Course Acronym:	STAT
Course Number:	C1000
Descriptive Title:	Introduction to Statistics
Division:	Mathematical Sciences
Department:	Mathematics
Course Disciplines:	Mathematics
Catalog 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.
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.
Co-requisite:	
Recommended Preparation:	
Enrollment Limitation:	
Hours Lecture (per week):	4
Hours Laboratory (per week):	0
Outside Study Hours:	8
Total Course Hours:	72
Course Units:	4
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	Prior to July 1992
Transfer UC:	Yes
Effective Date:	
General Education: ECC	Area 4B - Language and Rationality: Communication and Analytical Thinking, Area 6 - Mathematics Competency
Term:	
Other:	

CSU GE:	Area B4 - Physical Universe and its Life Forms: Mathematics/Quantitative Reasoning
Term:	
Other:	
IGETC:	Area 2A - Mathematical Concepts and Quantitative Reasoning
Term:	
Other:	
Student Learning Outcomes:	**SLO #1 Computing and Interpreting Various Measures** From data or bivariate data, compute statistics and develop displays of the data that illustrate the measures of central tendency, variation, relative position, and correlation. Interpret the displays in context. **SLO #2 Probability** Compute probability of an event by applying the basic assumption in classical probability and using addition rule and multiplication rule for contingency tables. **SLO #3 Central Limit Theorem** Use the Central Limit Theorem to compute probabilities concerning the distribution of the sample means and comparing these to the probabilities of the related random variable. **SLO #4 Confidence Intervals and Hypothesis Testing** Compute the confidence intervals and conduct hypothesis testing for a variety of parameters, and perform non-parametric hypothesis testing.
Course Objectives:	At the conclusion of this course, the student should be able to: 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.
Major Topics:	1. Introduction to statistical thinking and processes 2. Technology-based statistical analysis 3. 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 4. Units (subjects/cases) and variables in a data set, including multivariable data sets 5. Categorical and quantitative variables 6. Sampling methods, concerns, and limitations, including bias and random variability 7. Observational studies and experiments 8. Data summaries, visualizations, and descriptive statistics 9. Probability concepts 10. Probability distributions (e.g.,binomial,normal) 11. Sampling distributions and the Central Limit Theorem 12. Estimation and confidence intervals 13. Hypothesis testing, including t-tests for one and two populations, Chi-squared test(s), and ANOVA; and interpretations of results 14. Regression, including correlation and linear regression equations
Total Lecture Hours:	72
Total Laboratory Hours:	0
Total Hours:	72
Primary Method of Evaluation:	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: Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	A random sample of 49 shoppers showed that they spent an average of $23.45 per visit at a grocery store. The standard deviation of the sample was $2.80. Decide what type of

	confidence interval is appropriate to estimate the true mean and justify your choice. Then find a 90% confidence interval estimate of the true mean.
Critical Thinking Assignment 1:	A researcher claims that students in a private school have an IQ that is 8 points higher than that of students in public schools. Random samples of 60 students from each type of school are selected and given an IQ exam. The results are shown below. Justify why performing a test comparing the two population means is appropriate. Set up the null and alternate hypotheses. At a significance level of 0.05, test the claim and interpret the results in the context of the problem. Private Schools x = 110 s = 15 n = 60 Public Schools x =104 s = 18 n = 120
Critical Thinking Assignment 2:	In a sampling of 200 surgeons, 15% felt that the government should control health care. In a sample of 200 dentists, 21% felt this way. At a significance level of 0.10, decide if there is a difference in the proportions. Explain and justify what test you used and explain how probability played a role in your conclusion.
Other Evaluation Methods:	Homework Problems, Laboratory Reports, Other Exams, Quizzes, Written Homework
Instructional Methods:	Discussion, Lecture
If other:	Computer assignments using statistical software
Work Outside of Class:	Answer questions, Problem solving activity, Required reading, Study
If Other:	
Up-To-Date Representative Texts:	• Introduction to Modern Statistics 2e, Çetinkaya-Runde, M., Hardin, J., OpenIntro, 2024 ($0- 25): https://www.openintro.org/book/ims/ • Statistics: Learning From Data 3e, Peck, R., Case, C., Cengage, 2024 ($57-250): https://www.cengage.com/c/new-edition/9780357758298/ • Introductory Statistics: Exploring the World Through Data 4e, Gould, R., Wong, R., Ryan, C., Pearson, 2025 ($65-80): https://www.pearson.com/en-us/subject-catalog/p/introductory- statistics/P200000011641/9780138242145 • Introductory Statistics 2e, Illowsky, B., Dean, S., OpenStax, 2023 ($0): 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 ($0): https://www.utdanacenter.org/products/introductory-statistics
Alternative Texts:	Statistics, Informed Decisions Using Data 6th Edition, Michael Sullivan III, Pearson, 2021

	Elementary Statistics, Third California Edition, Triola, Pearson, 2017.
Required Supplementary Readings:	
Other Required Materials:	Graphing calculator with statistical analysis capabilities
Requisite:	Prerequisite
Category:	sequential
Requisite course(s): List both prerequisites and corequisites in this box.	
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	**Solve algebraic equations.** **Graph linear functions.** **Perform numerical calculations involving powers and roots.**
Requisite Skill:	qualification by testing (El Camino College Mathematics Placement Test) and assessment
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	H. Jones, R. Maier, H. Pickett
Date:	02/01/1956

Original Board Approval Date:	
Last Reviewed and/or Revised by:	Benjamin Mitchell
Date:	10/18/2024
Last Board Approval Date:	11/18/2024
Effective Term:	FA 2025