

STAT C160: INTRODUCTION TO STATISTICS

Item	Value
Curriculum Committee Approval Date	10/25/2024
Top Code	170100 - Mathematics, General
Units	4 Total Units
Hours	72 Total Hours (Lecture Hours 72)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)
Local General Education (GE)	• Area 2 Mathematical Concepts and Quantitative Reasoning (CA3)
California General Education Transfer Curriculum (Cal-GETC)	• Cal-GETC 2A Math Concepts (2A)
Intersegmental General Education Transfer Curriculum (IGETC)	• IGETC 2A Math Concepts (2A)
California State University General Education Breadth (CSU GE-Breadth)	• CSU B4 Math/Quant.Reasoning (B4)

Course Description

Formerly: MATH C160. 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. 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. Transfer Credit: CSU; UC. C-ID: MATH 110. **Common Course Number:** STAT C1000. **C-ID:** MATH 110.

Course Level Student Learning Outcome(s)

1. Collect, analyze, and draw conclusions from data.
2. Interpret information from graphs and summarize statistics.
3. Demonstrate the ability to use hypothesis tests.

Course Objectives

- I PART 1:
- I. 1. Assess how data were collected and recognize how data collection affects what conclusions can be drawn from the data.

- I. 2. Identify appropriate graphs and summary statistics for variables and relationships between them and correctly interpret information from graphs and summary statistics.
- I. 3. Describe and apply probability concepts and distributions.
- I. 4. Demonstrate an understanding of, and ability to use, basic ideas of statistical processes, including hypothesis tests and confidence interval estimation.
- I. 5. Identify appropriate statistical techniques and use technology-based statistical analysis to describe, interpret, and communicate results.
- I. 6. Evaluate ethical issues in statistical practice.

Lecture Content

PART 1: Introduction to statistical thinking and processes 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 .

Method(s) of Instruction

- Lecture (02)
- DE Online Lecture (02X)
- Video one-way (ITV, video) (63)
- Cable (CA)

Reading Assignments

- Problem Solving Exercises - Skills Demonstration - Quizzes

Writing Assignments

Observe real-world problems and translate into statistical language. Submit written-report projects.

Demonstration of Critical Thinking

Part 1: 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. Part 2: Homework Assignments include a variety of problems to reinforce the understanding and achievement of all SLOs. Quizzes and exams cover a recent lecture, reading assignment, or homework assignment. Objective Examination may be separate assessment or part of an exam, could cover any of the SLOS. Individual or group projects based on material in the course presented written or verbally to instructor or the rest of the class.

Required Writing, Problem Solving, Skills Demonstration

Mathematical Problem-Solving Exercises will be a foundation of the class. Then will be used to reinforce material learned in the class.

Assignments will provide opportunities for students to demonstrate mathematical skills and use of technology.

Eligible Disciplines

Mathematics: Master's degree in mathematics or applied mathematics OR bachelor's degree in either of the above AND master's degree in statistics, physics, or mathematics education OR the equivalent. Master's degree required.

Textbooks Resources

1. Required etinkaya-Runde, M., Hardin, J.. Introduction to Modern Statistics, 2nd ed. Openintro (\$0-25), 2024 Legacy Textbook Transfer Data: <https://www.openintro.org/book/ims/> 2. Required Peck, R., Case, C.. Statistics: Learning From Data, 3 ed. Cengage (\$57-250), 2024 Legacy Textbook Transfer Data: <https://www.cengage.com/c/new-edition/9780357758298/> 3. Required Gould, R., Wong, R., Ryan, C.. Introductory Statistics: Exploring the World Through Data 4e, ed. Pearson (\$65-80), 2025 4. Required Illowsky, B., Dean, S.. Introductory Statistics, 2nd ed. OpenStax (\$0), 2023 5. Required Charles A. Dana Center. Introductory Statistics: Analyzing Data with Purpose, The Dana Center Mathematics Pathways, ed. University of Texas at Austin (\$0), 2021

Other Resources

1. Coastline Library 2. MyMathLab access code 3. Digital Video Tutor 4. Student Solutions Manual