

# AP Statistics Course Syllabus

**Instructor:** Shannon Johnson

**Prerequisite:** Algebra II or equivalent

## Textbook:

- Daren Starnes, D. Y. (2012). *The Practice of Statistics 4th Edition*. New York: Freeman and Worth.

## Reference Material:

- Bock, David E., Paul F. Velleman, and De Veaux Richard D. *Stats: Modeling the World*. Boston: Addison-Wesley, 2010. Print.
- Peck, Roxy, and Chris Olsen. *Statistics: Learning from Data*. Boston: Brooks/Cole, 2014. Print.
- AP Central
- Barron's Test Prep material

## Technology

- It is strongly recommended that all students have the equivalent of a TI-83, TI-83+ or TI-84 graphing calculator for use in class, at home, and on the AP Exam.
- Students will use their graphing calculator extensively throughout the course. Most assignments, numerous in class activities and test will require the use of a graphing calculator.
- Students that do not have access to a graphing calculator will have great difficulty with the class.
- The TI calculators are recommended. TI calculators are NOT required and neither the instructor, nor the school has any financial relationship with TI. However, the examples in class will be given using a TI-84 (which is very similar to the TI 83) and the instructor does not know how to instruct students in the use of calculators other than the TI 83/84. Please note that the key strokes on the TI 86 & 89 are completely different than the TI 83/84.
- Students will also occasionally go to the computer lab and utilize statistics software, MS Excel as well as some Internet applets.
- Students are not required to have access to any statistical computer software. However, numerous examples of MINITAB printouts will be reviewed in class and some homework and test problems will require understanding of MINITAB output to answer the questions.

**Course Description:** Curriculum for this course follows the AP Statistics curriculum set by the College Board and is designed to prepare students for the AP Statistics exam in May. This syllabus is adapted from the course description given by the College Board. The full course

description should be downloaded from [www.Collegeboard.com](http://www.Collegeboard.com) and read completely. The purpose of the AP course in statistics is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. This course draws connections between all aspects of the statistical process, including design, analysis, and conclusions. Additionally, using the vocabulary of statistics this course will teach students how to communicate statistical methods, results and interpretations. Students will learn how to use graphing calculators and read computer output in an effort to enhance the development of statistical understanding.

**Performance Standards:** During this course, the student will be exposed to four broad conceptual themes and will be expected to demonstrate proficiency in:

- Exploring Data: Describing patterns and departures from patterns
- Sampling and Experimentation: Planning and conducting a study
- Anticipating Patterns: Exploring random phenomena using probability and simulation
- Statistical Inference: Estimating population parameters and testing hypotheses.

**Instructional Materials:** The following materials are needed for this class:

- Text Book, provided to you, needed daily in class.
- Daily access to a graphing calculator of some type is strongly suggested (see technology section above and students are encouraged to visit the College Board website for a list of graphing calculators that are approved for the AP exam)
- Access to a computer with a spreadsheet program is highly recommended. The computer lab at school will be used occasionally during class, however, home access can accentuate the learning process.
- 3 ring binder with loose leaf paper
- writing utensil

To help in studying for the AP exam, all class notes, assignments, exams and quizzes should be kept in a neatly organized binder. Your notebook/binder for class should be organized into the following clearly labeled sections:

- Notes
- Homework/effort work
- Exams/Quizzes
- Miscellaneous assignments
- AP prep materials

**Class Room Standards:** Students are to follow all school rules & standards. All students are to follow the Class Expectations that are given out with this syllabus and can be found on the class web site. Class Expectations will be gone over in class the first week of class.

**Academic Dishonesty:** Cheating of any kind will not be tolerated. All involved parties will earn zeroes on the assignment or assessment and a disciplinary referral will be sent to the office. The following are examples of cheating; however, this list is not all inclusive:

- Representing the work of others as your own (copying homework, letting someone copy your work etc.)
- Looking at another student's paper during an exam or quiz.
- Using prohibited materials (notes, etc.) on exams or quizzes.
- Sharing calculators during exams or quizzes
- Discussing exams or quizzes with students in other sections of the class who have not yet taken them.

**Forms of Assessment & Grading Scale:** Exams, quizzes, class participation, homework/Classwork, effort, calculator assignments, group assignments, projects & content writing are used to assess the students' performance. As well as oral exams where you will report your findings to the classroom and explain the results.

#### **GRADING SCALE GRADING STANDARDS**

A 90%-100%	30% Tests
B 80% - 89%	20% Quizzes
C 70% - 79%	20% Projects/Writing/ Group work
D 60% - 69%	15% Homework
F 0% - 59%	15% Classwork

**Project:** Each student will have an individual and/or group project each semester. As an example, students have designed a simple survey and collected data on school athletic ticket sales to obtain specific information needed by the school's athletic department, been assigned specific pairs of physical attributes to measure on individuals to create a scatter plot and assess the strength & type (linear, quadratic, log, etc) of the relationship, required to individually develop questions & answers of which their groups develop a Jeopardy style game to be used in class for AP test review, etc. The instructor will give project assignments each semester & reserves the right to change projects to fit the needs of the school and the class. Term 3 will have a project where the student creates an experiments, conducts an experiments, and then analyzes and comes to conclusions.

**Makeup Work/Absences:** If you are absent for any reason, it is your responsibility to obtain all materials missed, including notes, homework solutions, assignments, etc. All assignments for the entire year are posted at the beginning of the year on the class web site; please refer to it for assignments. It is a good idea to also choose someone in class that you can call or email if you are absent. The timeline for turning in makeup work is outlined in your student planner. Other than as outlined in the student planner, all makeup work,

disputed work, or makeup test MUST be completed prior to the start of semester finals for semester in question, or zero's will be given. If you miss an exam or quiz, you will take an alternate version of the assessment immediately upon your return. Any assignments that were assigned before you were absent & due on a day you miss must be handed in immediately upon your return. Since exams are announced well in advance, missing a single class period before an exam does not get you out of taking the exam on the scheduled date. If you are in class on the scheduled date of an exam or quiz, you will take it. Finals are taken on the day scheduled by the school, no exceptions. If you miss a final exam for any reason, you will need to arrange to take a make-up exam sometime after the scheduled exam.

**The AP Exam:** It is assumed that all students are in this class with the intention of taking the AP exam in May. If you are a senior and already know the schools you are applying to for next fall, you should contact them to find out their policy for accepting AP credit. If, for any reason, you decide not to take the AP exam, you are still required to complete all work and participate in all review activities in class with respect to the AP exam.

Below is a tentative schedule for the school year. Adjustments will be made as needed.

## Unit 1

### Chapter 1: Exploring Data

- Analyzing Categorical Data
- Displaying Quantitative Data with Graphs
- Describing Quantitative Data with Numbers

Writing Assignment – Introduction to Statistics

AP Practice Test Questions

Chapter 1 Test

### Chapter 2: Modeling Distributions of Data

- Describing Location in a Distribution
  - Normal Distribution

Writing Assignment – Normal Distribution

AP Practice Test Questions

Chapter 2 Test

### Chapter 3: Describing Relationships

- Scatterplots and Correlation
- Least-Squares and Regression

AP Practice Test Questions

Chapter 3 Test

#### **Chapter 4: Designing Studies**

- Sampling and Surveys
  - Experiments
- Using Studies Wisely

Cummulative AP Practice Test

Chapter 4 Test

Major Group Project: Survey Design

#### **Unit 2**

#### **Chapter 5: Probability: What are the Chances**

- Randomness, Probability, and Simulation
  - Probability Rules
- Conditional Probability and Independence

Mini Project - Probability

AP Practice Test Questions

Chapter 5 Test

#### **Chapter 6: Random Variables**

- Discrete and Continuous Random Variables
- Transforming and Combining Random Variables
- Binomial and Geometric Random Variables

AP Practice Test Questions

Chapter 6 Test

## **Chapter 7: Sampling Distributions**

- What is a sampling distribution?
  - Sample Proportions
  - Sample Means

Writing Assignment - Sampling

Cumulative AP Practice Test

Chapter 7 Test

### **Unit 3**

## **Chapter 8: Estimating with Confidence**

- Confidence Intervals: The Basics
- Estimating a Population Proportion
- Estimating a Population Mean

AP Practice Test Questions

Chapter 8 Test

## **Chapter 9: Testing a Claim**

- Significance Tests: The Basics
- Tests about a Population Proportion
- Tests about a Population Mean

AP Practice Test Questions

Chapter 9 Test

## **Chapter 10: Comparing Two Populations Or Groups**

- Comparing Two Proportions
- Comparing Two Means

Cumulative AP Practice Test

Chapter 10 Test

## **Unit 4**

### **Chapter 11: Inference for Distributions of Categorical Data**

- Chi-Square Goodness of Fit Tests
  - Inference for Relationships

Mini Project – Chi Square Goodness of Fit

AP Practice Test Questions

Chapter 11 Test

### **AP Test Preparation**

- Review
- Sample Multiple Choice Tests
- Sample Free Response Test Questions

### **AP Exam**

Project Presentations

Final Exam Review