AP Statistics

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Primary Textbook: <u>The Practice of Statistics (5th Edition)</u> by Starnes, Yates, & Moore. New York: W.H. Freeman & Co./BFW.

ABOUT THIS CLASS

AP Statistics is a rigorous, year-long statistics course designed for students who have successfully completed Algebra II. The goal of this AP course is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. This course will cover four themes as outlined by the College Board:

- I. Exploring Data: Describing Patterns and Departures from Patterns
- II. Sampling and Experimentation: Planning and Conducting a Study
- III. Anticipating Patterns: Exploring Random Phenomena Using Probability and Simulation
- IV. Statistical Inference: Estimating Population Parameters and Testing Hypotheses

AP Statistics meets every day for 45 minutes (except when an Activity or Delay Schedule in effect for the day – those classes will meet for 31 to 41 minutes). The school year consists of about 175 class days for seniors. Approximately 155 of these are class days before the AP[®] Exams. The school year is separated into four equal grading periods. Generally, the students who take this course are juniors or seniors; however, sophomores who have been accelerated may also register for this course.

Throughout the year, students will be exposed to four broad conceptual themes listed above. While the pure mathematics involved is not complicated, this course does require a "mathematical maturity" and interpretive and reasoning skills, which the students may not have fostered as much in previous math courses. Written work and the ability to express one's mastery of a problem through words is a major component of this course.

Many of the questions in AP Statistics deal with interpreting data, often in a written form. Toward this end, there are written assignments throughout each quarter. These assignments are in paragraph form, using proper grammar and spelling, and should be indicative of students capable of higher-level thinking. The assignments are designed to make the real-life connection between the math that is used and the context in which it is used. It is not enough in this case to just get a proper answer. The methodology behind the answer and the understanding of where that answer fits in the greater context of the problem is preeminent in this course.

TECHNOLOGY

You will need to acquire a graphing calculator for this course. A list of calculators that are permitted on the AP Exam (as of 2016) is listed at the end of this course syllabus (<u>TI-83 Plus, TI-84, or TI-nspire models are</u> <u>recommended for this course</u>). Your graphing calculator will be the primary technological source you will use to help you....we also will utilize computer software such as Excel and Minitab. However, on all of your assessments in the course, and on the AP Statistics exam in May, you will only be allowed to use your calculator.

TI Calculators "Technology Corner" Assignments are included within the "Course Plan" below. These assignments will provide instruction and practice for you on TI calculator topics including, but not limited to:

finding area under a normal curve; creating and analyzing scatterplots; least-squares regression; choosing a simple random sample; binomial coefficients, binomial probability; one-proportion z-test; computing P-values; one sample t-tests; and confidence intervals.

Minitab & Excel Assignments are included with the "Course Plan" below. Minitab and Excel will be used with various assignments throughout the semester. In the M&M problem, they will be used for numerical displays of frequency and relative frequency and graphical displays (such as bar graphs, pie charts). Minitab will be used to analyze contingency tables (Technology Corner, pg 16), analyze various data sets created in class (do a descriptive analysis of the data). We will also create histograms, boxplots; stemplots from the data created in class. Other functions we will perform with Minitab are: confidence intervals, proportion tests, summary statistics, correlation and regression, t-tests, and Chi-square tests. Minitab assignments are listed in the Course plan.

ATTENDANCE

You need to be present in class to benefit from the in-class notes, discussions, sample problems, and interactions. This is invaluable and cannot be recreated. Any work that is missed during legal absences must be made up within the same number of days that have been missed.

NOTEBOOKS/HOMEWORK

Each student will need to keep an organized 3-ring binder for this course. When taking notes, list the date and topic at the top of each segment of notes. It is recommended, but not required, that you work in pen (blue or black only please). Homework should also be dated, and should also include the page number and problems assigned at the top of the page. Failure to do this will result in deductions. You can expect to work a minimum of 30 minutes per night on your homework. Don't fall behind, because it will be very difficult to learn new material while attempting to catch up on old material. Assignments will be collected on Friday of each week. Your preparation time will increase considerably as the AP Exam draws near.

GRADING

Your grade will consist of homework, quizzes, exams, class participation, writing summaries, and projects (see "Project" section below). These categories will not be weighted, but will be based on total points received out of total points available.

Grading Scale is as follows: A: 91-100; B: 81-90 C: 70-80 D: 60-69 F: 0-59

TUTORING

I will be available to assist you prior to school each day. I arrive at approximately 6:45 and will have a morning duty beginning around 7:13. I can also assist after school until 3:15. If other time is needed for assistance, please set up an appointment.

CLASS PARTICIPATION

Each student will need to be an active participant in this class. This means not only offering answers and insights during class discussion, but also being prepared for class daily, completing daily assignments, asking questions for clarification, being prepared to place problems on the board, cooperatively learning with a partner, pair-sharing, tutoring others when the opportunity arises (teaching a topic to someone else is the absolute best way to retain information), and maturing as a student of statistics.

WRITING SUMMARY/REVIEW

At the conclusion of each chapter, you will be required to write a summary of the chapter. This summary will include, but is not limited to: what did you learn (based upon chapter learning objectives); what were the significant features of each section (including key definitions and concepts); what was one sample problem or homework problem that taught you the most in the chapter and why; AP Exam Tips; any other information you might want to add. Your summaries are expected to be written at an upper high school/lower college level, free from errors, typed, double-spaced, and cited if necessary. These summaries should be a minimum of 1 typed page, but not more than 2 (you may print double-sided).

At the end of Quarter 1 and Quarter 3, you will provide a review/analysis of a research journal article that includes statistical analysis. You must communicate methods that were utilized, results, and interpretations using proper statistical vocabulary in this formal writing assignment. You will provide an analysis of the statistics included in the article and your opinion of whether or not you view the author's analysis to be accurate or biased based on what you have learned to this point. This Review will be due 2 days before the end of Q1 and Q3. Your instructor will provide for you articles from which you can choose.

PROJECT

You will be required to complete a minimum of two projects as described below.

1.) AP Statistics Midterm Project: Bivariate Data Collection

Explanation: Your job is to choose a topic that will require you to explore the relationship between two variables that you believe will have some correlation. You will collect data related to your topic and analyze and interpret your results.

A more detailed description of this project will be provided apart from this syllabus.

Your group (size of 1 or 2) will:

- Choose a random sample of at least 20 pairs from a larger population.
 -be sure to use appropriate sampling techniques for data collection
 -your data can come from a survey or an observational study
- 2) Choose data that is appropriate to measure regression
- 3) Choose data that should not have an easily predicted correlation, but one in which you anticipate a moderate to strong correlation.
- 4) Choose an appropriate mathematical model (linear, exponential, power, inverse...)that will enable you to calculate regression.
- 5) Make inferences and communicate your findings by way of report (described below)

The Report

The report should have each of the following sections in the order given:

A. Description of Study

State the goals of your study, including what you are hoping to learn from this study. State your explanatory and response variables and explain the reason for your designation of each.

B. Data Collection

Include a description of how you conducted your study or researched the data. This would be specific enough so the reader will have a clear picture of how you performed the study and have a good feel for your thoughtfulness in reducing possible sources of error. (The word reproducible should be kept in mind!) If you used data that was already produced, explain who collected it, when, where, why, how and where it published. (Use appropriate citations.)

Also include your sampling technique, with original labeling and selecting.

C. Data presentation

Include a list of the data in a spread sheet or list format. If you researched the data, include the original data

from the source, and a new list that you created with the 2 variables. Your lists must be clearly labeled. Draw a scatterplot of your data. This will be done with computer software (such Minitab or Excel.) Discuss the overall shape, strength and direction of the scatterplot and any outliers or influential points that may be present. Do not include regression lines on this graph!

D. Modeling

You will include a regression model for your data. Choose a model (linear, exponential, power, inverse, etc.) that fits your data. Include in your project:

- an explanation of why you chose your model, comparing the models you examined.
- a new scatterplot with the regression line on the data or transformed data for the model you chose.
- the residual plot for the model you chose.
- a paragraph discussing:
 - ✓ The meaning of the slope and y-intercept of your regression line.
 - \checkmark The value of the correlation coefficient and what it means in relation to your data.
 - \checkmark The value of the coefficient of determination and what it means in relation to your data.
 - \checkmark The transformed equation if the model is not linear.

E. Predictions

- Use your chosen model to make an interpolative and extrapolative prediction of interest to you and discuss the reasonableness of each.
- Discuss causation as it relates to your study.

2.) AP Statistics Final Project: Using What You've Learned

Explanation: Your job is to demonstrate what you have learned in this course by appropriately applying the concepts of Producing Data, Exploring Data, Anticipating Patterns, and Statistical Inference. A more detailed description of this project will be provided apart from this syllabus.

Your group (size of 1 or 2) will:

1) **Develop** a research question (this question is to be one that interests you and your group and must be approved by your instructor).

2) *Collect* data by way of survey or observational study.

3) <u>Analyze</u> the data using the techniques developed in this course (therefore, your research question must be one that provides meaningful data).

4) Provide statistical *inference* based upon evidence and reasoning.

5) <u>Communicate</u> your findings. This can be by way of classroom presentation, video, Prezi or PowerPoint (with audio narration), or some other approved method of communication.

You will have approximately 10 class days to work on this project after the AP Exam is complete. The below summary provides the overview of this project so that you can begin thinking through your approach as we walk through the school year. Specific details and scoring rubric will be provided following the AP Exam, so that you can then piece your details together in the manner required.

Project Summary:

1) This project is in the form of an extended formal writing assignment. Good form and technical proficiency are requirements.

2) The goal is for you to gain practical experience and make connections between all aspects of your design, analysis, and conclusion. You are required to demonstrate your knowledge of the four broad conceptual themes of AP Statistics: Exploring Data; Sampling and Experimentation; Anticipating Patterns; and Statistical Inference. Your ultimate goal is to demonstrate your understanding of the connections between these four themes within the context of your specific question.

HIGH SCHOOL AP STATISTICS COURSE PLAN

Below is the approximately flow of the course by Textbook, AP Topic (see "AP STATISTICS COURSE OUTLINE" below, Timeframe, and Anticipated Problems Assigned. There will be time built in for consistent cumulative reviews, multiple choice and open response AP Exam practice problems, projects assigned through the year pertaining to statistics, and AP Exam preparation beginning in early May.

Textbook Section	Topic from AP	<u>Timeframe</u>	Anticipated Problems Assigned
	Stats Outline		(ODD #'s are required)
Chapter 1 Intro: Data Analysis		1-2 days	p. 6: 1 – 7
1.1 Analyzing Categorical Data	I. E. 1,2,3,4	3-4 days	p. 20: 9-33
1.2 Displaying Quantitative Data	I. A. 1,2,3,4	3-4 days	p. 41: 37-75
with Graphs	I. C. 1,2,3,4		Minitab: Boxplot Activity
1.3 Describing Quantitative Data	I. B. 1,2,3,4	3-4 days	Data Exploration – p. 66
with Numbers	I. C. 1,2,3,4		p. 69: 79-111
Chapter 1 Review		2 days	FRAPPY – p. 74
			Chapter 1 Writing Summary
			p. 78: Ch 1 AP Stats Prac Test
			Excel: M&M Assignment
Chapter 1 Exam		1 day	
****	*****	*****	****
2.1 Describing Location in a	I. B. 3,5	2-4 days	p. 99: 1-31
Distribution			
2.2 Density Curves and Normal	III. C. 1,2,3	2-3 days	p. 116: Technology Corner
Distributions			p. 126: "Do You Sodoku?"
			p. 128: 33-73
			Minitab: Normal Distribution
			Activity
Chapter 2 Review		2 days	FRAPPY – p. 134
			Chapter 2 Writing Summary
			p. 137: Ch 2 AP Stats Prac Test
Chapter 2 Exam		1 day	
****	*****	XXXXXXXXXXX	****
Chapter 3 Intro: Describing		1 day	Activity – p. 142
Relationships			
3.1 Scatterplots and Correlation	I. D. 1,2	3-4 days	p. 146: Check Your
			Understanding
			p. 150: Technology Corner
			P. 157: Data Exploration (use
			Excel and Minitab to display
			scatterplot)
			p. 159: 1-29
3.2 Least Squares Regression	I. D. 3,4	3-4 days	p. 170: Activity
			p. 171: Technology Corner
			p. 175: Technology Corner
			p. 193: 35-75
Chantar 2 Daview		2 dava	
Chapter 3 Keview		z uays	FRAPPI - P. 199 Chapter 2 Writing Summary
			Chapter 3 writing Summary

specific assignment dates and problem numbers will be given at the beginning of each chapter

			p. 203: Ch 3 AP Stats Prac Test
Chapter 3 Exam		1 day	
****	****	XXXXXXXXXXX	****
Chapter 4 Intro: Designing		1-2 days	p. 108: Read
Studies			p. 109: Activity
4.1 Sampling and Surveys	II. A. 1,2	2-4 days	p. 215: Technology Corner
	II. B. 1,2,3,4		p. 229: 1-39
4.2 Experiments	II. A. 3,4	2-4 days	p. 249: Activity
	II. C. 1,2,3,4,5		p. 259: 45-93
4.3 Using Studies Wisely	Optional	Optional	Minitab: Sampling Activity
Chapter 4 Review		2 days	FRAPPY – p. 275
			Chapter 4 Writing Summary
			p. 272 Activity
			p. 279: Ch 4 AP Stats Prac Test
Chapter 4 Exam		1 day	
*****	****	XXXXXXXXXXX	*****
CUMULATIVE REVIEW		2 days	p. 282: Cumulative AP Prac Test 1
*****	*****	XXXXXXXXXXX	*****
Chapter 5 Intro: Probability		1	
5.1 Randomness, Probability,	III. A. 1,2,5	2-3 days	p. 300: 1-35
and Simulation			
5.2 Probability Rules	I. E. 2	2-3 days	P 314: 39-61
	III. A. 3		
5.3 Conditional Probability and	I. E. 3	2-3 days	p. 332: Calculated Risks
Independence	III. A. 3		p. 333: 63-99
Chapter 5 Review		2 days	FRAPPY – p. 338
			Chapter 5 Writing Summary
			p. 342: Ch 5 AP Stats Prac Test
Chapter 5 Exam		1 day	
	*****	XXXXXXXXXX	
Chapter 6 Intro: Random		1 day	p. 354: Technology Corner
Variables			
6.1 Discrete and Continuous	III. A. 4	1-2 days	p. 359: 1-29
Random Variables			
6.2 Transforming and Combining	III. A. 6	2-3 days	p. 382: 35-63
Random Variables	III. B. 1,2		
6.3 Binomial and Geometric	optional	optional	p. 392: Technology Corner
Random Variables			p. 394: Technology Corner
			p. 406: Technology Corner
			52.422%
Chapter 6 Review		2 days	FKAPPY - p. 414
			Chapter 6 writing Summary
			p. 272 Activity
Charter C Even		1 4	p. 418: Ch 6 AP Stats Prac Test
		тау	
Chapter 7 Intro: Compliant	*****		*****
Chapter / Intro: Sampling		T-5 days	
DISTRIBUTIONS			

7.1 What Is a Sampling	III. D. 6	2-3 days	p. 422: Activity
Distribution?			p. 436: 1-25
7.2 Sample Proportions	III. D. 1	2-3 days	p. 447: 27-45
7.3 Sample Means	III. D. 2,3	1 day	P 450: Activity
			p. 461: 49-71
7.3 Sample Means (Central Limit	III. D. 2,3	1-2 days	
Theorem)			
Chapter 7 Review		2 days	FRAPPY – p. 464
			Chapter 7 Writing Summary
			p. 468: Ch 7 AP Stats Prac Test
Chapter 7 Exam		1 day	
*****	*****	XXXXXXXXXX	****
CUMULATIVE REVIEW		2 days	p. 470: Cumulative AP Prac Test 2
****	*****	*****	****
END OF			
SEMESTER 1			
****	****	XXXXXXXXXX	****
8.1 Confidence Intervals: The	IV. A. 1,2,3	3-4 days	p. 489: 1-25
Basics			
8.2 Estimating a Population	IV. A. 4	2-3 days	p. 504: 27-51
Proportion			
8.3 Estimating a Population	III. D. 7	2-3 days	p. 515 Activity
Mean	IV. A. 6		p. 525: 55-79
Chapter 8 Review		2 days	FRAPPY – p. 530
			Chapter 8 Writing Summary
			p. 534: Ch 8 AP Stats Prac Test
Chapter 8 Exam		1 day	
	*****	XXXXXXXXXX	****
Chapter 9 Intro: Testing a Claim		1-2 days	p. 538: Activity
9.1 Significance Tests: The Basics	IV. B. 1	3-4 days	p. 542: Activity
	N/ D 4		p. 551: 1-29
9.2 Tests About a Population	IV. B. 1	2-3 days	p. 561: Technology Corner
Proportion	IV. B. 2		p. 570: 31-61
			p. 576. rechnology Corner
			Minitah: Population Mean
	1		
•			Hypothesis Testing
9 3 Tests About a Population	ΙV Δ 7	2-3 days	Hypothesis Testing
9.3 Tests About a Population Mean	IV. A. 7 IV. B 4 5	2-3 days	Hypothesis Testing p. 595: 65-101
9.3 Tests About a Population Mean Chapter 9 Review	IV. A. 7 IV. B. 4,5	2-3 days	Hypothesis Testing p. 595: 65-101 FRAPPY – p. 601

			Chapter 9 Writing Summary
			p. 605: Ch 9 AP Stats Prac Test
Chapter 9 Exam		1 day	
****	XXXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXX	****
Chapter 10 Intro: Comparing Two Populations or Groups		1-2 days	p. 610: Activity
10. 1 Comparing Two	III. D. 4	3-4 days	p. 629: 1-29
Proportions	IV. A. 5		p. 643: Technology Corner
	IV. B. 3		p. 647: Technology Corner
10.2 Comparing Two Means	III. D. 5	2-3 days	p. 654: 31-61
	IV. A. 7		
	IV. B. 5		
Chapter 10 Review		2 days	FRAPPY – p. 662
			Chapter 10 Writing Summary
			p. 666: Ch 10 AP Stats Prac Test
Chapter 10 Exam		1 day	
****	*****	XXXXXXXXXX	****
		2 days	p. 669: Cumulative AP Prac Test 3
	*****	xxxxxxxxxx	
Chapter 11 Intro: Inference for		1-2 days	p. 678: Activity
Distributions of Categorical Data		2.4 days	
11.1 Chi-Square Tests for	III. D. 8	3-4 days	p. 693: 1-25
11.2 Informed for Two Way	IV. D. 0	2 4 days	n 724:27 EQ
Tables	IV. D. O	5-4 uays	p. 724. 27-39
Chapter 11 Review		2 days	FRAPPY - n 730
		2 00 95	Chapter 11 Writing Summary
			p. 734: Ch 11 AP Stats Prac Test
Chapter 11 Exam		1 day	
****	****	, , , , , , , , , , , , , , , , , , , ,	****
Chapter 12 Intro: More About		1-2 days	p. 738: Activity
Regression			
12.1 Inference for Linear Regression	IV. A. 8	3-4 days	P. 759: 1-25
	IV. B. 7		
12.2 Transforming to Achieve Linearity	I. D. 5	3-4 days	p. 785: 31-51
Chapter 12 Review		2 days	FRAPPY – p. 793
			Chapter 12 Writing Summary
			p. 797: Ch 12 AP Stats Prac Test
Chapter 12 Exam		1 day	
	*****	XXXXXXXXXX	
CUMULATIVE REVIEW		2 days	p. 800: Cumulative AP Prac Test 4
*****	*****	XXXXXXXXXX	*****
		10-15	
REVIEW FOR AP EXAM		days	
	*****	XXXXXXXXXXX	*****
ΑΡΕΧΑΜ			
		XXXXXXXXXX	*****
Post-AP Exam Project	Topic TBD	10-15 days	

AP STATISTICS COURSE OUTLINE

Α.

I. Exploring Data: Describing patterns and departures from patterns (20%–30% of AP Exam)

- Constructing and interpreting graphical displays of distributions of
 - univariate data (dotplot, stemplot, histogram, cumulative frequency plot)
 - 1. Center and spread
 - 2. Clusters and gaps
 - 3. Outliers and other unusual features
 - 4. Shape
- B. Summarizing distributions of univariate data
 - 1. Measuring center: median, mean
 - 2. Measuring spread: range, interquartile range, standard deviation
 - 3. Measuring position: quartiles, percentiles, standardized scores (z-scores)
 - 4. Using boxplots
 - 5. The effect of changing units on summary measures
- C. Comparing distributions of univariate data (dotplots, back-to-back stemplots, parallel boxplots)
 - 1. Comparing center and spread: within group, between group variation
 - 2. Comparing clusters and gaps
 - 3. Comparing outliers and other unusual features
 - 4. Comparing shapes
- D. Exploring bivariate data
 - 1. Analyzing patterns in scatterplots
 - 2. Correlation and linearity
 - 3. Least-squares regression line
 - 4. Residual plots, outliers and influential points
 - 5. Transformations to achieve linearity: logarithmic and power transformations
- E. Exploring categorical/qualitative data
 - 1. Frequency tables and bar charts
 - 2. Marginal and joint frequencies for two-way tables
 - 3. Conditional relative frequencies and association
 - 4. Comparing distributions using bar charts

II. Sampling and Experimentation: Planning and conducting a study (10%–15%)

- A. Overview of methods of data collection
 - 1. Census
 - 2. Sample survey
 - 3. Experiment
 - 4. Observational study
- B. Planning and conducting surveys
 - 1. Characteristics of a well-designed and well-conducted survey
 - 2. Populations, samples and random selection
 - 3. Sources of bias in sampling and surveys
 - 4. Sampling methods, including simple random sampling, stratified random

sampling and cluster sampling

- C. Planning and conducting experiments
 - 1. Characteristics of a well-designed and well-conducted experiment
 - 2. Treatments, control groups, experimental units, random assignments and replication
 - 3. Sources of bias and confounding, including placebo effect and blinding
 - 4. Completely randomized design
 - 5. Randomized block design, including matched pairs design
- D. Generalizability of results and types of conclusions that can be drawn from observational studies, experiments and surveys
- III. Anticipating Patterns: Exploring random phenomena using probability and simulation (20%–30%)
 - A. Probability
 - 1. Interpreting probability, including long-run relative frequency interpretation
 - 2. "Law of Large Numbers" concept
 - 3. Addition rule, multiplication rule, conditional probability and independence
 - 4. Discrete random variables and their probability distributions, including binomial and geometric
 - 5. Simulation of random behavior and probability distributions
 - 6. Mean (expected value) and standard deviation of a random variable, and linear transformation of a random variable
 - B. Combining independent random variables
 - 1. Notion of independence versus dependence
 - 2. Mean and standard deviation for sums and differences of independent random variables
 - C. The normal distribution
 - 1. Properties of the normal distribution
 - 2. Using tables of the normal distribution
 - 3. The normal distribution as a model for measurements
 - D. Sampling distributions
 - 1. Sampling distribution of a sample proportion
 - 2. Sampling distribution of a sample mean
 - 3. Central Limit Theorem
 - 4. Sampling distribution of a difference between two independent sample proportions
 - 5. Sampling distribution of a difference between two independent sample means
 - 6. Simulation of sampling distributions
 - 7. t-distribution
 - 8. Chi-square distribution
- IV. Statistical Inference: Estimating population parameters and testing hypotheses (30%–40%)

- A. Estimation (point estimators and confidence intervals)
 - 1. Estimating population parameters and margins of error
 - 2. Properties of point estimators, including unbiasedness and variability
 - 3. Logic of confidence intervals, meaning of confidence level and confidence intervals, and properties of confidence intervals
 - 4. Large sample confidence interval for a proportion
 - 5. Large sample confidence interval for a difference between two proportions
 - 6. Confidence interval for a mean
 - 7. Confidence interval for a difference between two means (unpaired and paired)
 - 8. Confidence interval for the slope of a least-squares regression line
- B. Tests of significance
 - 1. Logic of significance testing, null and alternative hypotheses; p-values; one- and two-sided tests; concepts of Type I and Type II errors; concept of power
 - 2. Large sample test for a proportion
 - 3. Large sample test for a difference between two proportions
 - 4. Test for a mean
 - 5. Test for a difference between two means (unpaired and paired)
 - 6. Chi-square test for goodness of fit, homogeneity of proportions, and independence (one- and two-way tables)
 - 7. Test for the slope of a least-squares regression line

COURSE RESOURCES

Primary Textbook:

The Practice of Statistics (5th Edition). Starnes, Yates, & Moore. New York: W.H. Freeman & Co./BFW.

Supplemental textbooks:

<u>Elementary Statistics</u>. Johnson & Kuby. Boston: Brooks/Cole, Cengage Learning. <u>Elementary Statistics – Looking at the Big Picture</u>. Nancy Pfenning. Boston: Brooks/Cole, Cengage Learning. <u>Understanding Basic Statistics</u>. Charles Henry Brase. Belmont, CA: Brooks/Cole, Cengage Learning.

Technology:

Minitab software. TI-83, TI 84, TI-nspire calculators. Microsoft Excel.

Other:

<u>Barron's AP Statistics, 8th Edition.</u> Martin Sternstein. <u>Fast Track to a 5: Preparing for the AP Statistics Examination</u>. Stephen R. Dartt. <u>Strive for a 5: Preparing for the AP Statistics Examination.</u> Joason Molesky and Michael Legacy.

2015–16 LIST OF GRAPHING CALCULATORS PERMITTED ON AP STATISTICS EXAM (note that this may change for the 2016-17 exam)

Graphing calculators having the expected built-in capabilities listed above are indicated with an asterisk (*). However, students may bring any calculator on the list to the exam; any model within each series is acceptable.

Casio	Hewlett-Packard	ITexas Instruments
FX-6000 series	HP-9G	TI-73
FX-6200 series	HP-28 series*	TI-80
FX-6300 series	HP-38G*	TI-81
FX-6500 series	HP-39 series*	TI-82*
FX-7000 series	HP-40 series*	TI-83/TI-83 Plus*
FX-7300 series	HP-48 series*	TI-83 Plus Silver*
FX-7400 series	HP-49 series*	TI-84 Plus*
FX-7500 series	HP-50 series*	TI-84 Plus CE*
FX-7700 series	HP Prime*	TI-84 Plus Silver*
FX-7800 series		TI-84 Plus C Silver*
FX-8000 series	Radio Shack	TI-85*
FX-8500 series	EC-4033	TI-86*
FX-8700 series	EC-4034	TI-89*
FX-8800 series	EC-4037	TI-89 Titanium*
FX-9700 series*		TI-Nspire*
FX-9750 series*	Sharp	TI-Nspire CX*
FX-9860 series*	EL-5200	TI-Nspire CM-C*
CFX-9800 series*	EL-9200 series*	TI-Nspire CAS*
CFX-9850 series*	EL-9300 series*	TI-Nspire CX CAS*
CFX-9950 series*	EL-9600 series*†	TI-Nspire CM-C CAS*
CFX-9970 series*	EL-9900 series*	TI-Nspire CX-C CAS*
FX 1.0 series*		-
Algebra FX 2.0 series*	:	Other
FX-CG-10 (PRIZM)*		Datexx DS-883
FX-CG-20*		Micronta
		Smart ²

[†] The use of the stylus is not permitted.

Note: This list is current as of November 2015; other allowable machines will be added as necessary.