STAT G160S: INTRODUCTION TO STATISTICS

Item	Value
Curriculum Committee Approval Date	11/05/2024
Top Code	170100 - Mathematics, General
Units	6 Total Units
Hours	108 Total Hours (Lecture Hours 108)
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)
Local General Education (GE)	• Area 2 Mathematics (GB2)
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 G160S. 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. 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. Enrollment Limitation: STAT C1000/ECON G160/PSYC G140/SOC G125; students who complete STAT C1000E may not enroll in or receive credit for STAT C1000, ECON G160, PSYC G140, or SOC G125. Transfer Credit: CSU; UC: Credit Limitation: ECON G160, STAT C1000, STAT C1000E, MATH G160, MATH G160S, PSYC G140, and SOC G125 combined: maximum credit, 1 course. C-ID: MATH 110. **Common Course Number:** STAT C1000E.**C-ID:** MATH 110.

Course Level Student Learning Outcome(s)

1. Course Outcomes
2. Summarize data through the use of graphs, calculate measures of central tendency and dispersion, and describe the distribution.
3. Compute the probability of an event involving a normally distributed random variable.
4. Compute probabilities using probability rules, counting techniques, and probability distributions, including sampling distributions.

Course Objectives

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

Lecture Content

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 Error types and power in hypothesis tests Concepts Type 1 error and power Residual analysis and outliers in regressions Skills for Success Learning Skills Study skills Test-taking skills Operations of Real and Complex Numbers Arithmetic Simplifying Rounding Scientific notation Summation notation Sets and intervals Ratios and Proportions Ratios as fractions Decimals and fractions as percents Solving problems using proportions Linear Equations Interpret the slope Interpret the vertical intercept Solving Word Problems Identifying questions Identifying formula/equation Interpreting results

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)

Reading Assignments

Textbook. Websites. Statistical study from a current journal.

Writing Assignments

Complete written solutions to homework, quiz, and test problems. Written reports and/or projects.

Out-of-class Assignments

Individual and/or group projects. Calculator and/or computer assignments.

Demonstration of Critical Thinking

Students will demonstrate critical thinking and problem-solving skills by using logic, in conjunction with past mathematical solving techniques, to solve and interpret a variety of applications not previously seen. Such as determining whether there is evidence to reject the null hypothesis with p-values hypothesis testing. Demonstrations will be shown by completing assignments, participating in discussions, and completing required assessments.

Required Writing, Problem Solving, Skills Demonstration

Complete written solutions to homework, quiz, and test problems. Written reports and/or projects. Demonstrate use of calculator and/or computer in analyzing and comparing data.

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, 2024 2. Required Peck, R., Case, C. Statistics: Learning From Data, 3rd ed. Cengage, 2024 3. Required Gould, R., Wong, R., Ryan, C. Introductory Statistics: Exploring the World Through Data, 4th ed. Pearson, 2025 4. Required Illowsky, B., Dean, S. Introductory Statistics, 2nd ed. OpenStax (OER), 2023 5. Required Charles A. Introductory Statistics: Analyzing Data with Purpose, The Dana Center Mathematics Pathways, ed. Dana Center, University of Texas at Austin (OER), 2021

Other Resources

1. TI-83/83+/84/84 Graphing calculator