

College of Engineering and Computer Science
Department of Civil Engineering



ENGR 115

Statistics for Engineers

Course Syllabus
Summer 2023

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Online Office Hours:
By Appointment

Pre-requisite

Math 31 may be taken concurrently.

Text Book

Probability and Statistics for Engineering and Sciences, Devore, Eight Edition, Thomson Higher Education Publishing Company.

Goals and Objectives

In this class, we will examine the application of statistical methods to the analysis of engineering and physical systems. Data collection, characteristics of distributions, probability, uses of normal distribution, regression analysis, and decision-making under uncertainty will be studied.

Learning Outcomes

1. Describe and explain probability and statistics concepts.
2. Present and interpret graphical and numerical summaries of data.
3. Apply basic probability concepts and tools to describe engineering problems.
4. Distinguish between discrete and continuous random variables.
5. Calculate the expected value (mean) and variance of a given probability distribution function.
6. Calculate the confidence interval for the mean and proportion based on normal distribution.
7. Formulate a hypothesis for the mean and proportion of one sample, calculate the appropriate test statistic, and derive proper conclusions based on the results.
8. Calculate the appropriate regression parameters for simple linear model and determine the goodness-of-fit of the model.

Evaluation of Student Performance

The final grade is based on four tests with no extra credit!

Tests	100%
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There will be four exams. The final exam will be exam number 4. Exams will be given during class time.

Final grade is based on the point distribution shown below

	$90.0 \leq x < 95.0 = A-$	$x \geq 95.0 = A$
$80.0 \leq x < 84.0 = B-$	$84.0 \leq x < 87.0 = B$	$87.0 \leq x < 90.0 = B+$
$70.0 \leq x < 74.0 = C-$	$74.0 \leq x < 77.0 = C$	$77.0 \leq x < 80.0 = C+$
$60.0 \leq x < 64.0 = D-$	$64.0 \leq x < 67.0 = D$	$67.0 \leq x < 70.0 = D+$
$x < 60.0 = F$		

For more details on these guidelines, please refer to the [University Catalog Grading Policy](#)

Honor Code:

Any instance of academic dishonesty will result in a grade of "F" for the assignment and all other sanctions as applicable by [University policy](#). Students are encouraged to read the policy to better understand the definition of academic dishonesty, student and faculty responsibilities, and student rights. As a student you are responsible for:

- Only submitting work that is your own
- Not knowingly allowing other students to copy your work
- Only using aids during exams that are allowed by the instructor.

Attendance

If you are ill or you are the caretaker of someone who is ill, your safety and responsibilities come first. Advice on what to do in the case of illness is provided in this syllabus. We will work with you to adjust schedules and make other reasonable accommodations. That said, please notify us as soon as possible if you run into circumstances that will interfere with your participation. Waiting to tell us what's going on may make it more difficult to figure out a plan for you to catch up.

In general, if you cannot contact all your instructors individually you can always email Ashley Mihok (ashley.mihok@csus.edu) and she will inform them. If you can't email, leave a message on the department phone (916-278-6982).

Make-up exams

Make-up exams or quizzes will not be given except in unusual cases beyond the student's control or arranged in advance with the instructor.

Collaboration

You are encouraged to do homework assignments with a classmate. The goal of the homework is for you to learn the concepts of the course, and you will be asked to demonstrate your knowledge of these concepts on quizzes and exams. It will be in your best interest to understand all of the assigned problems, even if collaborating with other individuals.

Work Load

This is a 3-unit course. Student should plan on spending an average of 6 hours per week outside of class each week reading the textbook, reviewing lecture notes, and preparing professional homework assignments.

Calculator Policy

It is the policy of the CE Department that only current FE approved calculators will be allowed during in class tests. Use of an unapproved calculator will be considered an act of academic dishonesty.

"Per CE Department policy, the **only** calculators that will be allowed for all quizzes, tests and exams are:

- **Casio:** All **fx-115** models; any Casio calculator with **fx-115** in its model name is allowed.
- **Hewlett Packard:** The **HP 33s** and **HP 35s** models are allowed. No other Hewlett Packard models are allowed.
- **Texas Instruments:** All **TI-30X** and **TI-36X** models are allowed; any Texas Instruments calculator with **TI-30X** or **TI-36X** in its model name is allowed

Lecture Topics and Course Calendar

Reading Assignment	
Chapter	Section Nos.
Chapter 1 – Overview and Descriptive Statistics	1 through 4
*Test No. 1: Thursday July 20	
Chapter 2 – Probability	1 through 5
Chapter 3 – Discrete Random Variables and Probability Distributions	1 through 6
*Test No. 2: Thursday July 27	
Chapter 4 – Continuous Random Variables and Probability Distributions	1 through 4
Chapter 7 – Statistical Intervals Based on a Single Sample	1 through 3
*Test No.3: Thursday August 3	
Chapter 8 – Tests of Hypotheses Based on a Single Sample	1 through 5
Chapter 9 – Inferences Based on Two Samples	1 through 5
Chapter 12 – Simple Linear Regression and Correlation	1 through 5
Test No. 4: Thursday August 17	

Note: * These dates are subject to change.

Refer to the University Schedule for Campus Holidays

Health & Safety Information

If you are sick, please self-diagnose if you are experiencing any COVID- like symptoms (fever, cough, sore throat, muscle aches, loss of smell or taste, nausea, diarrhea, or headache) or have had exposure to someone who has tested positive for COVID contact **Student Health & Counseling Services (SHCS) at 916-278-6461** to receive guidance and/or medical care. You are asked to report any possible COVID related illnesses/exposures to SHCS via this link [COVID-19 Illness/Exposure Report Form](#). Expect a call from SHCS within 24 hours. The CDC provides a good source of information regarding COVID-19 and a way to self-check symptoms:

<https://www.cdc.gov/coronavirus/2019-ncov/index.html>

Sacramento State has developed a one-stop information site:

<https://www.csus.edu/covid-19-information/>

Campus Support

- Services to Students with Disabilities ([SSWD](#)) offers a wide range of accommodation services that ensure students with disabilities have equal access and opportunity to pursue their educational goals.
- [Student Health and Counseling Services](#) “Your physical and mental health are important to your success as a college student. Student Health and Counseling Services (SHCS) in The WELL offers medical, counseling, and wellness services to help you get and stay healthy during your time at Sac State. SHCS offers: Primary Care medical services, including sexual and reproductive healthcare, transgender care, and immunizations; urgent care for acute illness, injuries, and urgent counseling needs; pharmacy for prescriptions and over-the-counter products; mental health counseling, including individual sessions, group counseling, support groups, mindfulness training, and peer counseling; athletic training for sports injury rehabilitation; wellness services, including nutrition counseling, peer led health education and wellness workshops, and free safer sex supplies; violence and sexual assault support services. Most services are covered by the Health Services fee and available at no additional cost.”
- If you or someone you know has experienced any type of sexual violence (sexual harassment, sexual assault, dating/domestic violence, stalking), please know that you may speak to a variety of resources confidentially or non-confidentially. Note that all faculty are considered mandated reporters and are required to report disclosures of sexual violence to the Office for Equal Opportunity. All campus staff are also considered mandated reporters with the exception of confidential campus resources, which include the campus Confidential Advocate (916-278-5850) and Counseling and Psychological Services (CAPS) (916-278- 6461). You may speak to these confidential resources on campus without the incident being reported to campus officials. Survivors of sexual violence may also contact WEAVE, Inc. in Sacramento. WEAVE provides confidential services 24 hours a day at 916-920-2952. You can find more information and the appropriate resources for support services and non- confidential reporting at <https://www.csus.edu/title-ix/>.
- [Crisis Assistance & Resource Education Support \(CARES\)](#): “If you are experiencing challenges with food, housing, financial or other unique circumstances that are impacting your education, help is just a phone call or email away. The CARES office provides case management support for any enrolled student.

Further resources and information: [Martin Luther King Center](#), [Multicultural Center](#), [Dreamer Resource Center](#), [Student Success Center](#), [Academic Advising](#), [PARC](#), [Reading & Writing Center](#), [Grading Policy](#), [Academic Calendar](#), [Hornet Honor Code](#), [Student Rights and Responsibilities](#)