

What's New in the Fall 2019 AP Statistics Course and Exam Description (CED)

Course Framework (CF) that describes the content and skills students should master in AP Statistics

- Content
 - Organized into 9 Units with varying numbers of Topics per Unit
 - Understanding by Design (UBD) structure of CF includes Big Ideas, Enduring Understandings, Learning Objectives, and Essential Knowledge statements
- Course Skills Categories
 1. *Selecting Statistical Methods* Select methods for collecting and/or analyzing data for statistical inference.
 2. *Data Analysis* Describe patterns, trends, associations, and relationships in data.
 3. *Using Probability and Simulation* Explore random phenomena.
 4. *Statistical Argumentation* Develop an explanation or justify a conclusion using evidence from data, definitions, or statistical inference.

Content changes/clarifications from previous AP Statistics Topic Outline to Course Framework

Unit 1 Exploring One-Variable Data

- Key terms to include:
 - discrete vs. continuous quantitative variables
 - descriptive statistics vs. inferential statistics
 - statistic vs. parameter
 - unimodal, bimodal, approximately uniform
 - variance vs. standard deviation
 - percentile (less than *or equal to*)
 - empirical rule (68–95–99.7 rule)

Unit 2 Exploring Two-Variable Data

- Mosaic plots **added**
- Simplified formula for regression line: $\hat{y} = a + bx$
- Unusual points in bivariate quantitative data sets **modified**: outlier, influential, high leverage
- Key terms to include:
 - univariate, bivariate

Unit 3 Collecting Data

- Systematic random sampling **added**
- Prospective vs. retrospective observational studies **added**
- Key terms to include:
 - homogeneous vs. heterogeneous

Unit 4 Probability, Random Variables, and Probability Distributions

- Geometric random variable: probability distribution, including mean and *variance* (**added**)
- Key terms to include:
 - random process, trial
 - empirical probability
 - disjoint (mutually exclusive)
 - joint probability
 - probability distribution vs. population distribution; parameter
 - cumulative probability distribution
 - linear transformation vs. linear combination
 - 10% condition and independent observations

Unit 5 Sampling Distributions

- Includes sampling distributions for a difference between two proportions and two means
- Key terms to include:
 - point estimator
 - randomization distribution
 - 10% condition and SD of sampling distribution
 - independent observations vs. independent samples

Unit 6 Inference for Categorical Data: Proportions

- Confidence interval: Interval estimate of plausible values for a parameter *based on sample data*
- Confidence level = capture rate *when conditions met*
- Underlying purpose of checking conditions for inference procedures **modified**
 - Conditions for inference about a proportion/mean
 - (1) Observations in sample are independent (Random, 10%)
 - (2) Sampling distribution is approximately Normal (Large Counts vs. Normal/Large Sample)
- confidence interval: statistic \pm (critical value)(standard error of statistic)
- Margin of error proportional to $1/\sqrt{n}$
- Using CI for proportion to get CI for other parameters—see 2017 Exam, Question 2
- Standardized test statistic = $\frac{\text{statistic} - \text{parameter}}{\text{standard error of statistic}}$
- P -value = probability of getting evidence for H_a as strong or stronger than the observed evidence when H_0 is true...*Assuming probability model is true (conditions met)*
- How to check Large Counts condition when performing a test of $H_0 : p_1 - p_2 = 0$ **modified**; students should use the pooled (combined) proportion of successes \hat{p}_C
- Randomization distribution of difference in proportions/means in experiments modeled by sampling distribution if conditions met

Unit 7 Inference for Quantitative Data: Means

- Determining sample size needed to achieve a specified margin of error when estimating a population mean **deleted??**
- Use df from technology for two-sample t procedures

Unit 8 Inference for Categorical Data: Chi-square

- Chi-square statistic measures how far observed counts are from expected counts, *relative to expected counts*.
- Emphasize P -value interpretation

Unit 9 Inference for Quantitative Data: Slopes

- Sample (estimated) regression line: $\hat{y} = a + bx$
- Population (true) regression line: $\mu_Y = \alpha + \beta x$
- Normal condition: At each x value, the distribution of y values is approximately Normal OR $n \geq 30$
- Inference about slope of the regression model in the special case when the y -intercept is 0: $df = n - 1$.

New Formula sheet

New Resources and Supports

- Personal Progress Checks (PPCs)
 - Prebuilt PPCs for each Unit
 - Additional PPC items by Topic/Skill pairing in Question Bank
- Progress Dashboard
- AP Question Bank