Course Acronym:	STAT
Course Number:	C1000H
Descriptive Title:	Introduction to Statistics - Honors
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. This is an honors course.
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:	2/21/2017
Transfer UC:	Yes
Effective Date:	
General Education: ECC	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 college statistics class conducted a survey of how students spend their money. They asked 25 students to estimate how much money they typically spend each week on fast food. They determined that the mean amount spent on fast food is $31.52 with a standard deviation of $21.60. Later they realized that a value entered as $3 should have been $30. They recalculate the mean and standard deviation. The mean is now $32.60. Write a one-page description of how the standard deviation is affected by the entry error. The description should include: (1) the purpose of calculating the standard deviation; (2) calculations which illustrate the effect of the entry error on the standard deviation; (3) calculations which illustrate how the error should be corrected, and (4) graphs to illustrate the correct standard deviation vs. the standard deviation resulting from the entry error.
Critical Thinking Assignment 1:	The drug Prevnar is a vaccine meant to prevent certain types of bacterial meningitis. It is typically administered to infants starting around 2 months of age. In randomized double-blind clinical trials of Prevnar, infants were randomly divided into two groups. Subjects in group 1 received Prevnar, while subjects in group 2 received a control vaccine. After the second dose, 137 of 452 subjects in the experimental group (group 1) experienced drowsiness as a side effect. After the second dose, 31 of 99 subjects in the control group (group 2) experienced drowsiness as a side effect. Does the evidence suggest that a lower proportion of subjects in group 1 experienced drowsiness as a side effect than subjects in group 2? Write a well-organized paper (1-2 pages) detailing the steps taken to solve this problem. Include calculations and an explanation of the findings from this study.
Critical Thinking Assignment 2:	Complete a project by collecting, analyzing, interpreting, and graphing statistical data using a graphing calculator or a software package such as Excel, Minitab, SPSS, SAS, etc. The project can be a semester-long project consisting of 5 - 7 pages typed or consisting of up to three smaller projects, each of which requires two typed pages (totaling 5 - 7 pages).
Other Evaluation Methods:	Homework Problems, Multiple Choice, Objective Exam, Presentation, Quizzes, True/False, Written Homework
Instructional Methods:	Discussion, Group Activities, Lecture, Role play/simulation
If other:	
Work Outside of Class:	Answer questions, Observation of or participation in an activity related to course content (such as theatre event, museum, concert, debate, meeting), Problem solving activity, Required reading, Skill practice, Study, Written work (such as essay/composition/report/analysis/research)
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:	
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).	
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:	Ambkia Silva
Date:	09/01/2016

Original Board Approval Date:	02/21/2017
Last Reviewed and/or Revised by:	Benjamin Mitchell
Date:	09/23/2024
Last Board Approval Date:	11/18/2024
Effective Term:	FA 2025