

## COURSE SYLLABUS

### AP Statistics A/B

Last Modified: February 2017

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**Course Description:** This year-long AP Statistics course is designed to provide the student with skills required for the AP Statistics exam and to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students explore and analyze data using graphical and numerical techniques. They also use probability and statistical inferences to develop an appropriate model for data collected.

Students learn appropriate statistical techniques and a variety of ways to communicate them within the context of statistical activities and experiences. They become competent interpreters and investigators of statistical data and information. They make connections between all aspects of the statistical process, including design, analysis, and conclusions. Students are responsible for communicating methods, results, and interpretations using the correct vocabulary. The prerequisite for this AP Statistics course is successful completion of a second-year algebra course.

**Course Materials:** AP Statistics has the following digital textbook embedded within the course. A hand-held graphing calculator is required. Some suggested models are listed below.

**Publisher:** Pearson

**Title:** Stats: Modeling the World (AP Edition), 4th Edition

**Author(s):** Bock, Velleman, De Veaux

**Year published:** 2015

**Student edition text:**

ISBN-10: 0-13-315154-9 / 0133151549

ISBN-13: 978-0-13-315154-1 / 9780133151541

**Graphing Calculator:** TI-83 Plus, TI-84 Plus, or TI-89. Otherwise check with the instructor for other options. Each student must have his/her own graphing calculator for use in this class and for use on the AP Statistics exam. The teacher cannot provide students with graphing calculators.

**Statistical Software:** Students must have their own access to Microsoft Excel or similar computer software for analyzing data and producing output for display. Check with the instructor for suggestions.

Learning Targets: These are major learning targets for AP Statistics.

- **Concepts and Procedures:** Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
- **Problem Solving:** Students can frame and solve a range of complex problems in pure and applied mathematics.
- **Communication and Reasoning:** Students can clearly and precisely construct viable arguments to support their own reasoning and critique the reasoning of others.
- **Data Analysis and Modeling:** Students can analyze complex, real-world scenarios and can use mathematical models to interpret and solve problems.

Grade Scale: Final letter grades will be calculated based on these percent grades.

Letter	Range (%)
A	95.0+
A-	90.0 – 94.9
B+	87.0 – 89.9
B	84.0 – 86.9
B-	80.0 – 83.9
C+	77.0 – 79.9
C	74.0 – 76.9
C-	70.0 – 73.9
D+	67.0 – 69.9
D	64.0 – 66.9
D-	60.0 – 63.9
F	0.00 – 59.9

Course Methodology: This is an inquiry-based course. Students will generate knowledge through online readings, asynchronous discussions with students and their instructor, interactions with online tutorials, and online and hands-on simulations. A semester project developed by each student will be used to demonstrate knowledge and understanding of the material in the course.

The instructor will act as a guide, a facilitator, an events planner, and a resource advisor. He/she will always be available through course messages. The student must actively construct and acquire knowledge by being intrinsically motivated to succeed. To succeed, students must participate and complete all readings and activities. This course requires the student's active participation.

Both formal and informal assessment methods will be used in the course. Informal assessment will include an evaluation of the quality and timeliness of participation in class activities. Formal assessment may include multiple-choice



quizzes, tests, discussion board participation, and written assignments. A final exam will be given at the end of the course.

**Course Expectations:** Students are expected to conduct themselves in a responsible manner that reflects sound ethics, honor, and good citizenship. It is the student's responsibility to maintain academic honesty and integrity and to manifest their commitment to the goals of NUVHS through their conduct and behavior. Students are expected to abide by all NUVHS policies and regulations. Any form of academic dishonesty, or inappropriate conduct by students or applicants may result in penalties ranging from warning to dismissal, as deemed appropriate by NUVHS.

**Communication:** Throughout this course students will need to be in close contact with their instructor and fellow students. Students are expected to communicate via course messages and electronic discussion boards. Therefore, students should plan on checking course messages at least three to five times a week and participate in the discussion boards during the weeks they are live.

Instructors strongly encourage and welcome open communication. Clear, consistent, and proactive communication will ensure a successful experience in this course. It is the student's responsibility to notify the instructor immediately if and when a personal situation occurs that affects his/her performance in this class. Being proactive with communication will result in a quick solution to any problems that may occur.

**Support:** At NUVHS you will have access to multiple support teams. Who you contact will depend on the questions you have. Always start by contacting your teacher through course messages. Your teacher should be able to answer your question, but if they can't, then they will direct you to another support team. If you have questions about any of the course content, your grades, or course policies, you should contact your instructor.

For questions about your enrollment, transcripts, or general school-wide policies, you can contact [NUVHS Student Services](mailto:info@nuvhs.org) at [info@nuvhs.org](mailto:info@nuvhs.org) or by phone at 866.366.8847. For example, if you would like to withdraw from your course, you should contact Student Services. Please note that a refund for your course can only be obtained if you drop within the first seven days of enrolling in the course.

For help with login/password issues, or other technical issues specific to the Blackboard website, you can contact the team at [National University Blackboard Learn](#). They can also be reached by phone at (888) 892-9095.

Course Design:

The textbook provides the general design for this course. Students are required to read the chapters from the textbook prior to completing the related activities. Students are expected to have at least a TI-83 Plus Graphing Calculator to use for all homework, activities, and assessments throughout the course. With each subsequent course module, students learn and use statistical capabilities of the graphing calculator and statistical software as described in the course outline below.

Students will be assigned homework and one or more investigative tasks for most chapters. The investigative tasks will require the students to use, apply, and analyze the topics they have learned in that chapter in a new setting. Investigative tasks require students to interpret the results and communicate their findings in a computer generated written report. The emphasis on all homework, classwork, and activity reports are on the student's ability to arrive at the correct conclusion along with communicating their results in appropriate statistical language. Writing complete responses using appropriate justifications is a critical aspect of gaining statistical proficiency. Student progress will be assessed using chapter quizzes, module tests, grades for homework, investigative tasks, and one major project for each semester.

The main purpose of each semester project is for students to gain strong experience in developing statistical studies and making sound connections and judgments between the design and the results of an experiment. The first semester project will be a comprehensive written report and summary oral presentation on the material we covered in the first half of the year (one or two variable descriptive statistics). The second semester project will be on the material covered in the second half of the year (inferential statistics). For each project students will collect data or design and conduct an experiment to investigate a topic of their choosing. Students must state all resources. Results are presented graphically using output generated from statistical software. Both written report and oral presentation should include a title and the following sections:

- **Introduction:** Description of the topic and the motivation for picking this topic.
- **Methodology:** Description of how the data was gathered and how the experiment was conducted. Include all steps taken to reduce confounding and bias.
- **Results:** The data is presented in table or graph form in such a way that conclusions can easily be made. Graphs must be labeled appropriately.
- **Conclusions:** Conclusions are stated in appropriate statistical terms. Any unusual findings that might cause concern should be discussed. Described what was learned from this project.

<b>Course Outline for AP Statistics A (First Semester)</b>	
<b>Unit</b>	<b>Chapter / Topics / Activities</b>
1	<p><u>(Approx. 2 days) Chapter 1 – Stats Starts Here</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Introduction to Statistics, Data and Variation</li> <li>• Analyzing Data – Who, What, When, Where, Why, How</li> <li>• Categorical vs. Quantitative Variables</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 1</li> <li>• Homework 1 and Chapter 1 Discussions</li> <li>• Chapter 1 Quizzes</li> </ul>
1	<p><u>(Approx. 4 days) Chapter 2 – Displaying and Describing Categorical Data</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Frequency and Relative Frequency Tables</li> <li>• Distributions of Categorical Variables</li> <li>• Importance of the Area Principle</li> <li>• Bar and Pie Charts</li> <li>• Contingency Tables</li> <li>• Marginal and Conditional Distributions</li> <li>• Independence of Categorical Variables</li> <li>• Joint Frequencies, Segmented Bar Charts, and Comparing Distributions</li> <li>• Simpson’s Paradox</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 2</li> <li>• Homework 2 and Chapter 2 Discussions</li> <li>• Investigative Task 2: Race and the Death Penalty</li> <li>• Chapter 2 Quizzes</li> </ul>
1	<p><u>(Approx. 5 days) Chapter 3 – Displaying and Summarizing Quantitative Data</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Distributions of Quantitative Variables</li> <li>• Frequency and Relative Frequency Histograms</li> <li>• Stem-and-Leaf Displays, Dotplots</li> <li>• Describing a Distribution in Terms of Shape, Outliers, Center, and Spread (SOCS)</li> <li>• Shape: Modality, Uniformity, Symmetry, Skewness, Unusual Observations, Gaps, and Clusters</li> <li>• Measures of Central Tendency (Mean, Median, Mode, and Midrange)</li> <li>• Measures of Spread (Range, IQR, Variance, Standard Deviation)</li> </ul>

	<ul style="list-style-type: none"> <li>• Five Number Summary</li> <li>• Boxplots, Quartiles/Percentiles</li> <li>• Center and Spread in General Terms</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 3</li> <li>• Homework 3 and Chapter 3 Discussions</li> <li>• Investigative Task 3A: Dollars for Students</li> <li>• Investigative Task 3B: Tongue-Rolling and Gender</li> <li>• Chapter 3 Quizzes</li> </ul>
2	<p><u>(Approx. 5 days) Chapter 4 – Understanding and Comparing Distributions</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Comparing Distributions</li> <li>• Comparing Groups with Histograms</li> <li>• Comparing Groups with Boxplots</li> <li>• Timeplots</li> <li>• Re-expressing Data to Improve Symmetry</li> <li>• Re-expressing Data to Equalize Spread Across Groups</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 4</li> <li>• Homework 4 and Chapter 4 Discussion</li> <li>• Investigative Task 4A: Auto Safety</li> <li>• Investigative Task 4B: SUV Insurance</li> <li>• Investigative Task 4C: Brits vs Yanks</li> <li>• Chapter 4 Quizzes</li> </ul>

2	<p><u>(Approx. 7 days) Chapter 5 – The Standard Deviation as a Ruler and the Normal Model</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Introduction to Standardized Scores (z-scores)</li> <li>• Shifting Data by Adding or Subtracting a Constant Value</li> <li>• Rescaling Data by Multiplying or Dividing by a Constant Value (Changing Units)</li> <li>• Normal Models, the Standard Normal Model</li> <li>• Parameters vs. Statistics</li> <li>• Empirical Rule (68-95-99.7 Rule)</li> <li>• Tables of Normal Percentiles to Calculate Probabilities for a Normal Model and to Find Z-scores for a Given Percentile</li> <li>• Assessing Normality, Normal Probability Plots</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 5</li> <li>• Homework 5 and Chapter 5 Discussions</li> <li>• Investigative Task 5A: Normal Models</li> <li>• Investigative Task 5B: Normal Gas Mileage</li> <li>• Chapter 5 Quizzes</li> </ul>
2	<p><u>Cumulative Test</u></p> <ul style="list-style-type: none"> <li>• Review Chapters 1-5</li> <li>• Chapters 1-5 Cumulative Test</li> </ul>
3	<p><u>(Approx. 5 days) Chapter 6 – Scatterplots, Association, and Correlation</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Introduction to Bivariate Data</li> <li>• Creating a Scatterplot</li> <li>• Describing a Scatterplot in terms of Direction, Form, Strength, and Unusual Observations</li> <li>• Explanatory vs. Response Variables</li> <li>• Calculating Correlation</li> <li>• Conditions Required for Correlation</li> <li>• Properties for Correlation</li> <li>• Correlation Tables</li> <li>• Correlation vs. Association</li> <li>• Lurking Variables and Causation</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 6</li> <li>• Homework 6 and Chapter 6 Discussions</li> <li>• Chapter 6 Quizzes</li> </ul>

3	<p><u>(Approx. 10 days) Chapter 7 – Linear Regression</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Linear Models</li> <li>• Predicted Values</li> <li>• Line of Best Fit, Regression to the Mean</li> <li>• Least Squares Regression Line (LSRL)</li> <li>• Finding the Slope and Y-Intercept of the LSRL using Summary Statistics</li> <li>• Interpreting the Slope and Y-Intercept of the LSRL</li> <li>• Calculating and Interpreting Residual Values</li> <li>• Creating and Interpreting a Residual Plot</li> <li>• Understanding and Interpreting the Coefficient of Determination</li> <li>• Assumptions and Conditions for the Linear Regression Model</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 7</li> <li>• Homework 7 and Chapter 7 Discussions</li> <li>• Investigative Task 7A: Smoking</li> <li>• Investigative Task 7B: Fun Run</li> <li>• Chapter 7 Quizzes</li> </ul>
4	<p><u>(Approx. 5 days) Chapter 8 – Regression Wisdom</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Abuses of Regression</li> <li>• Exploring Subsets of Data</li> <li>• Nonlinear Datasets</li> <li>• Dangers of Extrapolation</li> <li>• Examining Outliers in Regression Models</li> <li>• Lurking Variables and Causation</li> <li>• Working with Summary Values</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 8</li> <li>• Homework 8 and Chapter 8 Discussions</li> <li>• Investigative Task 8: Olympic Long Jump</li> <li>• Chapter 8 Quizzes</li> </ul>
4	<p><u>(Approx. 8 days) Chapter 9 – Re-expressing Data: Get It Straight!</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Linear vs. Non-linear growth</li> <li>• Re-expressing data sets</li> </ul>



	<ul style="list-style-type: none"> <li>Using the Ladder of Powers</li> <li>Using logarithms to straighten scatterplots, including the Exponential, Logarithmic, and Power models</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>Read Chapter 9</li> <li>Homework 9 and Chapter 9 Discussions</li> <li>Investigative Task 9: Alligators</li> <li>Chapter 9 Quizzes</li> </ul>
4	<p><u>Cumulative Test (Midterm Exam)</u></p> <ul style="list-style-type: none"> <li>Review Chapters 6-9</li> <li>Chapters 6-9 Cumulative Test (Midterm Exam)</li> </ul>
5	<p><u>(Approx. 5 days) Chapter 10 – Understanding Randomness</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>Understanding the Concept of Randomness</li> <li>How the Mind is Not Random</li> <li>Pseudorandom Numbers, Tables of Random Digits</li> <li>Conducting a Simulation</li> <li>Components of a Simulation (outcomes, trials, response variables)</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>Read Chapter 10</li> <li>Homework 10 and Chapter 10 Discussions</li> <li>Investigative Task 10: Extrasensory Perception (ESP) (Use TI graphing calculator to simulate random numbers)</li> <li>Chapter 10 Quizzes</li> </ul>
5	<p><u>(Approx. 7 days) Chapter 11 – Sample Surveys</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>Sample Statistics vs. Population Parameters</li> <li>The Good and the Bad of Polling</li> <li>Why Randomization is Important in Sampling</li> <li>How Sample Size Plays a Role in Sampling</li> <li>Taking a Census</li> <li>Sampling Frame, Sampling Variability</li> <li>Statistical Sampling Methods: Simple Random Sampling, Stratified Random Sampling, Cluster Sampling, Multistage Sampling, Systematic Sampling</li> <li>Non-statistical Sampling Methods – Voluntary Response</li> <li>Sampling, Convenience Sampling</li> <li>Bias in Sampling – Voluntary Response Bias, Sampling from a Bad Sampling</li> </ul>

	<p>Frame, Undercoverage, Overcoverage, Nonresponse Bias, Response Bias, Poorly Worded Questions</p> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 11</li> <li>• Homework 11 and Chapter 11 Discussions</li> <li>• Chapter 11 Quizzes</li> </ul>
6	<p><u>(Approx. 5 days) Chapter 12 – Experiments and Observational Studies</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Observational Studies vs. Experiments</li> <li>• Types of Observational Studies – Retrospective vs. Prospective</li> <li>• Elements of an Experiment</li> <li>• Experimental Units, Subjects, and Participants</li> <li>• Explanatory Variables, Factors, Levels, and Treatments</li> <li>• Response Variables</li> <li>• Principles of Experimental Design (Control, Randomization, Replication, and Blocking)</li> <li>• Completely Randomized Experimental Designs</li> <li>• Idea of Statistical Significance</li> <li>• Control Treatments and Control Groups</li> <li>• Blinding (Single and Double Blind)</li> <li>• Placebo and Placebo Effect</li> <li>• Randomized Block Experimental Designs</li> <li>• Matched Pairs Designs</li> <li>• Idea of Confounded Variables</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 12</li> <li>• Homework 12 and Chapter 12 Discussions</li> <li>• Investigative Task 12A: Backhoes &amp; Forklifts</li> <li>• Investigative Task 12B: Shuffle the Deck</li> <li>• Investigative Task 12C: Feeling Fatigued?</li> <li>• Chapter 12 Quizzes</li> </ul>
6	<p><u>Cumulative Test</u></p> <ul style="list-style-type: none"> <li>• Review Chapters 10-12</li> <li>• Chapters 10-12 Cumulative Test</li> </ul>
7	<p><u>(Approx. 4 days) Chapter 13 – From Randomness to Probability</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Probability as a Long Run Relative Frequency</li> </ul>

	<ul style="list-style-type: none"> <li>• Language of Probability – Trials, Outcomes, and Events, Sample Space</li> <li>• Fundamental Counting Rule</li> <li>• General Idea of Independence Versus Independence</li> <li>• Law of Large Numbers</li> <li>• Basic Rules of Probability, Complement Rule</li> <li>• Addition Rule for Disjoint Events</li> <li>• Multiplication Rule for Independent Events</li> <li>• Union and Intersection of Two Events</li> <li>• Introduction to Venn Diagrams</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 13</li> <li>• Homework 13 and Chapter 13 Discussions</li> <li>• Chapter 13 Quizzes</li> </ul>
7	<p><u>(Approx. 5 days) Chapter 14 – Probability Rules!</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Probability for Equally Likely Events</li> <li>• General Addition Rule</li> <li>• Conditional Probability</li> <li>• Formal Idea of Independence</li> <li>• Independent Events vs. Disjoint Events (Revisited)</li> <li>• Drawing with and without Replacement</li> <li>• Making a Picture – Venn Diagrams, Probability Tables, and Tree Diagrams</li> <li>• Introduction to Bayes’ Rule</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 14</li> <li>• Homework 14 and Chapter 14 Discussions</li> <li>• Chapter 14 Quizzes</li> </ul>
8	<p><u>First Semester Final Project</u> See details in the Course Design section above.</p> <p><u>Cumulative Test (Final Exam)</u></p> <ul style="list-style-type: none"> <li>• Review Chapters 13-14</li> <li>• Chapters 13-14 Cumulative Test (Final Exam)</li> </ul>

<b>Course Outline for AP Statistics B (Second Semester)</b>	
<b>Unit</b>	<b>(# Days) Chapter / Topics / Activities</b>
1	<p><u>(Approx. 6 days) Chapter 15 – Random Variables</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Random Variables</li> <li>• Discrete and Continuous Random Variables</li> <li>• Creating a Probability Model for Discrete Variables</li> <li>• Expected Values of Random Variables</li> <li>• Variance and Standard Deviation of Random Variables</li> <li>• Linear Transformations of Random Variables</li> <li>• Combining Independent Random Variables</li> <li>• Means and Standard Deviations for Sums and Differences of Random Variables</li> <li>• Combining Normal Random Variables</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 15</li> <li>• Homework 15 and Chapter 15 Discussions</li> <li>• Chapter 15 Quizzes</li> </ul>
1	<p><u>(Approx. 6 days) Chapter 16 – Probability Models</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Properties of Bernoulli Trials</li> <li>• Properties of the Geometric Model</li> <li>• Calculating Geometric Probabilities</li> <li>• Calculating the Expected Value and Standard Deviation for a Geometric Model</li> <li>• Properties of the Binomial Model</li> <li>• Calculating Binomial Probabilities</li> <li>• Calculating the Expected Value and Standard Deviation for a Binomial Model</li> <li>• Simulating Binomial and Geometric Probability Models</li> <li>• Normal Approximation to the Binomial Model</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 16</li> <li>• Homework 16 and Chapter 16 Discussions</li> <li>• Chapter 16 Quizzes</li> </ul>
2	<p><u>(Approx. 5 days) Chapter 17 – Sampling Distribution Models</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Simulating a Sampling Distribution Model</li> <li>• Sampling Variability</li> <li>• Describing the Sampling Distribution Models for Sample Proportions in Terms of</li> </ul>

	<p>Center, Spread, and Shape</p> <ul style="list-style-type: none"> <li>• Assumptions and Conditions for the Sampling Distribution Model of Sample Proportions</li> <li>• Calculating Probabilities Based on the Sampling Distribution Model of Sample Proportions</li> <li>• Describing the Sampling Distribution Models for Sample Means in terms of Center, Spread, and Shape</li> <li>• Central Limit Theorem</li> <li>• Assumptions and Conditions for the Sampling Distribution Model of Sample Means</li> <li>• Calculating Probabilities Based on the Sampling Distribution Model of Sample Means</li> <li>• Law of Diminishing Returns</li> <li>• Standard Error of the Sampling Distribution Model</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 17</li> <li>• Homework 17 and Chapter 17 Discussions</li> <li>• Investigative Task 17A: Simulated Coins</li> <li>• Investigative Task 17B: Why <math>np &gt; 10</math>?</li> <li>• Chapter 17 Quizzes</li> </ul>
2	<p><u>(Approx. 5 days) Chapter 18 – Confidence Intervals for Proportions</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Sampling Variability</li> <li>• Estimating Population Parameters</li> <li>• Point Estimates, Margins of Error</li> <li>• Interpreting Confidence Levels</li> <li>• Critical Values of <math>z^*</math></li> <li>• Creating a One-Proportion Z-Interval</li> <li>• Interpreting Confidence Intervals</li> <li>• Assumptions and Conditions for a One-Proportion Z-Interval</li> <li>• Calculating Minimum Sample Size for a given Margin of Error</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 18</li> <li>• Homework 18 and Chapter 18 Discussions</li> <li>• Chapter 18 Quizzes</li> </ul>
3	<p><u>(Approx. 3 days) Chapter 19 – Testing Hypothesis About Proportions</u></p> <p>Topics:</p>

	<ul style="list-style-type: none"> <li>• Logic of a Hypothesis Test</li> <li>• Null vs. Alternate Hypotheses</li> <li>• Idea of Rejecting vs. Retaining the Null Hypothesis</li> <li>• Conducting a One-Proportion Z-Test</li> <li>• Calculating a Probability Value (P-Value)</li> <li>• Assumptions and Conditions for a One-Proportion Z-Test</li> <li>• One-sided vs. Two-sided Hypothesis Tests</li> <li>• Drawing Conclusions from our Data</li> <li>• How Hypothesis Tests and Confidence Intervals are Related</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 19</li> <li>• Homework 19 and Chapter 19 Discussions</li> <li>• Chapter 19 Quizzes</li> </ul>
3	<p><u>(Approx. 4 days) Chapter 20 – More About Tests and Intervals</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• P-values as a Conditional Probability</li> <li>• Making a Decision based on an Alpha Level</li> <li>• Critical Values for a Hypothesis Test</li> <li>• Comparing a Hypothesis Test to a Confidence Interval</li> <li>• Type I and Type II Errors</li> <li>• Power of the Test</li> <li>• The Relationship between Alpha, Beta, and Power</li> <li>• Effect Size</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 20</li> <li>• Homework 20 and Chapter 20 Discussions</li> <li>• Investigative Task 20A: Life After High School?</li> <li>• Investigative Task 20B: Just Keep Flipping</li> <li>• Investigative Task 20C: Recession Careers</li> <li>• Chapter 20 Quizzes</li> </ul>
4	<p><u>(Approx. 3 days) Chapter 21 – Comparing Two Proportions</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>• Sampling Distribution Model for the Difference Between Two Independent Proportions</li> <li>• Assumptions and Conditions for Two-Proportion Inference</li> <li>• Creating a Two-Proportion Z-Interval (Confidence Interval for a Difference Between Two Proportions)</li> </ul>

	<ul style="list-style-type: none"> <li>Idea of Pooling</li> <li>Conducting a Two-Proportion Z-Test</li> <li>Relationship between an Interval and a Test</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>Read Chapter 21</li> <li>Homework 21 and Chapter 21 Discussions</li> <li>Chapter 21 Quizzes</li> </ul>
4	<p><u>Cumulative Test (Midterm Exam)</u></p> <ul style="list-style-type: none"> <li>Review Chapters 17-21</li> <li>Chapters 17-21 Cumulative Test (Midterm Exam)</li> </ul>
5	<p><u>(Approx. 4 days) Chapter 22 – Inferences About Means</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>Standard Error of the Sample Mean</li> <li>T-distribution</li> <li>Degrees of Freedom</li> <li>When to Use the Z-distribution vs. the T-distribution</li> <li>Assumptions and Conditions for Inference for Means</li> <li>Calculating a One-Sample T-interval for Means</li> <li>Interpreting a Confidence Interval for Means</li> <li>Normal Probability Plots Revisited</li> <li>Conducting a One-Sample T-test for Means</li> <li>Drawing a Conclusion Based on a Test for Means</li> <li>Relationships between Intervals and Tests</li> <li>Calculating a Minimum Sample Size for a Given Margin of Error</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>Read Chapter 22</li> <li>Homework 22 and Chapter 22 Discussions</li> <li>Investigative Task 22A: SAT Performance</li> <li>Investigative Task 22B: Marshmallow Experiment Twist</li> <li>Chapter 22 Quizzes</li> </ul>
5	<p><u>(Approx. 3 days) Chapter 23 – Comparing Means</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>Sampling Distribution Model for the Difference Between Two Independent Sample Means</li> <li>When to Use the Z-distribution vs. the T-distribution</li> <li>Assumptions and Conditions for Two-Sample Inference for Unpaired Means</li> <li>Creating a Two-Sample T-interval for Unpaired Means</li> </ul>

	<ul style="list-style-type: none"> <li>Idea of Pooling</li> <li>Conducting a Two-Sample T-Test for Unpaired Means</li> <li>Relationship between an Interval and a Test</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>Read Chapter 23</li> <li>Homework 23 and Chapter 23 Discussions</li> <li>Chapter 23 Quizzes</li> </ul>
6	<p><u>(Approx. 3 days) Chapter 24 – Paired Samples and Blocks</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>Paired Data vs. Independent Samples</li> <li>Assumptions and Conditions for Inference for Paired Means</li> <li>Creating a Matched-Pairs T-Interval for Means</li> <li>Conducting a Matched-Pairs T-Test for Means</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>Read Chapter 24</li> <li>Homework 24 and Chapter 24 Discussions</li> <li>Investigative Task 24A: SAT Performance (Part II)</li> <li>Investigative Task 24B: Atheist Shoes</li> <li>Chapter 24 Quizzes</li> </ul>
6	<p><u>Cumulative Test</u></p> <ul style="list-style-type: none"> <li>Review Chapters 22-24</li> <li>Chapters 22-24 Cumulative Test</li> </ul>
7	<p><u>(Approx. 6 days) Chapter 25 – Comparing Counts</u></p> <p>Topics:</p> <ul style="list-style-type: none"> <li>Chi-Square Distribution</li> <li>Chi-Square Test of Goodness of Fit</li> <li>Assumptions and Conditions for Chi-Square Tests</li> <li>Expected Counts vs. Observed Counts</li> <li>Chi-Square Test of Homogeneity for Two Proportions</li> <li>Chi-Square Test of Independence of Two Proportions</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>Read Chapter 25</li> <li>Homework 25 and Chapter 25 Discussions</li> <li>Investigative Task 25A: '97 AP Stat Scores</li> <li>Investigative Task 25B: Driver Fatalities</li> <li>Chapter 25 Quizzes</li> </ul>
7	<p><u>(Approx. 3 days) Chapter 26 – Inferences for Regression</u></p>



	<p>Topics:</p> <ul style="list-style-type: none"> <li>• Idealized Regression Model</li> <li>• Assumptions and Conditions for Inference for Regression</li> <li>• Sampling Distribution Model for the Slope of the Regression Line</li> <li>• Constructing a T-Interval for the Slope of the LSRL</li> <li>• Conducting a T-Test for the Slope of the LSRL</li> <li>• Reading Computer Output</li> </ul> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Read Chapter 26</li> <li>• Homework 26 and Chapter 26 Discussions</li> <li>• Worksheet 26A: Correlation &amp; Regression Review</li> <li>• Worksheet 26B: Regression Inference</li> <li>• Chapter 26 Quizzes</li> </ul>
8	<p><u>Second Semester Final Project</u> See details in the Course Design section above.</p> <p><u>Cumulative Test (Final Exam)</u></p> <ul style="list-style-type: none"> <li>• Review Chapters 25-26</li> <li>• Chapters 25-26 Cumulative Test (Final Exam)</li> </ul>
	<p><u>(Approx. 10 days) Review for the Exam</u></p> <p>Activities:</p> <ul style="list-style-type: none"> <li>• Topic outline with detailed review</li> <li>• Mock AP Exam using one year's Released Multiple Choice and the most recently released Free Response questions</li> <li>• Practice Investigative Tasks from previously released Free Response</li> <li>• Item Analysis of Practice Exams</li> </ul>
	<p><u>(1 day) AP Exam</u></p>