San José State University
Department of Sociology and Interdisciplinary Social Science
SOCI 15: Statistical Applications in the Social Sciences, Section 1
Fall 2018

Course and Contact Information

Instructor: Jose Bautista
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Office Hours: Tuesday 5:00 – 6:00 PM
Class Days/Time: Tuesday 6:00 – 8:45 PM
Classroom: DMH 162

Course Description

Information is all around us. Knowing how to make sense of it is not only important to understand our world, but is also a valuable skill to have in other classes that you take, and any career you pursue. This course is an introduction to statistical applications. We will learn ways to summarize and present data, including measures of central tendency and variation. We will also learn how to use probability and sampling distributions to test hypotheses with a variety of inferential tests like z-tests and t-tests to compare sample means, and tests of association like Chi-square and Pearson’s correlation.

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 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 Goals and Learning Objectives

The student learning and content goals for Area B4 courses include the following (1-6):

1. Using 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. Using mathematics to solve real life problems. Practice problems, homework problems, and test questions will reflect true-to-life situations and contemporary events.

3. Arriving 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. Applying 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. Incorporating 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. Writing requirements (minimum 500 words): 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.

Required Text and Materials

Textbook

ESSENTIALS OF SOCIAL STATISTICS FOR A DIVERSE SOCIETY
Author: LEON-GUERRERO
ISBN: 9781483359496
Edition/Copyright: 2nd / 2015
Publisher: SAGE

Materials

• You will want to download and print worksheets from Canvas, so access to the web, a computer and a printer is recommended.
• Calculator (should be able to do square roots, and you should be comfortable using it). Calculators on cell phones, smart phones, tablets or computers are not allowed.
• Scantron (882) forms.

Course Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on Canvas. You are responsible for regularly checking the web site to learn of any updates.

Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class,
participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

**Determination of Grades**

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Exams 100 pts/ea.</td>
<td>300</td>
<td>(33%)</td>
</tr>
<tr>
<td>Lowest Exam score</td>
<td>-100</td>
<td></td>
</tr>
<tr>
<td>11 Quizzes 20 pts./ea.</td>
<td>220</td>
<td>(33%)</td>
</tr>
<tr>
<td>Lowest Quiz score</td>
<td>-20</td>
<td></td>
</tr>
<tr>
<td>Final Examination</td>
<td>200</td>
<td>(33%)</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>600</strong></td>
<td></td>
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</table>

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  
< 60% (< 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.

Exams: Three exams. Lowest score is dropped. As a general rule, the examinations will take place during the last 2 hours of the class period in which they are scheduled. Each exam is worth 100 points.

Exam 1 (Chapters 1-4): 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 5, 6 & 8): 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 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.

<table>
<thead>
<tr>
<th>Quiz</th>
<th>Chapter</th>
<th>Available after midnight on</th>
<th>Due by midnight on</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz 1</td>
<td>Chapter 1</td>
<td>1/30</td>
<td>2/4</td>
</tr>
<tr>
<td>Quiz 2</td>
<td>Chapter 2</td>
<td>2/6</td>
<td>2/11</td>
</tr>
<tr>
<td>Quiz 3</td>
<td>Chapter 3</td>
<td>2/13</td>
<td>2/18</td>
</tr>
<tr>
<td>Quiz 4</td>
<td>Chapter 4</td>
<td>2/20</td>
<td>2/25</td>
</tr>
<tr>
<td>Quiz 5</td>
<td>Chapter 5</td>
<td>3/6</td>
<td>3/11</td>
</tr>
<tr>
<td>Quiz 6</td>
<td>Chapter 6</td>
<td>3/13</td>
<td>3/18</td>
</tr>
<tr>
<td>Quiz 7</td>
<td>Chapter 8 (z-tests)</td>
<td>3/20</td>
<td>3/25</td>
</tr>
<tr>
<td>Quiz 8</td>
<td>Chapter 8 (t-tests)</td>
<td>4/10</td>
<td>4/15</td>
</tr>
<tr>
<td>Quiz 9</td>
<td>Chapter 9</td>
<td>4/17</td>
<td>4/22</td>
</tr>
<tr>
<td>Quiz 10</td>
<td>Chapter 10</td>
<td>4/24</td>
<td>4/29</td>
</tr>
<tr>
<td>Quiz 11</td>
<td>Chapter 11</td>
<td>5/8</td>
<td>5/13</td>
</tr>
</tbody>
</table>

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 200 points.

Final Exam (Review plus Chapters 9 & 11): 200 points
• Topics covered in exams 1-3
• One-way Analysis of Variance
• Regression
• Correlation
• The Scatter Diagram
• Linear Relationships and Prediction Rules
Course Policies and Expectations

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 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. Did I mention that phones are not allowed as calculators during exams? They are not. Do yourself a favor and put the phone away during class. Instead, 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 in class: paper, pencils, eraser, a small ruler, a calculator and Scantron forms. 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 before each week’s lecture to be better prepared to learn 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 in 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, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be 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, 2018, Course Schedule

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

Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics, Readings, Assignments, Deadlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21-Aug</td>
<td>CHAPTER 1: The What and the Why of Statistics (Quiz 1)</td>
</tr>
<tr>
<td>2</td>
<td>28-Aug</td>
<td>CHAPTER 2: The Organization and Graphic Presentation of Data (Quiz 2)</td>
</tr>
<tr>
<td>3</td>
<td>4-Sep</td>
<td>CHAPTER 3: Measures of Central Tendency (Quiz 3)</td>
</tr>
<tr>
<td>4</td>
<td>11-Sep</td>
<td>CHAPTER 4: Measures of Variability (Quiz 4)</td>
</tr>
<tr>
<td>5</td>
<td>18-Sep</td>
<td>CHAPTER 5: The Normal Distribution (Quiz 5)</td>
</tr>
<tr>
<td>6</td>
<td>25-Sep</td>
<td>Exam 1</td>
</tr>
<tr>
<td>7</td>
<td>2-Oct</td>
<td>CHAPTER 6: Sampling and Sampling Distributions (Quiz 6)</td>
</tr>
<tr>
<td>8</td>
<td>9-Oct</td>
<td>CHAPTER 7: Estimation (Quiz 7)</td>
</tr>
<tr>
<td>9</td>
<td>16-Oct</td>
<td>CHAPTER 8: Testing Hypotheses (Quiz 8)</td>
</tr>
<tr>
<td>10</td>
<td>23-Oct</td>
<td>Exam 2</td>
</tr>
<tr>
<td>11</td>
<td>30-Oct</td>
<td>CHAPTER 8: Testing Hypotheses (Quiz 9)</td>
</tr>
<tr>
<td>12</td>
<td>6-Nov</td>
<td>CHAPTER 8: Bivariate Tables (Quiz 10)</td>
</tr>
<tr>
<td>13</td>
<td>13-Nov</td>
<td>CHAPTER 9: Bivariate Tables (Quiz 11)</td>
</tr>
<tr>
<td>14</td>
<td>20-Nov</td>
<td>Exam 3</td>
</tr>
<tr>
<td>15</td>
<td>27-Nov</td>
<td>CHAPTER 11: Regression and Correlation (Quiz 12)</td>
</tr>
<tr>
<td>16</td>
<td>4-Dec</td>
<td>Wrap-up/Review</td>
</tr>
<tr>
<td>Final Exam</td>
<td>18-Dec</td>
<td>Final Exam 1715 – 1930 PM (same room as class)</td>
</tr>
</tbody>
</table>