

Syllabus: AP Statistics v9

Below is the syllabus for your course.

Estimated Completion Time: This AP Statistics course is scheduled for 2 semesters, completed within 32-36 weeks at the traditional pace.

Description:

The purpose of the AP course in Statistics is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes:

1. Exploring Data: Describing patterns and departures from patterns
2. Sampling and Experimentation: Planning and conducting a study
3. Anticipating Patterns: Exploring random phenomena using probability and simulation
4. Statistical Inference: Estimating population parameters and testing hypotheses

Module 1

Topics Covered:

- Introduction to Univariate Data
- Pie Chart
- Graphical Displays of Categorical Data: Bar Graphs
- Graphical Displays of Quantitative Data 1
- Graphical Displays of Quantitative Data 2
- Graphical Displays of Quantitative Data 3
- Quiz 1
- Measuring the Center
- Measuring the Spread
- The Five-number Summary of Boxplots
- Review of Describing Distributions
- Quiz 2
- Density Curves
- The Normal Curves
- Standardized Scores
- Normal Distribution Calculations
- Assessing Normality
- Quiz 3
- Discussion Based Assessment
- Module One Test

Module 2

Topics Covered:

- Introduction to Bivariate Data
- Creating Scatterplots
- Interpreting Scatterplots
- Correlation
- Quiz 1
- The Least Square Regression Line
- Residual and Residual Plots
- Quiz 2
- Correlation and Regression Details
- Non-linear Data
- Exponential Models
- Power Models
- Quiz 3
- Bivariate, Categorical Data
- Simpson's Paradox and Other Cautions
- Quiz 4
- Discussion Based Assessment
- Module Two Test

Module 3

Topics Covered:

- Introduction to Studies, Experiments & Simulations
- Designing Samples and Surveys
- The SRS
- Bad Sampling
- Good Sampling
- Cautions about Sampling
- Quiz 1
- Experimental Design
- Different Experimental Designs
- Cautions and Experiment
- Quiz 2
- Simulations
- Generalizability
- Discussion Based Assessment
- Module Three Test

Module 4

Topics Covered

- Introduction to Definition of Probability
- Sample Spaces and Counting
- Complements, Disjoint Events & Addition Rules
- Independence and the Multiplication Rule
- Quiz 1
- Unions, Venn Diagrams and More Probability
- Discrete Random Variables
- Continuous Random Variables
- Mean and Variance of Random Variables
- The Law of Large Numbers and Rules for Means and Variances
- Quiz 3
- Discussion Based Assessment
- Module Four Test

Module 5

Topics Covered:

- Introduction to Binomial Settings
- Finding Binomial Probabilities
- The Binomial Formula, Mean, and Standard Deviation
- Practice with Binomial Distribution
- Quiz 1
- Geometric Settings
- Calculating Geometrical Probabilities, Mean and Standard Deviation
- Additional Practice with Binomial and Geometrical Distributions
- Quiz 2
- Introduction to Sampling Distributions
- Sample Proportions
- Sample Means
- The Central Limit Theorem
- Review of Random Variables and Sampling Distributions
- Quiz 3
- Discussion Based Assessment
- Module Five Test
- Segment One Exam

Module 6

Topics Covered:

- Confidence Intervals
- Sample Size and Confidence Interval Behavior
- Confidence Intervals and the Calculators
- Quiz 1
- The Significance Test
- Statistical Significance
- Connecting Confidence Intervals and Tests of Significance
- Quiz 2
- Significance Tests and Decision Making
- Errors and Power
- Review of Confidence Intervals and Significance Tests
- Quiz 3
- Discussion Based Assessment
- Module 6 Test

Module 7

Topics Covered:

- Confidence Intervals for T
Significance Test for T
- Conditions for T Testing
- T Distributions and the Calculator
- Quiz 1
- T Intervals for Comparing Two Means
- T Tests for Comparing Two Means
- Review, Two Means, and the Calculator
- Confidence Intervals for Proportions
- Significance Tests for Proportions
- Choosing Sample Size and Using Your Calculator
- Quiz 2
- Confidence Intervals and Two Proportions
- Significance Test for Two Proportions
- Discussion Based Assessment
- Module Seven Test

Module 8

Topics Covered:

- Chi-Squared Test for Goodness of Fit

- Goodness of Fit Conditional and the Calculator Quiz 1
- Quiz 1
- Chi-Squared Test of Association / Independence
- Chi-Squared Test of Independent Conditions and the Calculator
- Inference for Regression: Estimating Slope
- Discussion Based Assessment
- Module Eight Test

Module 9

Topics Covered:

- Multiple Choice Practice AP Test
- How to Choose the Right Test

Module 10

Topics Covered:

- Project Introduction
- Project Proposal
- Scoring and Check Point
- Cumulative Project
- Project DBA
Segment Two Exam