

STAT C1000 Course Outline as of Fall 2025**CATALOG INFORMATION**

Dept and Nbr: STAT C1000 Title: STATISTICS

Full Title: Introduction to Statistics

Last Reviewed: 10/28/2024

Units	Course Hours per Week		Nbr of Weeks		Course Hours Total	
Maximum	4.00	Lecture Scheduled	4.00	17.5	Lecture Scheduled	70.00
Minimum	4.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	4.00		Contact Total	70.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 140.00

Total Student Learning Hours: 210.00

Title 5 Category: AA Degree Applicable

Grading: Grade or P/NP

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly: MATH 15

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.

Additionally at SRJC, students who have not passed intermediate algebra or Math 3 in high school are required to take Math 215 concurrently with this course. Students with a high school GPA below 2.7 are recommended to take Math 215 concurrently with this course.

Prerequisites/Corequisites:

Prerequisites (Identical): Placement as determined by the college's [assessment](https://assessment.santarosa.edu/math-placement-calculations) process or completion of a course taught at or above the level of intermediate algebra.

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:

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.

Additionally at SRJC, students who have not passed intermediate algebra or Math 3 in high school are required to take Math 215 concurrently with this course. Students with a high school GPA below 2.7 are recommended to take Math 215 concurrently with this course. (Grade or P/NP)

Prerequisites/Corequisites: Prerequisites (Identical): Placement as determined by the college's [multiple measures assessment](https://assessment.santarosa.edu/math-placement-calculations) process or completion of a course taught at or above the level of intermediate algebra.

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;UC.

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area		Effective:	Inactive:
	B	Communication and Analytical Thinking	Fall 1989	
CSU GE:	MC	Math Competency	Fall 1981	
	Transfer Area		Effective:	Inactive:
	B4	Math/Quantitative Reasoning	Fall 1990	
IGETC:	Transfer Area		Effective:	Inactive:
	2A	Mathematical Concepts & Quantitative Reasoning	Fall 1993	
CSU Transfer:	Transferable	Effective:	Fall 1989	Inactive:
UC Transfer:	Transferable	Effective:	Fall 1989	Inactive:
CID:				
CID Descriptor:	MATH 110	Introduction to Statistics		
SRJC Equivalent Course(s):		STATC1000 OR PSYC9		

Certificate/Major Applicable:

Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:

At the conclusion of this course, the student should be able to:

1. Use numerical and graphical methods to summarize, display, and interpret data sets.
2. Estimate population parameters from sample statistics.
3. Perform one and two sample hypothesis tests for population means and proportions.

Objectives:

Statewide Required Objectives/Outcomes:

At the conclusion of this course, the student should be able:

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.

Expanded and Additional Local Objectives/Outcomes:

At the conclusion of this course, the student should be able to:

1. Create and use graphic displays of data and frequency distributions.
2. Distinguish among different scales of measurement and their implications.
3. Define mean, median, mode, percentiles, variability and standard deviation, and compute each for sets of data.
4. Apply concepts of sample space and probability distributions, including calculation of the mean and variance of a discrete distribution, and calculation of probabilities using normal and t distributions.
5. Distinguish between sample and population distributions and apply the Central Limit Theorem to calculate sampling distributions of means, proportions and standard error.
6. Compute and interpret confidence intervals and required sample size.
7. Identify the basic concept of hypothesis testing including Type I and II errors.
8. Select the appropriate technique for testing a hypothesis and interpret the result.
9. Perform hypothesis testing for mean, proportion, and variance.
10. Determine and interpret levels of statistical significance including p-values.
11. Implement goodness of fit test, and the test for independence.
12. Use linear regression and Analysis of Variance (ANOVA) for estimation and inference, and interpret the associated statistics.
13. Process data sets from multiple disciplines.

Topics and Scope:

Statewide Required 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

Expanded and Additional Local Topics:

I. Use of Statistical Software

- A. Analysis and evaluation of data
- B. Methods of simulations

II. Applications Using Data Sets from Disciplines, such as:

- A. Business
- B. Social sciences
- C. Behavioral sciences
- D. Life sciences
- E. Health sciences
- F. Education
- G. Administration of justice
- H. Economics
- I. Information technology
- J. Physical science
- K. Political science
- L. Psychology
- M. Social justice
- N. Sustainability

III. Statistical Description

- A. Graphic display of univariate and bivariate data
- B. Levels of measurement
- C. Frequency distributions
 1. Shapes of distributions
 2. Empirical rule
- D. Measures of central tendency
- E. Measures of variation
- F. Measures of relative position
- G. Correlation

IV. Probability Theory

- A. Sample space and laws of probability
- B. Random variables and expected value
- C. Probability distributions including, but not limited to:
 1. Binomial
 2. Normal
 3. Student
 4. Chi squared

V. Statistical Inference

- A. Sampling methods and experimental design
- B. Sampling distributions of means and proportions

- C. Standard error
- D. Central Limit Theorem
- E. Estimation and confidence intervals
- F. Hypothesis testing
 - 1. Tests of proportions and means, including t-tests for one and two populations
 - 2. Chi square tests: goodness of fit and independence
 - 3. P-values, significance, Type I error, and Type II error
- G. Required sample size
- H. Correlation and linear regression
- I. Introduction to ANOVA

Assignment:

- 1. Reading outside of class (0-50 pages per week)
- 2. Problem set assignments from required text(s) or supplementary materials chosen by the instructor (8-16)
- 3. Exams (2-4) and a final exam; quiz(zes) (0-20)
- 4. Project(s), e.g. computer activities, surveys or data collection and analyses (0-2)

Statewide Require Methods of Evaluation:

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.

Expanded and Additional Local Methods of Evaluation: See table below.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.	Writing 0 - 0%
---	-------------------

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Problem sets assignments or supplementary materials	Problem solving 10 - 30%
---	-----------------------------

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%
------	--------------------------------

Exams: All forms of formal testing, other than skill performance exams.

Exams, final exam, quiz(zes),

Exams
70 - 80%

Other: Includes any assessment tools that do not logically fit into the above categories.

Project(s)

Other Category
0 - 10%

Representative Textbooks and Materials:

Statewide Representative Textbooks:

- 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/introductorystatistics/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>

Additional Local Representative Textbooks:

Elementary Statistics: Picturing the World. 8th ed. Larson, Ron and Farber, Betsy. Pearson. 2023.

Elementary Statistics. 14th ed. Triola, Mario. Pearson. 2022.

Elementary Statistics, A Step by Step Approach. 11th ed. Bluman, Allan. McGraw-Hill. 2022.

Modern Elementary Statistics. 12th ed. Freund, John and Perles, Benjamin. Pearson. 2007. (classic).

Statistics: Unlocking the Power of Data. 3rd ed. Lock, Robin et al. Wiley, 2020.

Statistics: Informed Decisions Using Data. 6th ed. Sullivan, Mike. Pearson. 2021.

Any textbook prices listed above are subject to change