# Course Outline

**2026-2027 Catalog**

## STAT C1000E - Introduction to Statistics

### Catalog Description

**Transfer Status:** CSU/UC

**Prerequisite:**

Placement as determined by the college's multiple measures assessment process or completion of a course taught at or above the level of intermediate algebra

**Unit(s):** 4.00

**Lecture:** 34.00 Contact hours/68.00 Out of class hours/102.00 Total hours/2.00 Unit(s)
**Activity:** 68.00 Contact hours/34.00 Out of class hours/102.00 Total hours/2.00 Unit(s)
**Total:** 102.00 Contact hours/102.00 Out of class hours/204.00 Total hours/4.00 Unit(s)

**Course Description:** This course is an introduction to statistical thinking and processes, including methods and concepts for discovery and decision-making using data. Topics include descriptive statistics; probability and sampling distributions; statistical inference; correlation and linear regression; analysis of variance, chi-squared, and t-tests; and application of technology for statistical analysis including the interpretation of the relevance of the statistical findings. Students apply methods and processes to applications using data from a broad range of disciplines. This course has embedded support. (C-ID MATH 110).

### Objectives

Upon successful completion of this course, the student should be able to:

1. Evaluate ethical issues in statistical practice.
2. Identify appropriate statistical techniques and use technology-based statistical analysis to describe, interpret, and communicate results.
3. Demonstrate an understanding of, and ability to use, basic ideas of statistical processes, including hypothesis tests and confidence interval estimation.
4. Describe and apply probability concepts and distributions.
5. Identify appropriate graphs and summary statistics for variables and relationships between them and correctly interpret information from graphs and summary statistics.
6. Assess how data were collected and recognize how data collection affects what conclusions can be drawn from the data.

### Course Content

**Topic Titles / Suggested Time Topic**

**Lecture/Activity**

| Topics | Lec Hrs | Act Hrs |
|---|---|---|
| Introduction to statistical thinking and processes | 34.00 | 68.00 |
| Technology-based statistical analysis | | |
| Applications using data from four or more of the following disciplines: administration of justice, business, economics, education, health science, information technology, life science, physical science, political science, psychology, and social science | | |
| Units (subjects/cases) and variables in a data set, including multivariable data sets | | |
| Categorical and quantitative variables | | |
| Sampling methods, concerns, and limitations, including bias and random variability | | |
| Observational studies and experiments | | |
| Data summaries, visualizations, and descriptive statistics | | |
| Probability concepts | | |
| Probability distributions (e.g., binomial, normal) | | |
| Sampling distributions and the Central Limit Theorem | | |
| Estimation and confidence intervals | | |
| Hypothesis testing, including t-tests for one and two populations, Chi-squared test(s), and ANOVA; and interpretations of results | | |
| Regression, including correlation and linear regression equations | | |
| **Total Hours:** | **34.00** | **68.00** |

## Methods of Instruction

A. Class Activities
B. Collaborative Group Work
C. Discussion
D. Homework: Students are required to complete one hour of outside-of-class homework for every two hours of activity
E. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
F. Lecture

## Methods of Evaluation

A. Examples of potential methods of evaluation used to observe or measure students' achievement of course outcomes and objectives could include but are not limited to quizzes, exams, laboratory work, field journals, projects, research demonstrations, etc. Methods of evaluation are at the discretion of local faculty.

## Examples of Assignments

**Reading Assignments**

1. Read the article provided and produce a series of follow up questions skeptically addressing the sampling strategy. Prepare to discuss these questions in your activity section.
2. Read the section in the text book on sampling distributions and be able to describe the sampling distribution of sample means and state the Central Limit Theorem.

**Writing Assignments**

1. Compare two data sets and discuss the commonalities between the measures of central tendency for each. Discuss the appropriateness of the use of the mean and the median for describing the center of each data set.
2. After applying the Central Limit Theorem to find the probability of a sample mean, write a paragraph interpreting your results.

**Out-of-Class Assignments**

1. Review the section on sampling distributions and solve the problems in the exercises assigned by the instructor.
2. 1) Write a question you want to answer. 2) Design a study using appropriate sampling methods and other techniques as taught in this course.3) Write a report on your findings and assess weaknesses in the study.

## Recommended Materials of Instruction

Peck, R., Case, C. (2024). Statistics: Learning from Data. *Cengage, 3rd.* 978-0357758298.
Gould, R., Wong, R., Ryan, C. (2025). Introductory Statistics Exploring the World Through Data. *Pearson, 4th.* 9780138242145.
Triola, M. (2023). Essentials of Statistics. *Pearson, 7th.* 9780137466092.

**Zero Cost Textbook**

Introduction to Modern Statistics 2e, Çetinkaya-Runde, M., Hardin, J., OpenIntro, 2024: https://www.openintro.org/book/ims/
Introductory Statistics 2e, Illowsky, B., Dean, S., OpenStax, 2023: https://openstax.org/details/books/introductory-statistics-2e
Introductory Statistics: Analyzing Data with Purpose, The Dana Center Mathematics Pathways, Charles A. Dana Center, University of Texas at Austin, 2021: https://www.utdanacenter.org/products/introductory-statistics

**Other Learning Materials**

Free online materials abound for this subject; TI-84 Calculator

## Minimum Qualifications

Mathematics (Masters Required)

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