Locust Grove High School
AP Statistics Syllabus
2016 - 2017

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Room #:   111

Objective:
AP Statistics is a rigorous, non-calculus based course intended to be the equivalent of a first year college level course. The course is guided by the AP syllabus and covers the following areas:

- Organizing Data
- Normal, Binomial, Geometric, and Sample Distributions
- Correlation
- Experimental Designs
- Probability
- Statistical Inference and Testing

Upon completion, students will develop into competent interpreters and users of statistical data and information. Decision-making and justification of statistical hypotheses are emphasized. The AP Statistics course will prepare students for the College Board Advanced Placement Exam which is given in May. Students may earn college credit for this course by scoring from 3 to 5 on the exam. The amount of credit granted varies among colleges and universities.

Course Comments:
Since the potential exists to earn college credit, it is expected that you take the course seriously. Students must be active participants since the "best" learning occurs when students are actively involved in the learning process. AP Statistics will be more of a "hands on," practical applications oriented class. Technology is used frequently to allow students to investigate and explore statistical concepts. Effective communication skills will be developed through written analysis of real data.

Textbook:
Starnes, D., Tabor, J., Yates, D., & Moore, D. (2015). *The practice of statistics for the AP Exam (5th ed.)*. New York: W. H. Freeman.

Additional online support for the textbook may be found at www.whfreeman.com/tps5e. You MUST register using your email address to use the online quizzes and certain site features.

Homework:
Due to the amount and complexity of material being covered in this course, it is imperative that students complete all homework as assigned in order to master each topic. Students frequently will be asked to present homework problems to the class, and quizzes will draw from problems similar to those covered on homework assignments.

Quizzes and Tests:
The pacing of this course may not allow for as many quizzes to be given prior to a chapter test as may occur in non-AP classes. Tests will be similar in format, though not in length, to the AP exam, including both multiple choice and free response type questions. As the year progresses, alternate assessment opportunities may be provided.

Course Projects:
Course projects are in the form of extended formal writing assignments. Form and technical adequacy are enforced on multiple assignments throughout the year. Students will gain experience in developing statistical studies and forming valid, justifiable conclusions. Students are encouraged early in the course to identify research topics of personal interest and begin collecting relevant data and information that may be used for projects and assignments throughout the year.

Cumulative Project:
There will be a cumulative project for this course. It will cover the four conceptual themes of statistics: exploratory analysis, planning a study, probability, and statistical inference. Your task will be to develop a question, research the question, and use statistical analysis to determine your conclusion. A written report will be submitted and an oral presentation will be given to the class. More specific details will be given at the beginning of spring semester, but you are strongly encouraged to begin thinking about your research topic during fall semester.

Grading:
Assessments are scored using a points-out-of-points approach instead of percentage-correct approach. In the long run, this will be more advantageous to students' course averages. Progress reports will be given to students throughout the year; however, credit for the course will not be awarded until the end of the school year.

A Note About Calculators:
Graphing calculators are allowed on the AP Statistics exam and will be used frequently in this class. In fact, the Texas Instrument TI-84+ and TI-Nspire were specifically designed to facilitate statistical and financial data analysis and are the tools the AP exam authors considered while designing questions. Please be aware that your chances of passing the AP Statistics exam are extremely low if you show up to the exam without an approved calculator. Because of memory retaining qualities and programmability of these calculators, students will not be allowed to share calculators. Students should have access to a calculator equivalent or similar in capabilities to a TI-84+ or TI-Nspire. It is suggested that you obtain your own calculator; however, school owned calculators may be issued to students unable to secure their own. Special Note: Although many calculator and statistical applications (for free, or for a fee) exist, only approved calculators will be allowed for in-class assessments and on the AP exam.

Course Outline:
AP Statistics is more of an activity-based course where students construct their own understanding of statistical concepts and techniques. Broad topics include:

- Exploring and describing data
- Planning and designing a study to produce data by using samples, experiments, and simulations
- Probability and patterns in distributions
- Statistical inference with confidence

The teacher will facilitate and guide students' explorations and formations of hypotheses. Instruction on the use of technology's statistical data analysis tools will include the graphing calculator and statistical software when available. First semester will cover chapters 1-7. Second semester will cover chapters 8-12 prior to spring break. Preparation for the AP Statistics exam will take place between spring break and the May test date. The cumulative project will be completed after the AP Statistics exam, with written submissions and oral presentation to be completed during that time.

Advanced Placement Statistics

Content Map

- The time frame shown below is a *general* guide to what will be covered each semester. Durations of coverage may vary, depending on the needs of the students.

<u>Fall Semester:</u>

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Organizing Data	Weeks 1 – 3	**Exploring Data and Normal Distributions** ▪ Displaying distributions with graphs ▪ Describing distributions with numbers ▪ **Chapter 1 assessment** ▪ Density curves and the normal distribution ▪ Standard normal calculations ▪ **Chapter 2 assessment**
	Weeks 4 – 7	**Examining Relationships and Two-Variable Data** ▪ Scatterplots ▪ Correlation ▪ Least-squares regression ▪ **Chapter 3 assessment**
Producing Data	Weeks 8 – 9	**Designing samples, designing and simulating experiments** ▪ Designing samples ▪ Designing experiments ▪ **Chapter 4 assessment**
Probability	Weeks 10 – 12	**Probability Models and Rules** ▪ The idea of probability ▪ Probability models ▪ Simulating experiments ▪ General probability rules ▪ **Chapter 5 assessment**
	Weeks 13 – 14	**Random Variables** ▪ Discrete and continuous random variables ▪ Means of variance or random variables ▪ **Chapter 6 assessment**
	Weeks 15 – 17	**Binomial and geometric distributions. Sampling distributions, proportions, and means.** ▪ Sample distributions ▪ Sample proportions ▪ Sample means ▪ **Chapter 7 assessment**
Review	Week 18	**Review for and take the mid-year assessment. The assessment will be cumulative in content.**

*** Time permitting, we may go ahead and cover Chapter 8 prior to break.

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Spring Semester:

Organizing Data	Weeks 1 – 3	**Introduction to Inference** ▪ Confidence intervals ▪ Estimating a population mean ▪ Estimating a population proportion ▪ **Chapter 8 assessment**
	Weeks 4 – 8	**Inference for distributions and proportions** ▪ Introduction to inference ▪ Carrying out significance tests ▪ Using inference to make decisions ▪ Inference for a population mean ▪ Inference for a population proportion ▪ **Chapter 9 assessment**
	Weeks 9 – 11	**Inference for tables and regression** ▪ Comparing two proportions ▪ Comparing two means ▪ **Chapter 10 assessment** ▪ Test for goodness of fit ▪ Inference for two-way tables ▪ **Chapter 11 assessment**
	Weeks 12 – 14	▪ Inference about the regression model ▪ Predictions and conditions ▪ **Chapter 12 assessment**
AP Statistics Test	Weeks 15 – 17	**Preparation for and taking the AP Statistics test** It is recommended that students purchase a test preparation book for outside the classroom. We will discuss this during class sometime in January
Review	Week 18	**Review for and take the spring semester final assessment. The assessment will be cumulative in content.**
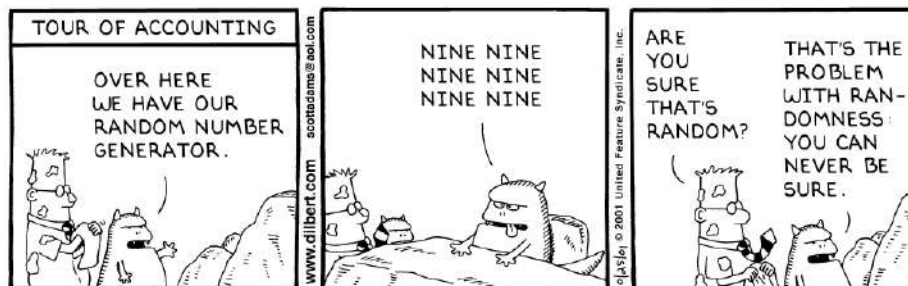
Additional Links for Enhanced Learning:

* Many more resources will be shared throughout the school year.

AP Central:
> http://apcentral.collegeboard.com/apc/Controller.jpf

Applets:
> http://onlinestatbook.com/stat_sim/

Careers in Statistics:
> http://www.amstat.org/careers/index.cfm?fuseaction=main
> http://www.bls.gov/k12

Data Resources:
> Bureau of Labor Statistics: http://www.bls.gov
> Federal Government Statistics: http://www.fedstats.gov

Glossary of statistical terms:
> http://www.stats.gla.ac.uk/steps/glossary/hypothesis_testing.html

Statistics Links:
> http://math.about.com/od/statistics/Statistics_Tutorials_and_Resources.htm

Online texts that may be a good resource:
> http://davidmlane.com/hyperstat/
> http://www.psychstat.missouristate.edu/introbook/sbk00.htm

Videos
> http://www.khanacademy.org/
> http://www.learner.org/resources/series65.html

Which schools give college credit for AP studies?
> http://collegesearch.collegeboard.com/apcreditpolicy/index.jsp