Course and Contact Information

Class Days/Time  Tuesdays & Thursdays
   Section 5:  12–1:15 pm
   Section 6:  1:30–2:45 pm
Classroom  MacQuarrie Hall 323
Prerequisites  Math 31 (Calculus through differentiation and integration) with a grade of C—
or better, or instructor consent.
Course Web Page  Course announcements and material are accessible only through Canvas
   (http://www.sjsu.edu/at/ec/canvas/)
Instructor  Bee Leng Lee
Office Location  MH 414
Telephone  (408) 924-5099
Email  beeleng.lee@sjsu.edu
Office Hours  Tuesdays & Thursdays, 3–4 PM, 5:45–6:15 PM
   If you wish to ask questions on the homework problems during office hours, you are
   expected to have completed the relevant reading assignments, read the problems thor-
   oughly, and at least attempted to solve them.

Course Description

Probability, descriptive and inferential statistics. Discrete and continuous probability models, ran-
dom variables, Central Limit Theorem, collection and analysis of data, confidence intervals, hy-
pothesis testing.

Course Learning Outcomes

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

1. Solve simple combinatorial problems.
2. Perform calculations based on basic concepts of probability theory.
3. Understand basic quantities for characterizing discrete and continuous random variables,
such as probability mass/density functions, cumulative distribution functions, expectations,
and variances, and be able to perform calculations based on these ideas.
4. Use several common discrete distributions such as the binomial, hypergeometric, negative
   binomial, and Poisson distributions to solve problems.
5. Use several common continuous distributions such as the uniform, normal, and exponential
distributions to solve problems.
6. Understand sampling distributions and the Central Limit Theorem.
7. Understand and calculate confidence intervals for population means and proportions.
8. Understand the key concepts of hypothesis testing, such as type I and type II errors, significance level and power of a test, and p-values, and apply these to make valid inferences from data.

**Required Texts/Readings**

**Textbook**


**Course Requirements and Assignments**

**Homework** will be assigned on a regular basis.

Two midterm exams are tentatively scheduled for March 6 and April 17. You may bring one page of notes for the first exam and two pages of notes for the second exam, where “one page” refers to one side of a letter-size sheet of paper. The notes may not contain any examples and must be turned in with your exam paper; for every example found in your notes, 5 points will be deducted from your total score for the exam. You should bring a scientific calculator to the exam. Other electronic or communication devices are not allowed during the exams.

A final exam is scheduled for:

- Section 5: May 17 (Thursday), 9:45 AM–12 PM
- Section 6: May 16 (Wednesday), 12:15–2:30 PM

You may bring three pages of notes for reference, where “one page” refers to one side of a letter-size sheet of paper. You should bring a scientific calculator to the exam. Other electronic or communication devices are not allowed during the exam.

**Grading Information**

The general policy in grading, which applies to all components of assessment described below, is that no credit will be given to an answer unless you show how it is calculated.

**Homework** carries a total of 15% of the final grade.

- Each homework must be submitted in class and within the first 10 minutes of class for it to be considered on time.
- For every 10 minutes or part thereof past the grace period, 2 points will be deducted from the total score for the homework. It does not make a difference to the instructor whether your homework is received on time or an hour late. The purpose of this policy is to ensure fairness to those students who worked hard to meet the deadline.

To allow you flexibility to deal with any emergencies that may arise in your personal life, the lowest homework score will be dropped from the final grade calculation.

**The midterm exams** carry a total of 45% of the final grade. No early or late exam will be given. If you miss an exam, you will receive an F grade for the course unless the instructor receives documentary evidence to substantiate the claim of extenuating circumstances (such as hospitalization or death in the family).
The final exam carries a total of 40% of the final grade. The same policies as described for the midterm exams apply.

Your final grade will be determined by the weighted average of your scores for homework, midterm exam, and final exam, as follows.

<table>
<thead>
<tr>
<th>Total score Grade</th>
<th>(95, 100]</th>
<th>(90, 95]</th>
<th>(85, 90]</th>
<th>(80, 85]</th>
<th>(75, 80]</th>
<th>(70, 75]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>A+</td>
<td>A</td>
<td>A-</td>
<td>B+</td>
<td>B</td>
<td>B-</td>
</tr>
<tr>
<td>Total score Grade</td>
<td>(65, 70]</td>
<td>(60, 65]</td>
<td>(55, 60]</td>
<td>55 or lower</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>Grade</td>
<td>C+</td>
<td>C</td>
<td>C-</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

The instructor reserves the right to lower the cutoffs.

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/
## Tentative Schedule

<table>
<thead>
<tr>
<th>Topic (Reading Assignment)</th>
<th>Number of Lectures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course Overview</strong></td>
<td></td>
</tr>
<tr>
<td>Basic Concepts (§ 2.1–2.3): sample spaces and events; axioms and properties of probability; counting techniques; interpretations of probability</td>
<td>4</td>
</tr>
<tr>
<td>Conditional Probability &amp; Independence (§ 2.4–2.5): conditional probability; multiplication rule, law of total probability, Bayes’ Theorem; independence of events.</td>
<td>3</td>
</tr>
<tr>
<td>Discrete Random Variables (§ 3.1–3.3): random variables, probability mass function, cumulative distribution function, expectation, variance.</td>
<td>3</td>
</tr>
<tr>
<td>Special Discrete Distributions (§ 3.4–3.6): Bernoulli trial; binomial (Bernoulli), negative binomial (geometric), hypergeometric, and Poisson distributions.</td>
<td>3</td>
</tr>
<tr>
<td>Continuous Random Variables (§ 4.1–4.2): probability density function, cumulative distribution function, expectation, variance, percentile.</td>
<td>2</td>
</tr>
<tr>
<td>Special Continuous Distributions (§ 4.3–4.4): uniform, normal, and gamma distributions.</td>
<td>2</td>
</tr>
<tr>
<td>Descriptive Statistics (§ 1.1, 1.3–1.4): population, sample, data; measures of location and measures of variability.</td>
<td>1</td>
</tr>
<tr>
<td>Statistics and Their Distributions (§ 5.3–5.5): random sample, statistic, sampling distribution; mean and variance of a linear combination of random variables; distribution of sample mean; central limit theorem.</td>
<td>3</td>
</tr>
<tr>
<td>Point and Interval Estimation (§ 6.1, 7.1–7.4): point estimate/estimator, standard error; interval estimate/estimator, confidence level, confidence interval; confidence intervals for the mean of normal distribution; large-sample confidence intervals for the population mean; confidence intervals for the variance of normal distribution.</td>
<td>3</td>
</tr>
<tr>
<td>Testing Statistical Hypotheses (§ 8.1, 8.2, 8.4): null and alternative hypotheses; one-tailed and two-tailed tests, test statistic, rejection/critical region; type I and type II errors, and corresponding probabilities, significance level, power; tests for population mean; p-value.</td>
<td>3</td>
</tr>
<tr>
<td>Midterm exams</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

THE CONTENT OF THIS GREENSHEET IS SUBJECT TO CHANGE AND ANY CHANGES WILL BE ANNOUNCED IN CLASS. IF YOU MISS A CLASS, IT IS YOUR RESPONSIBILITY TO FIND OUT FROM YOUR CLASSMATES WHAT YOU HAVE MISSED.