

San Jose State University/Department of Economics

ECON 3, Elementary Statistics, Sec 1, Summer, and 2019

Contact Information

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| Instructor: | Rui Liu |
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| Office Hours: | Online by appointment |
| Class Days/Time: | Weekly |
| Classroom: | Canvas |

Course Description

Welcome to the Age of Data, where information is all around us, helping us live happier, healthier lives. Or does it? Do we know yet if cell phones cause cancer? Have we come to a decision on whether we should be eating lots of meat or none at all to stay healthy? Despite all of this information, it can be challenging to turn it into the knowledge from which we can make sound decisions.

Statistics is the field that aims to bridge this gap between information and knowledge and this course is an application-oriented introduction to modern statistical modeling and inference. We will discuss topics such as: study design, descriptive statistics, data visualization, random variables, probability and sampling distributions, point and interval estimates, hypothesis tests, estimation, tests of means and linear regression. A wide variety of applications from the natural and social sciences will be used.

It is somewhat of a hands-on course in the sense that you will be given empirical exercise and asked to do calculations. Empirical exercises are designed to provide students with hands-on experience with Excel and real data. Excel is free for SJSU students and is available at <http://its.sjsu.edu/services/software/microsoft-students/index.html>

Course Goals and Learning Objectives

| CLOs | PLOs | Assignment |
|--|---|--|
| 1. Interpret ideas of population versus sample, random variables, and techniques of descriptive statistics including frequency distributions, histograms, stem and leaf plots, boxplots, and scatterplots. | PLO 3 research methods PLO 4 Specialist Area-Quantitative Methods PLO 5 Communication | Learning outcomes are satisfied by homework assignments and quizzes that contain two parts. The theory part helps students to gain basic understanding of the statistical analysis. The application part asks students to do practical analysis using Excel. Final exam is designed in a way such that students have to correctly identify the methods and apply them to real world problems. |
| 2. Calculate and interpret measures of central tendency and dispersion, including mean, median, standard deviation, and quartiles. | PLO 4 Specialist Area-Quantitative Methods PLO 5 Communication | Weekly homework, quizzes and exam |
| 3. Apply the 68-95-99.7 rule to normal distributions and use the normal tables to answer questions about the proportion of scores in a certain range or find various percentiles. | PLO 4 Specialist Area-Quantitative Methods | Weekly homework, quizzes and exam |
| 4. Apply ideas of appropriate sampling techniques and experimental design to data production. | PLO 4 Specialist Area-Quantitative Methods | Weekly homework, quizzes and exam |
| 5. Use the basic ideas of probability and apply them to statistics. | PLO 4 Specialist Area-Quantitative Methods | Weekly homework, quizzes and exam |
| 6. Use the sampling distributions of sample proportions and sample means to answer appropriate questions. | PLO 4 Specialist Area-Quantitative Methods | Weekly homework, quizzes and exam |

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| 7. Estimate single means, difference of two means, single proportions and difference of two proportions using confidence intervals. Interpret the results. | PLO 4 Specialist Area-Quantitative Methods | Weekly homework, quizzes and exam |
| 8. Demonstrate skills in hypothesis testing for means and proportions, for single populations and comparison of two populations. | PLO 4 Specialist Area-Quantitative Methods PLO 5 Communication | Such expected learning outcome are satisfied by the project which requires that students gather relevant data, apply appropriate methods, and write up their results in the form of a well-written report. |
| 9. Demonstrate skills in inference for regression | PLO 4 Specialist Area-Quantitative Methods | Weekly homework, quizzes and exam |

Recommended Texts/Readings

The course material will be based on the following textbook and it's FREE!

Online Statistics Education: A Multimedia Course of Study (<http://onlinestatbook.com/>)

Coursework Commitment

This is a four-unit undergraduate level course. SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of three hours per unit per week, including participating course activities, completing problem sets, mastering software languages, and so on. More details about student workload can be found in [University Policy S12-3](http://www.sjsu.edu/senate/docs/S12-3.pdf) at <http://www.sjsu.edu/senate/docs/S12-3.pdf>.

Course Requirements and Assignments

The course grade will be based on quizzes, weekly problem sets, discussion participation, and a final exam. The scores are averaged with the following weight:

| Assignment | Weight |
|-----------------------------------|--------|
| Problem Sets (two lowest dropped) | 40% |
| Discussion | 10% |
| Quizzes (lowest dropped) | 35% |
| Final Exam | 15% |

Quizzes

Quizzes will be given once every week. Quizzes will be short (30 minutes), and will cover the same material as recent homework assignments. Understanding the homework will lead to good performance on the quizzes, so no additional study time should be necessary (other than that of understanding the material covered in the homework). There will be 4 quizzes, and your lowest percentage score will be dropped in computing your overall quiz score. All quizzes will consist of true/false and multiple-choice questions on...

- concepts
- definitions
- formulas
- data analysis

Homework

There are approximately 20 homework assignments, four per week, and your two lowest percentage scores will be dropped in computing your overall homework score. The homework assignments are intended for students to review and apply materials from the online modules. Students get two attempts at each homework assignment. The final grade for each assignment is the average of both graded attempts.

Discussion

Discussion forums are designed to help students review materials prior to a quiz.

Using LockDown Browser and a webcam (Respondus Monitor) for online quizzes and exams

This course requires the use of **LockDown Browser** and a **webcam** for online quizzes and exams. The webcam can be built into your computer or can be the type that plugs in with a USB cable. Watch this [short video](#) to get a basic understanding of LockDown Browser and the webcam feature.

You can download and install Respondus when you are going to take Respondus enabled quiz on Canvas or through the link:

<http://www.respondus.com/lockdown/download.php?id=967937270>

Note: Don't download a copy of LockDown Browser from elsewhere on the Internet; those versions won't work at our institution.

To take an online test, start LockDown Browser and navigate to the exam. (You won't be able to access the exam with a standard web browser.) For additional details on using LockDown Browser, review this [Student Quick Start Guide \(PDF\)](#). For frequently asked questions regarding LockDown Browser, please visit <http://www.sjsu.edu/ecampus/teaching-tools/respondus/faq/index.html>.

Finally, when taking an online exam, follow these guidelines:

- Ensure you're in a location where you won't be interrupted
- Turn off all mobile devices, phones, etc.
- Clear your desk of all external materials — books, papers, other computers, or devices
- Remain at your desk or workstation for the duration of the test
- If a webcam is required, make sure it is plugged in or enabled before starting LockDown Browser
- LockDown Browser will prevent you from accessing other websites or applications; you will be unable to exit the test until all questions are completed and submitted
- If a webcam is required, you will be recorded during the test to ensure you're using only permitted resources

Grading Policy

Final grades will be determined as follows:

| Assignment | Weight | Dates |
|-----------------------------------|--------|-----------------------|
| Problem Sets (two lowest dropped) | 40% | Weekly |
| Discussion | 10% | Weekly |
| Quizzes (lowest dropped) | 35% | 6/7, 6/14, 6/21, 6/28 |
| Final Exam | 15% | 7/5 |

Letter grades will be determined as follows:

| | | |
|--------------------------|------------|-------------|
| A+ = 100-97% | A = 96-93% | A- = 92-90% |
| B+ = 89-87% | B = 86-83% | B- = 82-80% |
| C+ = 79-77% | C = 76-73% | C- = 72-70% |
| D+ = 69-67% | D = 66-63% | D- = 62-60% |
| F = 59-0% Unsatisfactory | | |

Late/Missing Work: Extensions/make-ups on homework and quizzes will be granted only in cases with extenuating circumstances. This must be arranged with me, and I have sole discretion over whether or not to grant an extension or make-up. As is noted above, no extensions or make-ups will be given for the exam.

Grade Disputes: If you wish to dispute a grade you must submit your dispute to me in writing, along with the original assignment. You must indicate each issue that you wish to dispute and include reasons why you believe that your grade should be changed. I must receive your dispute at least 24 hours, but no more than one week, after you receive your assignment back. I will regrade the entire assignment, and your grade may be raised, lowered, or remain the same.

Classroom Protocol

My most important piece of advice to you is this: keep up-to-date with all readings and assignments, and seek help from me if you do not understand a concept or problem. Statistics is a subject in which each new concept builds on previous concepts. Thus, it is imperative that you understand every concept, or you will be unable to understand later concepts. Furthermore, this is an accelerated course, meaning there is very little time to fall behind.

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](http://info.sjsu.edu/static/catalog/policies.html) 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](http://www.sjsu.edu/provost/services/academic_calendars/) at http://www.sjsu.edu/provost/services/academic_calendars/. The [Late Drop Policy](http://www.sjsu.edu/aars/policies/latedrops/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](http://www.sjsu.edu/advising/) at <http://www.sjsu.edu/advising/>.

Consent for Recording of Class and Public Sharing of Instructor Material

[University Policy S12-7](http://www.sjsu.edu/senate/docs/S12-7.pdf), <http://www.sjsu.edu/senate/docs/S12-7.pdf>, requires students to obtain instructor's permission to record the course.

- “Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's 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 are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.”
 - It is suggested that the greensheet include the instructor's process for granting permission, whether in writing or orally and whether for the whole semester or on a class by class basis.
 - In classes where active participation of students or guests may be on the recording, permission of those students or guests should be obtained as well.
- “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 without instructor consent.”

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. If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Integrity Policy S07-2 requires approval of instructors.

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) 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](http://www.sjsu.edu/aec) (AEC) at <http://www.sjsu.edu/aec> to establish a record of their disability.

In 2013, the Disability Resource Center changed its name to be known as the Accessible Education Center, to incorporate a philosophy of accessible education for students with disabilities. The new name change reflects the broad scope of attention and support to SJSU students with disabilities and the University's continued advocacy and commitment to increasing accessibility and inclusivity on campus.

ECON 3 / Elementary Statistics, Summer 2019, Course Schedule

Course Schedule

| Week | Topics |
|------|--|
| 1 | Syllabus Introduction Graphing Distribution Discussion 1 Quiz 1 |
| 2 | Summarizing Distribution Describing Bivariate Data Probability Discussion 2 Quiz 2 |
| 3 | Research Design Normal Distribution Sampling Distribution |

| Week | Topics |
|------|--|
| | Discussion 3 Quiz 3 |
| 4 | Estimation Hypothesis Testing Discussion 4 Quiz 4 |
| 5 | Tests of Means Final Exam |