AP Statistics Comprehensive Curriculum Guide 2025-2026

Revised Course Framework Implementation

School: Doral Academy
Teacher: Mrs. Zogovic

This curriculum aligns with the **2025 College Board AP Statistics Revised Course Framework**, implementing the new unit structure and statistical practices while maintaining comprehensive resource integration.

AP STATISTICS STATISTICAL PRACTICES FRAMEWORK

The 2025 framework emphasizes four core Statistical Practices that are integrated throughout all units:

Practice 1: Formulate Questions

Determine an investigative question for a statistical study.

- 1.A: Determine a valid investigative question that requires a statistical investigation

Practice 2: Collect Data

Identify and justify methods for collecting data and conducting statistical inference.

- 2.A: Identify information to answer a question or solve a problem
- 2.B: Justify an appropriate method for ethically gathering and representing data
- 2.C: Identify appropriate statistical inference methods
- 2.D: Identify types of errors and relationships among components in statistical inference methods
- 2.E: Identify the null and alternative hypotheses

Practice 3: Analyze Data

Construct representations of data and calculate numerical statistical outputs.

- 3.A: Construct tabular and graphical representations of data and distributions
- 3.B: Calculate summary statistics, relative positions of points within a distribution, and predicted responses
- 3.C: Calculate and estimate expected counts, percentages, probabilities, and intervals
- 3.D: Calculate means, standard deviations, and parameters for probability distributions
- 3.E: Calculate appropriate statistical inference method results

Practice 4: Interpret Results

Interpret results and justify conclusions and methods.

- 4.A: Describe and compare tabular and graphical representations of data
- 4.B: Justify a claim based on statistical calculations and results
- 4.C: Describe distributions and compare relative positions of points within a distribution
- 4.D: Interpret statistical calculations and results to assess meaning or a claim
- 4.E: Justify the use of a chosen statistical inference method by verifying conditions
- 4.F: Interpret results of statistical inference methods
- 4.G: Justify a claim based on statistical inference method results

COURSE UNITS ALIGNED TO 2025 FRAMEWORK

Unit 1: Exploring One-Variable Data and Collecting Data

Weeks 1-9 (Aug 14 - Oct 17)

Topics Covered:

- 1.1: Introducing Statistics: What Can We Learn from Data?
- 1.2: Variables
- 1.3: Tabular Representation and Summary Statistics for One Categorical Variable
- 1.4: Graphical Representations for One Categorical Variable
- 1.5: Graphical Representations for One Quantitative Variable
- 1.6: Descriptions for One Quantitative Variable Distributions
- 1.7: Summary Statistics for One Quantitative Variable
- 1.8: Graphical Representations of Summary Statistics for One Quantitative Variable
- 1.9: Comparisons of the Distributions for One Quantitative Variable
- 1.10: The Investigative Question Revisited and Data Collection
- 1.11: Random Sampling
- 1.12: Potential Problems with Sampling
- 1.13: Experimental Design

Key Statistical Practices Integration:

- **Practice 1:** Formulating investigative questions for data collection
- **Practice 2:** Understanding sampling methods and experimental design
- **Practice 3:** Creating graphs and calculating summary statistics
- **Practice 4:** Interpreting distributions and justifying claims

Essential Resources:

- Khan Academy: Analyzing Categorical Data
- Khan Academy: Summarizing Quantitative Data
- Khan Academy: Study Design
- StatQuest: Descriptive Statistics
- MathMedic: Unit 1 Concepts

Unit 2: Probability, Random Variables, and Probability Distributions

Weeks 10-18 (Oct 20 - Jan 15)

Topics Covered:

- 2.1: Tabular and Graphical Representations for the Distributions of Two Categorical Variables
- 2.2: Summary Statistics for Two Categorical Variables
- 2.3: Estimating Probabilities Using Simulation
- 2.4: Introduction to Probability
- 2.5: Mutually Exclusive Events
- 2.6: Conditional Probability
- 2.7: Independent Events and Unions of Events
- 2.8: Introduction to Random Variables and Probability Distributions
- 2.9: Parameters of Random Variables
- 2.10: The Binomial Distribution
- 2.11: The Normal Distribution
- 2.12: Sampling Distributions and the Central Limit Theorem

Key Statistical Practices Integration:

- **Practice 1:** Formulating questions about relationships between variables
- **Practice 2:** Understanding probability models and simulation methods
- **Practice 3:** Calculating probabilities and distribution parameters
- **Practice 4:** Interpreting probability results and distribution properties

Essential Resources:

- Khan Academy: Probability
- Khan Academy: Random Variables
- Khan Academy: Sampling Distribution
- StatQuest: Probability and Distributions
- Simulation Tools: StatKey

Unit 3: Inference for Categorical Data: Proportions

Weeks 19-27 (Jan 20 - Apr 2)

Topics Covered:

- 3.1: Estimators
- 3.2: Sampling Distributions for Sample Proportions
- 3.3: Constructing a Confidence Interval for a Population Proportion
- 3.4: Justifying a Claim Based on a Confidence Interval for a Population Proportion
- 3.5: Setting Up a Test for a Population Proportion
- 3.6: p-Values
- 3.7: Carrying Out a Test for a Population Proportion
- 3.8: Potential Errors When Performing Tests
- 3.9: Sampling Distributions for the Difference Between Sample Proportions
- 3.10: Constructing a Confidence Interval for the Difference Between Two Population Proportions
- 3.11: Justifying a Claim Based on a Confidence Interval for the Difference Between Two Population Proportions
- 3.12: Setting Up a Test for the Difference Between Two Population Proportions
- 3.13: Carrying Out a Test for the Difference Between Two Population Proportions
- 3.14: Setting Up a Chi-Square Test for Homogeneity or Independence
- 3.15: Carrying Out a Chi-Square Test for Homogeneity or Independence

Key Statistical Practices Integration:

- **Practice 2:** Selecting appropriate inference methods for proportions
- **Practice 3:** Calculating confidence intervals and test statistics
- **Practice 4:** Interpreting inference results and justifying conclusions

Essential Resources:

- Khan Academy: Confidence Intervals
- Khan Academy: Significance Tests
- Khan Academy: Chi-Square Tests
- StatQuest: Hypothesis Testing

Unit 4: Inference for Quantitative Data: Means

Weeks 28-33 (Apr 6 - May 15)

Topics Covered:

- 4.1: Sampling Distributions for Sample Means
- 4.2: Constructing a Confidence Interval for a Population Mean or Population Mean Difference
- 4.3: Justifying a Claim Based on a Confidence Interval for a Population Mean or Population Mean Difference
- 4.4: Setting Up a Test for a Population Mean or Population Mean Difference
- 4.5: Carrying Out a Test for a Population Mean or Population Mean Difference
- 4.6: Sampling Distributions for the Difference Between Two Sample Means
- 4.7: Constructing a Confidence Interval for the Difference Between Two Population Means
- 4.8: Justifying a Claim Based on a Confidence Interval for the Difference Between Two Population Means
- 4.9: Setting Up a Test for the Difference Between Two Population Means
- 4.10: Carrying Out a Test for the Difference Between Two Population Means

Key Statistical Practices Integration:

- **Practice 2:** Selecting t-procedures and verifying conditions
- **Practice 3:** Calculating t-statistics and confidence intervals
- **Practice 4:** Interpreting results for means and mean differences

Essential Resources:

- Khan Academy: t-Distributions and Inference
- StatQuest: t-tests and t-distributions
- MathMedic: Inference for Means

Unit 5: Regression Analysis

Weeks 34-36 (May 18 - Jun 5)

Topics Covered:

- 5.1: Graphical Representations Between Two Quantitative Variables
- 5.2: Correlation
- 5.3: Linear Regression Models
- 5.4: Residuals
- 5.5: Least-Squares Regression

Key Statistical Practices Integration:

- **Practice 1:** Formulating questions about relationships between quantitative variables
- **Practice 3:** Constructing scatterplots and calculating regression statistics
- **Practice 4:** Interpreting correlation, regression coefficients, and residual analysis

Essential Resources:

- Khan Academy: Bivariate Data
- StatQuest: Linear Regression
- Regression Analysis Tools

DETAILED QUARTERLY BREAKDOWN WITH DATES AND HOLIDAYS

Quarter 1: Aug 14 - Oct 17

Unit 1: Exploring One-Variable Data and Collecting Data

Week	Dates	Major Concepts/Topics	Statistical Practices Focus	Holiday/Special Notes	Resources
1	Aug 14-16	**Introduction to Statistics & Variables** • Components of statistical studies • Types of variables	**Practice 1:** Formulating investigative questions	Short week - School starts	Khan Academy: What is Statistics?
2	Aug 19-23	**Categorical Data Analysis** • Frequency tables • Bar charts & pie charts	**Practice 3:** Constructing tabular/graphical representations		Khan Academy: Categorical Data
3	Aug 26-30	**Quantitative Data Graphs** • Histograms • Stem-and-leaf • Dotplots	**Practice 3:** Constructing quantitative displays		StatQuest: Data Visualization
4	Sep 2-6	**Describing Distributions** • Shape, center, variability • Outliers and unusual features	**Practice 4:** Describing and comparing distributions	**Labor Day - Sep 2**	Khan Academy: Quantitative Data
5	Sep 9-13	**Summary Statistics** • Mean, median, quartiles • Range, IQR, standard deviation	**Practice 3:** Calculating summary statistics		StatQuest: Summary Statistics
6	Sep 16-20	**Boxplots & Comparisons** • Five-number summary • Comparing distributions • z-scores	**Practice 4:** Comparing relative positions		Khan Academy: Summary Statistics
7	Sep 23-27	**Study Design Basics** • Experiments vs observational studies • Sampling methods	**Practice 2:** Justifying data collection methods	**Teacher Planning Day - Sep 25**	Khan Academy: Study Design
8	Sep 30-Oct 4	**Sampling Methods** • Simple random, stratified, cluster • Bias in sampling	**Practice 2:** Identifying appropriate sampling	**Teacher Planning Day - Oct 2**	StatQuest: Sampling Methods
9	Oct 7-11	**Experimental Design** • Control, randomization, replication • Assessment preparation	**Practice 2:** Designing experiments		Khan Academy: Experiments
10	Oct 14-17	**Unit 1 Review & Assessment**	**All Practices:** Comprehensive integration	**Quarter 1 Ends Oct 17**	Comprehensive review materials

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Quarter 2: Oct 20 - Jan 15

Unit 2: Probability, Random Variables, and Probability Distributions

Week	Dates	Major Concepts/Topics	Statistical Practices Focus	Holiday/Special Notes	Resources
11	Oct 20-24	**Two-Way Tables & Association** • Joint, marginal, conditional frequencies • Side-by-side bar charts	**Practice 3:** Calculating summary statistics for categorical data		Khan Academy: Two-Way Tables
12	Oct 27-31	**Introduction to Probability** • Sample space, events • Simulation and probability estimation	**Practice 3:** Estimating probabilities using simulation	**Halloween - Oct 31**	Khan Academy: Probability
13	Nov 3-7	**Probability Rules** • Complement, addition rule • Mutually exclusive events	**Practice 3:** Calculating probabilities	**Teacher Planning Day - Nov 5**	StatQuest: Probability Rules
14	Nov 10-14	**Conditional Probability** • Multiplication rule • Independent events	**Practice 4:** Interpreting conditional probability	**Veterans Day - Nov 11**	StatQuest: Bayes' Theorem
15	Nov 17-21	**Random Variables** • Discrete probability distributions • Expected value and variance	**Practice 3:** Calculating distribution parameters		Khan Academy: Random Variables
16	Nov 24-28	**Binomial Distribution** • Binomial conditions • Binomial probability calculations	**Practice 4:** Interpreting binomial results	**Thanksgiving Break**	StatQuest: Binomial Distribution
17	Dec 1-5	**Normal Distribution** • Empirical rule • Normal probability calculations	**Practice 3:** Calculating normal probabilities		StatQuest: Normal Distribution
18	Dec 8-12	**Sampling Distributions** • Central Limit Theorem • Sample means and proportions	**Practice 4:** Interpreting sampling distributions	**Early Release Day - Dec 10**	Khan Academy: Sampling Distributions
19	Dec 15-19	**Semester Review & Final Exam**	**All Practices:** Comprehensive assessment	**Final Exams Week**	Comprehensive review materials
Winter Break	Dec 22-Jan 6	**Winter Break**		**No School**	
20	Jan 7-10	**Unit 2 Review & Assessment**	**All Practices:** Integration and application		Unit 2 assessment materials
21	Jan 13-15	**Transition to Inference** • Review of key concepts • Introduction to confidence intervals	**All Practices:** Bridge to Unit 3	**Quarter 2 Ends Jan 15**	Transition materials

Quarter 3: Jan 20 - Apr 2

Unit 3: Inference for Categorical Data: Proportions

Week	Dates	Major Concepts/Topics	Statistical Practices Focus	Holiday/Special Notes	Resources
22	Jan 20-24	**Estimators & Sampling Distributions** • Unbiased estimators • Sample proportion distributions	**Practice 2:** Understanding sampling variability	**MLK Day - Jan 20**	Khan Academy: Estimators
23	Jan 27-31	**Confidence Intervals for Proportions** • One-sample z-interval • Margin of error and sample size	**Practice 2:** Selecting appropriate CI procedures		Khan Academy: Confidence Intervals
24	Feb 3-7	**Interpreting Confidence Intervals** • CI interpretation • Justifying claims with CIs	**Practice 4:** Interpreting CI results		StatQuest: Confidence Intervals
25	Feb 10-14	**Hypothesis Tests for Proportions** • Setting up tests • p-values and significance	**Practice 2:** Setting up hypothesis tests	**Early Release Day - Feb 11**	Khan Academy: Significance Tests
26	Feb 17-21	**Carrying Out Proportion Tests** • Test statistics • Type I and II errors	**Practice 4:** Interpreting p-values and conclusions	**Presidents Day - Feb 17**	StatQuest: Hypothesis Testing
27	Feb 24-28	**Two-Sample Proportion Inference** • Difference in proportions • Confidence intervals and tests	**Practice 3:** Calculating two-sample statistics		Khan Academy: Two-Sample Inference
28	Mar 3-7	**Chi-Square Tests** • Goodness of fit • Test for independence/homogeneity	**Practice 4:** Justifying chi-square conclusions		Khan Academy: Chi-Square
29	Mar 10-14	**Chi-Square Applications** • Expected counts • Interpreting chi-square results	**Practice 3:** Calculating chi-square statistics	**Teacher Planning Day - Mar 12**	StatQuest: Chi-Square Tests
30	Mar 17-21	**Unit 3 Review** • Comprehensive proportion inference review	**All Practices:** Integration of proportion methods		Unit 3 review materials
Spring Break	Mar 24-28	**Spring Break**		**No School**	
31	Mar 31-Apr 2	**Unit 3 Assessment & Transition**	**All Practices:** Assessment and bridge to means	**Quarter 3 Ends Apr 2**	Assessment materials

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Quarter 4: Apr 6 - Jun 5

Units 4 & 5: Inference for Means & Regression

Week	Dates	Major Concepts/Topics	Statistical Practices Focus	Holiday/Special Notes	Resources
32	Apr 6-10	**t-Distributions & One-Sample t-Procedures** • t-distribution properties • Confidence intervals for means	**Practice 2:** Selecting t-procedures	**Spring Break continues through Apr 8**	Khan Academy: t-Procedures
33	Apr 13-17	**Hypothesis Tests for Means** • One-sample t-tests • Matched pairs design	**Practice 4:** Interpreting t-test results	**Early Release Day - Apr 15**	StatQuest: t-tests
34	Apr 20-24	**Two-Sample t-Procedures** • Independent samples • Confidence intervals for difference in means	**Practice 3:** Calculating two-sample t-statistics		Khan Academy: Two-Sample t
35	Apr 27-May 1	**Two-Sample t-Tests** • Hypothesis tests for difference in means • Comprehensive inference review	**Practice 4:** Justifying conclusions about means		StatQuest: Two-Sample Tests
36	May 4-8	**AP Exam Preparation** • Practice exams • Test-taking strategies	**All Practices:** Comprehensive AP preparation	**AP Exam Prep Week**	AP Central: Practice Materials
37	May 11-15	**Final AP Review & Mock Exam** • Last-minute review • Mock AP exam	**All Practices:** Final preparation	**AP Exam Week**	Khan Academy: AP Review
38	May 18-22	**Regression Analysis** • Scatterplots and correlation • Linear regression models	**Practice 3:** Regression calculations	**AP Statistics Exam (TBD)**	Khan Academy: Regression
39	May 25-29	**Residuals & Regression Applications** • Residual analysis • Least-squares regression	**Practice 4:** Interpreting regression results	**Memorial Day - May 26**	StatQuest: Linear Regression
40	Jun 2-5	**Final Projects & Course Wrap-up** • Statistical investigations • Course reflection	**All Practices:** Comprehensive application	**Early Release Days Jun 2-4 Quarter 4 Ends Jun 5**	Student choice projects

ASSESSMENT STRATEGY ALIGNED TO STATISTICAL PRACTICES

Statistical Practice Assessment Rubrics:

Practice 1: Formulate Questions

- Exemplary: Formulates clear, testable investigative questions
- Proficient: Formulates appropriate investigative questions with minor issues
- Developing: Formulates basic investigative questions
- Beginning: Unable to formulate appropriate investigative questions

Practice 2: Collect Data

- Exemplary: Correctly identifies and justifies all data collection methods
- Proficient: Identifies appropriate methods with minor justification issues
- Developing: Identifies basic methods with limited justification
- Beginning: Unable to identify appropriate data collection methods

Practice 3: Analyze Data

- Exemplary: Accurately constructs all representations and calculations
- Proficient: Constructs most representations and calculations correctly
- Developing: Constructs basic representations with some errors
- Beginning: Unable to construct appropriate representations

Practice 4: Interpret Results

- Exemplary: Provides complete, contextual interpretations and justifications
- Proficient: Provides mostly complete interpretations with minor issues
- Developing: Provides basic interpretations with some context
- Beginning: Unable to provide appropriate interpretations

TECHNOLOGY INTEGRATION FOR STATISTICAL PRACTICES

Practice 1: Question Formulation Tools

- Real Data Sources: Kaggle
- Current Events Data: FiveThirtyEight
- Global Data: Gapminder

Practice 2: Data Collection Methods

- Survey Design: Google Forms
- Random Sampling: Random.org
- Experimental Design: StatCrunch

Practice 3: Data Analysis Tools

- Graphing Calculator: TI-84
- Statistical Software: R/RStudio
- Online Calculator: Desmos
- Simulation Tools: StatKey

Practice 4: Interpretation Support

- Statistical Dictionary: StatisticsHowTo
- Interpretation Guides: AP Central
- Peer Discussion: Google Classroom

AP EXAM PREPARATION STRATEGY

Statistical Practices on the AP Exam:

- **Multiple Choice:** Emphasizes Practices 2 & 3 (method selection and calculations)
- **Free Response:** Emphasizes all practices, especially Practice 4 (interpretation)
- **Investigative Task:** Comprehensive application of all four practices

Monthly Practice Schedule:

- **September-December:** Focus on Practices 1 & 3 (foundation building)
- **January-March:** Focus on Practices 2 & 4 (method selection and interpretation)
- **April-May:** Integrated practice of all four practices in AP format

AP Preparation Resources:

- Official Practice Exams: AP Central
- Question Bank: AP Classroom
- Practice Tests: Khan Academy
- Review Materials: Albert.io

STATISTICAL LITERACY GOALS

By the end of this course, students will demonstrate mastery of all four Statistical Practices:

1. **Formulate Questions:** Students can identify what data are needed to answer questions and can pose investigative questions that can be answered with data.
2. **Collect Data:** Students can design and critique data collection methods, understanding the scope of conclusions that can be drawn.
3. **Analyze Data:** Students can select and perform appropriate statistical procedures and create appropriate data representations.
4. **Interpret Results:** Students can interpret statistical results in context, assess the reliability of conclusions, and communicate findings effectively.

CONTACT INFORMATION & SUPPORT

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Office Hours: Daily 7:15-7:45 AM and 3:15-4:00 PM
Course Website: [insert school LMS link]
AP Classroom Code: [insert code]
Statistical Practices Progress Portal: [insert link]

Additional Support Resources:

- **Statistical Practice Tutoring:** Individual sessions focused on specific practices
- **Peer Study Groups:** Collaborative practice development
- **Parent Communication:** Regular updates on statistical practice progress
- **Online Practice Portal:** 24/7 access to practice-building activities

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This curriculum guide implements the 2025 AP Statistics Revised Course Framework with its emphasis on Statistical Practices while maintaining comprehensive resource integration. The practice-focused approach ensures students develop expertise in formulating questions, collecting data, analyzing data, and interpreting results—the core competencies for success in statistics and data science.