 7 pg. 170-178 (W LAB)

HW #3 Due Monday 4/6

Week 12: Interpreting Quantitative Analyses in the Literature; Workshop
April 14th and 16th

“What are the Assumptions of Multiple Regression?” pp. 119-134 (Canvas)

**Week 13: Open LAB**  
April 20th and 22nd

“Choosing How to Present Statistical Test Results,” pp. 220-4 & 229-40 (Canvas)  
“Creating Effective Charts,” pp. 156-159 (Canvas)  
*HW #4 Due Wednesday 4/22*

**Week 14: Open LAB**  
April 28th and 30th

“Appendix B: Translating Statistical Output into Table and Text,” pp. 417-421 (Canvas)

**Week 15: Workshop and Presentations**  
May 4th and 6th

**Week 16: Presentations**  
May 11th and 13th

**Final Exam:**  
Thursday, May 21 2:45-5:00  
*Research Paper Due 5/21*