About the
AP Statistics Course

The AP Statistics course introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. There are four themes evident in the content, skills, and assessment in the AP Statistics course: exploring data, sampling and experimentation, probability and simulation, and statistical inference. Students use technology, investigations, problem solving, and writing as they build conceptual understanding.

College Course Equivalent

The AP Statistics course is equivalent to a one-semester, introductory, non-calculus-based college course in statistics.

Prerequisites

The AP Statistics course is an excellent option for any secondary school student who has successfully completed a second-year course in algebra and who possesses sufficient mathematical maturity and quantitative reasoning ability. Because second-year algebra is the prerequisite course, AP Statistics is usually taken in either the junior or senior year. Decisions about whether to take AP Statistics and when to take it depend on a student's plans:

- Students planning to take a science course in their senior year will benefit greatly from taking AP Statistics in their junior year.
- For students who would otherwise take no mathematics in their senior year, AP Statistics allows them to continue to develop their quantitative skills.
- Students who wish to leave open the option of taking calculus in college should include precalculus in their high school program and perhaps take AP Statistics concurrently with precalculus.
- Students with the appropriate mathematical background are encouraged to take both AP Statistics and AP Calculus in high school.

Course at a Glance

Plan

The Course at a Glance provides a useful visual organization of the AP Statistics curricular components, including:

- Sequence of units, along with approximate weighting and suggested pacing. Please note, pacing is based on 45-minute class periods, meeting five days each week for a full academic year.
- Progression of topics within each unit
- Spiraling of the big ideas and course skills across units

Teach

SKILL CATEGORIES
Skill categories spiral throughout the course.

1	Selecting Statistical Methods	**3**	Using Probability and Simulation
2	Data Analysis	**4**	Statistical Argumentation

+ Indicates 3 or more skills for a given topic. See the individual topic for all the relevant skills.

BIG IDEAS
Big ideas spiral across topics and units.

VAR	Variation and Distribution	**DAT**	Data-Based Predictions, Decisions, and Conclusions
UNC	Patterns and Uncertainty		

Assess

Assign the Personal Progress Checks—either as homework or in class—for each unit. Each Personal Progress Check contains formative multiple-choice and free-response questions. The feedback from the Personal Progress Checks shows students the areas where they need to focus.

UNIT 1 — Exploring One-Variable Data

~14–16 Class Periods | **15–23%** AP Exam Weighting

Skill		Topic
VAR 1		**1.1** Introducing Statistics: What Can We Learn from Data?
VAR 2		**1.2** The Language of Variation: Variables
UNC 2		**1.3** Representing a Categorical Variable with Tables
UNC 2		**1.4** Representing a Categorical Variable with Graphs
UNC 2		**1.5** Representing a Quantitative Variable with Graphs
UNC 2		**1.6** Describing the Distribution of a Quantitative Variable
UNC 2, 4		**1.7** Summary Statistics for a Quantitative Variable
UNC 2		**1.8** Graphical Representations of Summary Statistics
UNC 2		**1.9** Comparing Distributions of a Quantitative Variable
VAR 2, 3		**1.10** The Normal Distribution

UNIT 2 — Exploring Two-Variable Data

~10–11 Class Periods | **5–7%** AP Exam Weighting

Skill		Topic
VAR 1		**2.1** Introducing Statistics: Are Variables Related?
UNC 2		**2.2** Representing Two Categorical Variables
UNC 2		**2.3** Statistics for Two Categorical Variables
UNC DAT 2		**2.4** Representing the Relationship Between Two Quantitative Variables
DAT 2, 4		**2.5** Correlation
DAT 2		**2.6** Linear Regression Models
DAT 2		**2.7** Residuals
DAT 2, 4		**2.8** Least Squares Regression
DAT 2		**2.9** Analyzing Departures from Linearity

Personal Progress Check 1

Multiple-choice: ~35 questions
Free-response: 2 questions
- Exploring Data
- Exploring Data

Personal Progress Check 2

Multiple-choice: ~35 questions
Free-response: 2 questions
- Exploring Data
- Investigative Task

UNIT 3 — Collecting Data

~9–10 Class Periods | **12–15%** AP Exam Weighting

VAR 1	**3.1** Introducing Statistics: Do the Data We Collected Tell the Truth?
DAT 1 / 4	**3.2** Introduction to Planning a Study
DAT 1	**3.3** Random Sampling and Data Collection
DAT 1	**3.4** Potential Problems with Sampling
VAR 1	**3.5** Introduction to Experimental Design
VAR 1	**3.6** Selecting an Experimental Design
VAR 4	**3.7** Inference and Experiments

UNIT 4 — Probability, Random Variables, and Probability Distributions

~18–20 Class Periods | **10–20%** AP Exam Weighting

VAR 1	**4.1** Introducing Statistics: Random and Non-Random Patterns?
UNC 3	**4.2** Estimating Probabilities Using Simulation
VAR 3 / 4	**4.3** Introduction to Probability
VAR 4	**4.4** Mutually Exclusive Events
VAR 3	**4.5** Conditional Probability
VAR 3	**4.6** Independent Events and Unions of Events
VAR 2 / 4	**4.7** Introduction to Random Variables and Probability Distributions
VAR 3 / 4	**4.8** Mean and Standard Deviation of Random Variables
VAR 3	**4.9** Combining Random Variables
UNC 3	**4.10** Introduction to the Binomial Distribution
UNC 3 / 4	**4.11** Parameters for a Binomial Distribution
UNC 3 / 4	**4.12** The Geometric Distribution

UNIT 5 — Sampling Distributions

~10–12 Class Periods | **7–12%** AP Exam Weighting

VAR 1	**5.1** Introducing Statistics: Why Is My Sample Not Like Yours?
VAR 3	**5.2** The Normal Distribution, Revisited
UNC 3	**5.3** The Central Limit Theorem
UNC 4 / 3	**5.4** Biased and Unbiased Point Estimates
VAR 3 / 4	**5.5** Sampling Distributions for Sample Proportions
UNC 3 / 4	**5.6** Sampling Distributions for Differences in Sample Proportions
UNC 3 / 4	**5.7** Sampling Distributions for Sample Means
UNC 3 / 4	**5.8** Sampling Distributions for Differences in Sample Means

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Personal Progress Check 3

Multiple-choice: ~20 questions
Free-response: 2 questions
- Exploring Data and Collecting Data
- Collecting Data

Personal Progress Check 4

Multiple-choice: ~45 questions
Free-response: 2 questions
- Probability
- Investigative Task

Personal Progress Check 5

Multiple-choice: ~35 questions
Free-response: 2 questions
- Probability and Sampling Distributions
- Investigative Task

UNIT 6 — Inference for Categorical Data: Proportions

~16–18 Class Periods | **12–15%** AP Exam Weighting

VAR 1	6.1	Introducing Statistics: Why Be Normal?
UNC +	6.2	Constructing a Confidence Interval for a Population Proportion
UNC 4	6.3	Justifying a Claim Based on a Confidence Interval for a Population Proportion
VAR 1 4	6.4	Setting Up a Test for a Population Proportion
VAR DAT 3 4	6.5	Interpreting *p*-Values
DAT 4	6.6	Concluding a Test for a Population Proportion
UNC +	6.7	Potential Errors When Performing Tests
UNC +	6.8	Confidence Intervals for the Difference of Two Proportions
UNC 4	6.9	Justifying a Claim Based on a Confidence Interval for a Difference of Population Proportions
VAR 1 4	6.10	Setting Up a Test for the Difference of Two Population Proportions
VAR DAT 3 4	6.11	Carrying Out a Test for the Difference of Two Population Proportions

UNIT 7 — Inference for Quantitative Data: Means

~14–16 Class Periods | **10–18%** AP Exam Weighting

VAR 1	7.1	Introducing Statistics: Should I Worry About Error?
VAR UNC +	7.2	Constructing a Confidence Interval for a Population Mean
UNC 4	7.3	Justifying a Claim About a Population Mean Based on a Confidence Interval
VAR 1 4	7.4	Setting Up a Test for a Population Mean
VAR DAT 3 4	7.5	Carrying Out a Test for a Population Mean
UNC +	7.6	Confidence Intervals for the Difference of Two Means
UNC 4	7.7	Justifying a Claim About the Difference of Two Means Based on a Confidence Interval
VAR 1 4	7.8	Setting Up a Test for the Difference of Two Population Means
VAR DAT 3 4	7.9	Carrying Out a Test for the Difference of Two Population Means
	7.10	Skills Focus: Selecting, Implementing, and Communicating Inference Procedures

UNIT 8 — Inference for Categorical Data: Chi-Square

~10–11 Class Periods | **2–5%** AP Exam Weighting

VAR 1	8.1	Introducing Statistics: Are My Results Unexpected?
VAR +	8.2	Setting Up a Chi-Square Goodness of Fit Test
VAR DAT 3 4	8.3	Carrying Out a Chi-Square Test for Goodness of Fit
VAR 3	8.4	Expected Counts in Two-Way Tables
VAR 1 4	8.5	Setting Up a Chi-Square Test for Homogeneity or Independence
VAR DAT 3 4	8.6	Carrying Out a Chi-Square Test for Homogeneity or Independence
	8.7	Skills Focus: Selecting an Appropriate Inference Procedure for Categorical Data

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Personal Progress Check 6

Multiple-choice: ~55 questions
Free-response: 2 questions
- Inference
- Investigative Task

Personal Progress Check 7

Multiple-choice: ~50 questions
Free-response: 2 questions
- Inference and Collecting Data
- Investigative Task

Personal Progress Check 8

Multiple-choice: ~30 questions
Free-response: 2 questions
- Inference
- Inference and Exploring Data/ Collecting Data

Personal Progress Check 9

Multiple-choice: ~25 questions
Free-response: 1 question
▪ Inference and Exploring Data