AP Statistics

Description

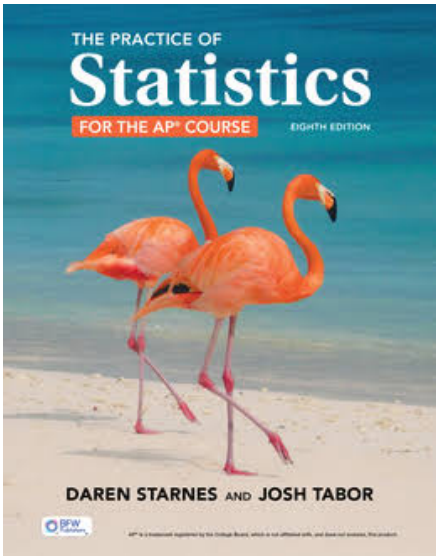
This AP Statistics course introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. There are four themes evident in the content, skills, and assessment in this course: exploring data, sampling and experimentation, probability and simulation, and statistical inference. This AP Statistics course is taught as an activity-based course in which students actively construct their own understanding of the concepts and techniques of statistics. Students use technology, investigations, problem solving, and writing as they build conceptual understanding. This class will be using the resources provided from Math Medic (previously Stats Medic) which is approved by AP College Board.

Prerequisites

According to the College Board, upon entering this course students are expected to have mathematical maturity and quantitative reasoning ability. *Mathematical maturity* could be defined as a complete working knowledge of the graphical and algebraic concepts through Algebra 2 and/or Pre-Calculus, including linear, quadratic, exponential, and logarithmic functions. In contrast to many math classes, this course will require reading of the text. It's extremely important that the student seek immediate assistance if they feel uncomfortable with the required mathematical skills.

Materials Needed

1. 3-ring binder or folder for notes & handouts
2. Notebook for homework problems
3. Whiteboard marker(s)
4. College Statistics Textbook - can be kept at home
5. A scientific calculator, preferably a graphing calculator
6. Red pen (recommended PaperMate Flair), pen and/or pencil



Rules of the Class

1. Be respectful to your classmates, the teacher, and all equipment
2. Follow directions the first time you are told
3. Come to class on time and prepared to learn
4. Cell phones are to stay in your backpack
5. All other Xavier High School rules apply

Attendance

Students are expected to attend school daily, and be **on time** for class. If a student is absent from class without a valid excuse or leaves class without the teacher's permission, he/she is considered unexcused. Students are expected to follow all attendance guidelines written in the Xavier student handbook.

Class Framework

Students will have the opportunity to meet the learning objectives in a variety of ways and to apply their knowledge to real world experiences and societal issues. Instructional time involves a variety of student-centered activities and group discussions which will be used to apply the statistics vocabulary and AP Statistics learning outcomes. Outside of class students read the assigned text, take notes on the notes sheet provided and complete daily homework assignments that support and reinforce each lesson. Quizzes will be used to help the student access

their understanding of the more challenging standards and will be based on previous homework assignments. A summative exam will be given at the end of each unit (or subunit for larger units).

Homework

It is expected that you will complete the 5 - 10 textbook problems that are assigned daily. The problems that are selected are designed to show you the different levels of questions that could be asked. All daily homework and notes must be complete to be given the privilege of comparing quiz answers before turning in the quiz.

If you have a few problems on an assignment that you did not understand or got wrong, DON'T PANIC. There will be time in class or during extended x-periods for you to ask questions before the quiz. However, it is your responsibility to ask questions if you don't understand how to do something.

Assessment

The students are assessed through quizzes and tests with the possibility of a project to apply information to a "real-world" situation. The quiz and test questions are modeled after questions from past AP® Statistics Exams and are written to give the students the opportunity to express their knowledge graphically, analytically, as well as using written explanations. The projects are assessed by the quality of their solution and also the quality of how they communicated their solution. If a student is absent on the day of an assessment, the student is expected to make up test or quiz the day the student returns to school. No assessments will be given before the scheduled date (ie, before a student leaves for planned absence).

Grading Criteria

Grades will be weighted in approximately the following percentages: Quizzes 30%, Tests 70%. These weights are subject to change based upon actual assignments. Participation in class and on homework assignments will be used to determine final grade rounding.

Xavier AP Grading Scale

98 - 100%	A+	72 - 77%	C
92 - 97%	A	68 - 71%	CD
88 - 91%	AB	62 - 67%	D
82 - 87%	B	0 - 61%	F
78 - 81%	BC		

Extra Support

The class Google Classroom has links to helpful video channels for explanations on the topics. Mrs Dumke is available before and after school every day and also during x-period on Tuesdays & Thursdays to answer questions.

Additional details may be obtained from the AP College Board website by viewing the curriculum for AP Statistics at: http://apcentral.collegeboard.com

Course at a Glance:
1st semester

UNIT 1 Exploring One-Variable Data and Collecting Data

~26 Class Periods | 20–30% AP Exam Weighting

Statistical Practices	Topics
1, 2	1.1 Introducing Statistics: What Can We Learn from Data?
2	1.2 Variables
3, 4	1.3 Tabular Representation and Summary Statistics for One Categorical Variable
3, 4	1.4 Graphical Representations for One Categorical Variable
3	1.5 Graphical Representations for One Quantitative Variable
4	1.6 Descriptions for One Quantitative Variable Distributions
3, 4	1.7 Summary Statistics for One Quantitative Variable
3, 4	1.8 Graphical Representations of Summary Statistics for One Quantitative Variable
3, 4	1.9 Comparisons of the Distributions for One Quantitative Variable
1, 2	1.10 The Investigative Question Revisited and Data Collection
2	1.11 Random Sampling
2	1.12 Potential Problems with Sampling
2	1.13 Experimental Design

UNIT 2 Probability, Random Variables, and Probability Distributions

~24 Class Periods | 15–25% AP Exam Weighting

Statistical Practices	Topics
4	2.1 Tabular and Graphical Representations for the Distributions of Two Categorical Variables
3, 4	2.2 Summary Statistics for Two Categorical Variables
3	2.3 Estimating Probabilities Using Simulation
3	2.4 Introduction to Probability
4	2.5 Mutually Exclusive Events
3	2.6 Conditional Probability
3	2.7 Independent Events and Unions of Events
3	2.8 Introduction to Random Variables and Probability Distributions
3, 4	2.9 Parameters of Random Variables
3, 4	2.10 The Binomial Distribution
3, 4	2.11 The Normal Distribution
4	2.12 Sampling Distributions and the Central Limit Theorem

UNIT 5 Regression Analysis

~9 Class Periods | 10–20% AP Exam Weighting

Statistical Practices	Topics
3, 4	5.1 Graphical Representations Between Two Quantitative Variables
4	5.2 Correlation
3	5.3 Linear Regression Models
3, 4	5.4 Residuals
3, 4	5.5 Least-Squares Regression

Second Semester

UNIT 3 Inference for Categorical Data: Proportions

~30 Class Periods | 15–25% AP Exam Weighting

Statistical Practices	Topics
3 4	3.1 Estimators
3 4	3.2 Sampling Distributions for Sample Proportions
2 3 4	3.3 Constructing a Confidence Interval for a Population Proportion
2 4	3.4 Justifying a Claim Based on a Confidence Interval for a Population Proportion
2 4	3.5 Setting Up a Test for a Population Proportion
4	3.6 *p*-Values
3 4	3.7 Carrying Out a Test for a Population Proportion
2 3 4	3.8 Potential Errors When Performing Tests
3 4	3.9 Sampling Distributions for the Difference Between Sample Proportions
2 3 4	3.10 Constructing a Confidence Interval for the Difference Between Two Population Proportions
4	3.11 Justifying a Claim Based on a Confidence Interval for the Difference Between Two Population Proportions
2 4	3.12 Setting Up a Test for the Difference Between Two Population Proportions
3 4	3.13 Carrying Out a Test for the Difference Between Two Population Proportions
2 4	3.14 Setting Up a Chi-Square Test for Homogeneity or Independence
3 4	3.15 Carrying Out a Chi-Square Test for Homogeneity or Independence

UNIT 4 Inference for Quantitative Data: Means

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

Statistical Practices	Topics
3 4	4.1 Sampling Distributions for Sample Means
2 3 4	4.2 Constructing a Confidence Interval for a Population Mean or Population Mean Difference
2 4	4.3 Justifying a Claim Based on a Confidence Interval for a Population Mean or Population Mean Difference
2 4	4.4 Setting Up a Test for a Population Mean or Population Mean Difference
3 4	4.5 Carrying Out a Test for a Population Mean or Population Mean Difference
3 4	4.6 Sampling Distributions for the Difference Between Two Sample Means
2 3 4	4.7 Constructing a Confidence Interval for the Difference Between Two Population Means
4	4.8 Justifying a Claim Based on a Confidence Interval for the Difference Between Two Population Means
2 4	4.9 Setting Up a Test for the Difference Between Two Population Means
3 4	4.10 Carrying Out a Test for the Difference Between Two Population Means