Advanced Placement Statistics

Union Grove High School

Objective:

AP Statistics is a rigorous, college level non-calculus based course intended to be the equivalent of a first yea[...] 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, and stati[...] inference and testing. Upon completion students will develop into competent interpreters and users of statisti[...] 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 Ma[...] Students can earn college credit for this course by scoring from 3 to 5 on the exam. The amount of credit gran[...] 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 mu[...] be active participants since the "best" learning occurs when students are actively involved in the learning pro[...] To this end AP Statistics will be a "hands-on", practical applications oriented class. Computers and calculator[...] used extensively to allow students to investigate and explore statistical concepts. Effective communication sk[...] will be developed through regular written analysis of real data.

Textbook:

• Yates, D. S., Moore, D. S., & Starnes, D. S. (2003). *The practice of statistics:*

   TI-83/89 graphing calculator enhanced (2nd ed.). New York: W. H. Freeman

Online Support of Text: Online Quizzes, Simulation Applets, Data Sets

http://bcs.whfreeman.com/yates2e/

(You MUST register using your email address to use the online quizzes and certain site features.)

Supplemental Resources for Instruction:

 •Rossman, Allan J., Beth L. Chance, and Robin H. Lock. J. *Workshop Statistics – Discovery with   Data and* *Fathom.* Emeryville, Ca.: Key College Publishing (2001)

 •Hinders, Duane C. *5 steps to a 5: AP statistics*. New York: McGraw-Hill (2004)

 •Chatterjee, Samprit, Marks S. Handcock, and Jeffery S. Simonoff. *A Casebook for a First Course in Statisti[...]* *and Data Analysis.* New York: Wiley, 1995

• Mulekar, M. *Cracking the AP Statistics Exam.* New Jersey: Princeton Review (2003)

• *Against all Odds: Inside Statistics -* Video Series

• 3-ring, 2 inch binder (class notes/assignments) and 3 prong soft folder (for response log)

• Graphing calculator, TI-83/ 83 Plus/ 84/ 84 Plus and TI 89

A Note about calculators:

Graphing calculators are allowed on the AP Statistics exam and will be used extensively in this class. In fact, Texas Instruments TI-83+ was specifically designed to facilitate statistical and financial data analysis and is th tool the AP exam authors considered while designing questions. If you show up to the AP Statistics test witho approved calculator please be aware that your chances of passing are extremely low. Because of the memor retaining qualities and programmability of the these calculators, students will not be allowed to share calculato It is imperative that all students have access to a calculator listed above. Therefore, it is suggested that you c your own calculator, however school owned calculators may be issued to students unable to secure their own

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 including justifications.

Cumulative Project:

There will be a cumulative project for this course. It will cover the four conceptual themes of statistics: explora analysis, planning a study, probability, and statistical inference. Task: Develop a question, research the ques and use statistical analysis to determine an answer. Specifically, decide on a question to investigate – be ingenious). Design an experiment to run, then go through the steps OR design a study, recruit subjects or whatever, place subjects into groups (randomly, of course), impose the treatments, etc. OR perform a simulat on the calculator.   Collect data, plot the data, and finally perform inference. Demonstrate the use of the 4 inference steps. Then analyze the data and draw a conclusion. Write up a report and orally report your study findings to the class.

Course Outline:

AP Statistics is an activity-based course where students actively construct their own understanding of statistic concepts and techniques. Broad topics include Exploring and Describing Data, Planning and Design of a Stu produce Data using Samples, Experiments , and Simulations, Probability and patterns in distributions, and Statistical Inference with confidence.. The teacher will facilitate and guide students' explorations and formatic hypotheses. Instruction on the use of technology's statistical data analysis tools will include the graphing calculator, and statistical software, including Fathom, Active Stats, and Data Desk. First semester will cover Chapters 1 - 9. Second semester will cover Chapters 10-14 prior to spring break, preparation for the AP Exar during April and early May. Second semester major project will be completed following the AP Exam. Written oral presentations of student selected area of interest.

Content Map Per Semester   **Fall Semester**

Organizing Data		Producing Data	Probability		
Weeks 1 - 3	Weeks 4 - 6	Weeks 7 - 9	Weeks 10	Weeks 13 –	Weeks 15 - 17

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Exploring data and normal distributions. • Displaying distributions with graphs • Describing distributions with numbers • Chapter 1 test • Assorted projects, special problems and quizzes. • Density curves and the normal distributions • Standard normal calculations • Chapter 2 test • Assorted projects, special problems and quizzes. • Scatterplots • Correlation • Least-squares regression • Chapter 3 test • Assorted projects, special problems and quizzes.	**Examining relationships and two-variable data.** • Transforming relationships • Cautions about correlation and regression • Relations in categorical data • Chapter 4 test • Assorted projects, special problems and quizzes.	**Designing samples, designing and simulating experiments.** • Designing samples • Designing experiments • Simulating experiments • Chapter 5 test • Assorted projects, special problems and quizzes.	**Probability models and rules.** • The idea of probability • Probability models • General probability rules • Chapter 6 test • Assorted projects, special problems and quizzes.	**Random variables.** • Discrete and continuous random variables • Means and variances of random variables • Chapter 7 test • Assorted projects, special	**Binomial and geometric distributions. Sampling distributions, proportions and means.** • The binomial distributions • Geometric distributions • Chapter 8 test • Assorted projects, special problems and quizzes. • Sampling distributions • Sample proportions • Sample means • Chapter 9 test • Assorted projects, special problems, and quizzes.

Week 18 is planned for review and the Final Exam
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Content Map Per Semester   **Spring Semester**

Inference			AP Test	Analysis of Variance
Weeks 1 - 3	Weeks 4 - 8	Weeks 9 – 11	Weeks 12 – 15	Weeks 16 – 17
Introduction to Inference. • Estimating with confidence • Tests of significance • Making sense of statistical significance • Inference as decision • Chapter 10 test • Assorted projects, special problems and quizzes.	**Inference for distributions and Proportions.** • Inference for the mean of a population • Comparing two means • Chapter 11 test • Inference for a population proportion • Comparing two proportions • Chapter 12 test • Assorted projects, special problems and quizzes.	**Inference for tables and regression.** • Test for goodness of fit • Inference for two-way tables • Chapter 13 test • Inference about the model • Predictions and conditions • Chapter 14 test • Assorted projects, special problems and quizzes.	**Preparation for and taking the AP test.** It is recommended that students purchase a test preparation book for use outside the classroom. We will discuss this during class sometime in January.	**Analysis of variance.** • Inference for population spread • One-way analysis of variance • Chapter 15 test • Cumulative project

Week 18 is planned for review and the Final Exam.

Some links to visit for enhanced learning...
online glossary of statistical terms:
http://www.stats.gla.ac.uk/steps/glossary/hypothesis_testing.html
online texts that may be a good resource:
http://davidmlane.com/hyperstat/
http://www.psychstat.smsu.edu/introbook/sbk00.htm
careers in Statistics:
http://www.amstat.org/careers/index.cfm?fuseaction=presentation
http://www.amstat.org/careers/index.cfm?fuseaction=main

which schools give college credit for AP studies??
http://www.collegeboard.com/ap/creditpolicy

Data Resources:
The New York Times: http://www.nytimes.com/
Applets:
http://www.ruf.rice.edu/~lane/stat_sim/index.html
Statistics Links:
http://math.about.com/od/statistics/

GRADING:
Math Deparment Grading Policy
All grades are averaged together for a cumulative 18 week Semester Grade

Major tests - 40%,   HW/Classwork -35%,   Project –10%,   Exam -15%
6 and 12 week progress reports reflecting current numerical grades will be issued.
2 to 3 major tests per 6 week period and one final exam at the end of the 18 weeks.
The second semester exam will be the AP Exam.
Projects will be assigned for one or more of the 6 weeks.

Attendance:
Only work missed due to an *excused* absence may be made up. It is the **student's responsibility** to secure miss
assignments and complete in a timely fashion**.**
PLEASE LIMIT THE NUMBER OF CHECK OUTS AND CHECK INS… THIS IS AN AP COURSE.