AP Statistics 20-Session Syllabus

# Session 1: Introduction to Statistics

* Overview of AP Statistics Exam
* Exploring Data: Individuals and Variables
* Types of Data: Categorical vs Quantitative

# Session 2: Displaying and Describing Data

* Frequency Tables, Dotplots, Stemplots
* Histograms and Boxplots
* Shape, Center, Spread, and Outliers

# Session 3: Numerical Summaries of Data

* Measures of Center: Mean, Median
* Measures of Spread: Range, IQR, Standard Deviation
* Using the Five-Number Summary

# Session 4: Modeling Distributions of Data

* Normal Distributions
* The Empirical Rule (68-95-99.7 Rule)
* z-Scores and Standard Normal Distribution

# Session 5: Exploring Relationships - Part 1

* Scatterplots and Correlation
* Describing Direction, Form, Strength

# Session 6: Exploring Relationships - Part 2

* Linear Regression
* Least Squares Regression Line (LSRL)
* Interpreting Slope, Intercept, and Residuals

# Session 7: Collecting Data - Part 1

* Sampling Methods: SRS, Stratified, Cluster
* Bias in Sampling

# Session 8: Collecting Data - Part 2

* Experimental Design
* Principles of Experimentation: Control, Randomization, Replication, Blocking

# Session 9: Probability - Part 1

* Basic Probability Rules
* Addition Rule and Multiplication Rule
* Independent and Mutually Exclusive Events

# Session 10: Probability - Part 2

* Conditional Probability
* Tree Diagrams and Venn Diagrams
* Bayes' Theorem (conceptual)

# Session 11: Random Variables and Probability Distributions

* Discrete Random Variables
* Mean and Standard Deviation of a Random Variable
* Binomial and Geometric Distributions

# Session 12: Sampling Distributions

* Sampling Distributions of Sample Mean and Proportion
* Central Limit Theorem (CLT)

# Session 13: Estimating with Confidence - Part 1

* Confidence Intervals for Proportions
* Conditions for Inference

# Session 14: Estimating with Confidence - Part 2

* Confidence Intervals for Means
* Margin of Error and Interpreting Confidence Intervals

# Session 15: Significance Testing - Part 1

* Introduction to Hypothesis Testing
* Null and Alternative Hypotheses
* p-Values and Statistical Significance

# Session 16: Significance Testing - Part 2

* One-Sample z-Test for Proportions
* One-Sample t-Test for Means

# Session 17: Comparing Two Groups

* Two-Sample z-Test for Proportions
* Two-Sample t-Test for Means

# Session 18: Chi-Square Tests and Inference for Linear Regression

* Chi-Square Test for Independence
* Chi-Square Test for Goodness of Fit
* Inference for Slope in Linear Regression

# Session 19: Practice Session 1

* Mixed Practice: Multiple Choice and Free Response
* Review of Key Concepts

# Session 20: Practice Session 2 and Final Review

* Full-Length Practice Exam
* Test-Taking Strategies
* Final Q&A

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Note: Each session will include practice problems, discussions, and mini-quizzes to reinforce learning.