

AP Statistics (Quantitative)

This course covers the topics shown below.

Students navigate learning paths based on their level of readiness.

Institutional users may customize the scope and sequence to meet curricular needs.

Curriculum (123 topics + 5 additional topics)

- Mathematical Readiness (19 topics)
 - ◆ Arithmetic Readiness (10 topics)
 - ◇ Order of operations with whole numbers
 - ◇ Order of operations with whole numbers and grouping symbols
 - ◇ Decimal place value: Hundreds to ten thousandths
 - ◇ Rounding decimals
 - ◇ Converting between percentages and decimals
 - ◇ Finding a percentage of a whole number without a calculator: Basic
 - ◇ Writing a ratio as a percentage without a calculator
 - ◇ Converting a percentage to a fraction in simplest form
 - ◇ Converting a fraction to a percentage: Denominator of 20, 25, or 50
 - ◇ Summation of indexed data
 - ◆ Algebra Readiness (9 topics)
 - ◇ Solving a two–step equation with integers
 - ◇ Solving a linear equation with several occurrences of the variable: Variables on the same side and distribution
 - ◇ Solving a linear equation with several occurrences of the variable: Variables on both sides and distribution
 - ◇ Y–intercept of a line
 - ◇ X– and y–intercepts of a line given the equation in standard form
 - ◇ Writing an equation of a line given the y–intercept and another point
 - ◇ Graphing a line given its x– and y–intercepts
 - ◇ Graphing a line given its equation in slope–intercept form
 - ◇ Graphing a line through a given point with a given slope
- Descriptive Statistics (24 topics)
 - ◆ Graphical Displays (12 topics)
 - ◇ Interpreting pie charts
 - ◇ Computations from pie charts
 - ◇ Double bar charts
 - ◇ Histograms for grouped data
 - ◇ Frequency polygons for grouped data
 - ◇ Interpreting relative frequency histograms
 - ◇ Cumulative distributions and ogives
 - ◇ Comparing means without calculation
 - ◇ Comparing standard deviations without calculation
 - ◇ Box–and–whisker plots
 - ◇ Interpreting a stem–and–leaf display
 - ◇ Using back–to–back stem–and–leaf displays to compare data sets
 - ◆ Descriptive Measures (12 topics)

- ◇ Mean, median, and mode: Computations
- ◇ Rejecting unreasonable claims based on average statistics
- ◇ Weighted mean: Tabular data
- ◇ Estimating the mean of grouped data
- ◇ Percentiles
- ◇ Population standard deviation
- ◇ Sample standard deviation
- ◇ Estimating the standard deviation of grouped data
- ◇ Chebyshev's theorem and the empirical rule
- ◇ Mean, median, and mode: Comparisons
- ◇ Transforming the mean and standard deviation of a data set
- ◇ Making reasonable inferences based on proportion statistics
- Probability (24 topics)
 - ◆ Counting (4 topics)
 - ◇ Factorial expressions
 - ◇ Combinations
 - ◇ Probabilities of draws with replacement
 - ◇ Probabilities of draws without replacement
 - ◆ Events and Probability (11 topics)
 - ◇ Venn diagrams: Two events
 - ◇ Venn diagrams: Word problems
 - ◇ Outcomes and event probability
 - ◇ Die rolling
 - ◇ Probability of intersection or union: Word problems
 - ◇ Independent events: Basic
 - ◇ Probability of union: Basic
 - ◇ Mutually exclusive events: Two events
 - ◇ Probability of independent events
 - ◇ Independent events: Two events
 - ◇ The curious die
 - ◆ Conditional Probability (9 topics)
 - ◇ Calculating relative frequencies in a contingency table
 - ◇ Conditional probability: Basic
 - ◇ Probability of dependent events
 - ◇ Intersection and conditional probability
 - ◇ Conditional probability: Mutually exclusive events
 - ◇ Conditional probability: Independent events
 - ◇ Tree diagrams for conditional probabilities
 - ◇ Law of total probabilities
 - ◇ Bayes' theorem
- Random Variables (11 topics)
 - ◆ One Random Variable (7 topics)
 - ◇ Classification of variables and levels of measurement
 - ◇ Discrete versus continuous variables
 - ◇ Discrete probability distribution: Basic
 - ◇ Discrete probability distribution: Word problems
 - ◇ Cumulative distribution function
 - ◇ Expectation and variance of a random variable
 - ◇ Rules for expectation and variance of random variables
 - ◆ Two Random Variables (4 topics)
 - ◇ Marginal distributions of two discrete random variables
 - ◇ Joint distributions of dependent or independent random variables
 - ◇ Probabilities of two random variables given their joint distribution

- ◇ Conditional probabilities of two random variables given their joint distribution
- Distributions (16 topics)
 - ◆ Fundamental Distributions (13 topics)
 - ◇ Binomial problems: Mean and standard deviation
 - ◇ Binomial problems: Basic
 - ◇ Binomial problems: Advanced
 - ◇ Standard normal probabilities
 - ◇ Standard normal values: Basic
 - ◇ Standard normal values: Advanced
 - ◇ Normal versus standard normal density curves
 - ◇ Normal distribution raw scores
 - ◇ Mean and deviation of a normal distribution
 - ◇ Normal distribution: Word problems
 - ◇ t distribution
 - ◇ Chi-square distribution
 - ◇ Normal approximation to binomial
 - ◆ Central Limit Theorem (3 topics)
 - ◇ Central limit theorem: Sample mean
 - ◇ Central limit theorem: Sample sum
 - ◇ Central limit theorem: Sample proportion
- Inferential Statistics (22 topics)
 - ◆ Confidence Intervals and Estimation (8 topics)
 - ◇ Selecting a distribution for inferences on the population mean
 - ◇ Confidence interval for the population mean: Use of the standard normal
 - ◇ Choosing an appropriate sample size
 - ◇ Confidence interval for the population mean: Use of the t distribution
 - ◇ Confidence interval for a population proportion
 - ◇ Confidence interval for the difference of population means: Use of the standard normal
 - ◇ Confidence interval for the difference of population means: Use of the t distribution
 - ◇ Confidence interval for the difference of population proportions
 - ◆ Hypothesis Tests (11 topics)
 - ◇ Determining null and alternative hypotheses
 - ◇ Type I and Type II errors
 - ◇ Type I and Type II errors and power
 - ◇ Effect size, sample size, and power
 - ◇ Hypothesis test for the population mean: Z test
 - ◇ Hypothesis test for the population mean: t test
 - ◇ Hypothesis test for a population proportion
 - ◇ Hypothesis test for the difference of population means: Z test
 - ◇ Hypothesis test for the difference of population means: Paired comparisons
 - ◇ Hypothesis test for the difference of population means: t test
 - ◇ Hypothesis test for the difference of population proportions
 - ◆ Chi-square Tests (3 topics)
 - ◇ Contingency tables: Expected frequencies
 - ◇ Chi-square goodness-of-fit test
 - ◇ Chi-square test of independence
- Regression and Correlation (7 topics)
 - ◆ Introduction to Regression and Correlation (5 topics)
 - ◇ Sketching the least-squares regression line
 - ◇ Linear relationship and the sample correlation coefficient
 - ◇ Predictions from the least-squares regression line
 - ◇ Computing the sample correlation coefficient and the coefficients for the least-squares regression line

- ◇ Explained and unexplained variation and the least-squares regression line
- ◆ Inference for Regression and Correlation (2 topics)
 - ◇ Confidence intervals and prediction intervals from simple linear regression
 - ◇ Hypothesis tests for the correlation coefficient and the slope of the least-squares regression line

- Other Topics Available(*) (5 additional topics)
 - ◆ Probability (5 topics)
 - ◇ Permutations
 - ◇ Permutations, combinations, and the multiplication principle for counting
 - ◇ Venn diagrams: Three events
 - ◇ Mutually exclusive events: Three events
 - ◇ Independent events: Three events

Other Topics Available *By default, these topics are NOT included in the course, but can be added using the content editor in the Teacher Module.*