

Canyon Crest Academy: Statistical Reasoning in Sports

Level of Difficulty	Estimated Homework	Prerequisites
<input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Difficult <input type="checkbox"/> Very Difficult	30-60 minutes	District See department recommendation Department C in Integrated Math 3 or C in Algebra 2

Course Description

This course teaches students how to use four-steps of the statistical process in the context of sports: ask questions, collect data, analyze data, and make conclusions. Each chapter will begin with a sports-related statistical question (e.g., Is there a home field advantage in the NFL?) and then students will learn how to collect appropriate data, how to analyze the data, and how to make reasonable conclusions. Although the context of the examples and exercises will be sports related, the primary focus of the class will be to teach students the basic principles of statistical reasoning. Major statistical topics include: analyzing distributions of univariate and bivariate data, both categorical and numerical, using graphs and summary statistics; correlation and least squares regression; using simulations to estimate probability distributions; theoretical probability distributions, including the binomial and normal distributions; rules of probability, including conditional probability and expected value; the logic of hypothesis testing, including stating hypotheses, calculating and interpreting p-values, drawing conclusions, and Type I and Type II errors; using confidence intervals to estimate parameters; and proper methods of data collection, including sampling and experimentation. Use of technology, including online applets and the graphing calculator will be prominent in the course. Throughout the course, students will complete investigations that require students to complete the four-step statistical process using athletes of their choice.

Grading

Students will be expected to spend an average of approximately 1/2 to 1 hour outside of class on homework for each class period. Approximately one chapter will be covered every week, with a quiz and a test for each chapter. Each semester will have approximately 8 tests and 8 quizzes. Grades will be calculated within the following guidelines:

- Tests and Quizzes: 70%
- Homework: 10%
- Projects: 20%

Syllabus Link

Supplemental Information

10 Credits

Meets high school graduation requirement for math or electives

Meets UC/CSU subject area "c" requirement