

Information for Course Syllabus

Name of Course: AP Statistics

Grade Level: 9-12

School: ORHS

Major Assignments: Final project after AP Exam

Field Trips: None

How can parents access instructional materials? Canvas

AP Statistics

2021-2022

Term 1

One Variable Data Unit	1.1 Bar Graphs and Pie Charts, Graphs: Good and Bad
	1.1 Two-Way Tables and Marginal Distributions, Relationships between Categorical Variables: Conditional Distributions
	1.2 Dotplots, Describing Shape, Comparing Distributions, Stemplots
	1.2 Histograms, Using Histograms Wisely
	1.3 Measuring Center: Mean and Median, Comparing the Mean and Median, Measuring Spread: Range and <i>IQR</i> , Identifying Outliers, Five-Number Summary and Boxplots
	1.3 Measuring Spread: Standard Deviation, Choosing Measures of Center and Spread, Organizing a Statistics Problem

Two Variable Data Unit	3.1 Explanatory and response variables, displaying relationships: scatterplots, describing scatterplots
	3.1 Measuring linear association: correlation, facts about correlation
	3.2 Least-squares regression, interpreting a regression line, prediction, residuals
	3.2 Calculating the equation of the least-squares regression line, determining whether a linear model is appropriate: residual plots
	3.2 How well the line fits the data: the role of s and r^2 in regression
	3.2 Interpreting computer regression output, regression to the mean, correlation and regression wisdom

Collecting Data Unit	4.1 Introduction, The Idea of a Sample Survey, How to Sample Badly, How to Sample Well: Simple Random Sampling
	4.1 Other Random Sampling Methods
	4.1 Inference for Sampling, Sample Surveys: What Can Go Wrong?
	4.2 Observational Study versus Experiment, The Language of Experiments
	4.2 How to Experiment Badly, How to Experiment Well, Completely Randomized Designs
	4.2 Experiments: What Can Go Wrong? Inference for Experiments
	4.2 Blocking
	4.3 Scope of Inference, The Challenges of Establishing Causation

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Term 1

Probability, Random Variables, and Distributions Unit	5.1 The Idea of Probability, Myths about Randomness
	5.1 Simulation
	5.2 Probability Models, Basic Rules of Probability
	5.2 Two-Way Tables, Probability, and the General Addition Rule, Venn Diagrams and Probability
	5.3 What Is Conditional Probability?, The General Multiplication Rule and Tree Diagrams,
	5.3 Conditional Probability and Independence: A Special Multiplication Rule
	6.1 Discrete Random Variables, Mean (Expected Value) of a Discrete Random Variable
	6.1 Standard Deviation (and Variance) of a Discrete Random Variable, Continuous Random Variables
	6.2 Linear Transformations
	6.2 Combining Random Variables, Combining Normal Random Variables
	6.3 Binomial Settings and Binomial Random Variables, Binomial Probabilities
	6.3 Mean and Standard Deviation of a Binomial Distribution, Binomial Distributions in Statistical Sampling
	6.3 Geometric Random Variables

Sampling Distributions Unit	Introduction: German Tank Problem, 7.1 Parameters and Statistics
	7.1 Sampling Variability, Describing Sampling Distributions
	7.2 The Sampling Distribution of \bar{x} , Using the Normal Approximation for \bar{x} .
	7.3 The Sampling Distribution of s : Mean and Standard Deviation, Sampling from a Normal Population
	7.3 The Central Limit Theorem

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Term 1

Inference for Categorical Data Unit	8.1 The Idea of a Confidence Interval, Interpreting Confidence Intervals and Confidence Levels
	8.1 Constructing a Confidence Interval; Using Confidence Intervals Wisely
	8.2 Conditions for Estimating p , Constructing a Confidence Interval for p , Putting It All Together: The Four-Step Process
	8.2 Choosing the Sample Size
	8.3 The Problem of unknown σ , When σ Is Unknown: The t Distributions, Conditions for Estimating
	8.3 Constructing a Confidence Interval for μ , Choosing a Sample Size
	9.1 Stating Hypotheses, The Reasoning of Significance Tests, Interpreting P -values, Statistical Significance
	9.1 Type I and Type II Errors
	9.2 Carrying Out a Significance Test, The One-Sample z Test for a Proportion
	9.2 Two-Sided Tests, Why Confidence Intervals Give More Information, Type II Error and the Power of a Test
	9.3 Carrying Out a Significance Test for μ , The One Sample t Test, Two-Sided Tests and Confidence Intervals
	9.3 Inference for Means: Paired Data, Using Tests Wisely

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Term 2

Inference for Quantitative Data Unit	10.1 The Sampling Distribution of a Difference between Two Proportions
	10.1 Confidence Intervals for $p_1 - p_2$
	10.1 Significance Tests for $p_1 - p_2$, Inference for Experiments
	10.2 “Does Polyester Decay?” Activity, The Sampling Distribution of a Difference between Two Means
	10.2 The Two-Sample t Statistic, Confidence Intervals for $\mu_1 - \mu_2$
	10.2 Significance Tests for $\mu_1 - \mu_2$, Using Two-Sample t Procedures Wisely

Chi Squared Distributions Unit	11.1 Comparing Observed and Expected Counts: The Chi-Square Statistic; The Chi-Square Distributions and P -values
	11.1 Carrying Out a Test; Follow-Up Analysis
	11.2 Comparing Distributions of a Categorical Variable; Expected Counts and the Chi-Square Statistic; The Chi-Square Test for Homogeneity
	11.2 Relationships between Two Categorical Variables; the Chi-Square Test for Independence; Using Chi-Square Tests Wisely

Inference for Slope Unit	12.1 Sampling Distribution of b ; Conditions for Regression Inference
	12.1 Estimating the Parameters; Constructing a Confidence Interval for the Slope
	12.1 Performing a Significance Test for the Slope
	12.2 Transforming with Powers and Roots
	12.2 Transforming with Logarithms; Putting it all Together: Which Transformation Should We Choose?

AP Exam Review

Final Project and Presentations