

SPRINGFIELD PUBLIC SCHOOLS
AP STATISTICS

Course Description

The AP Statistics course is an excellent option for any student who has successfully completed Integrated Algebra II, Algebra II, or Integrated Math III regardless of the student's intended college major. This course is not a Calculus-based course. The purpose of AP Statistics is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students may choose to take the AP Exam at the end of the course. Dual enrollment for college credit may be available. Inquire at your high school. Graphing calculators will be used in this course. Prerequisite: C or better in Integrated Algebra II, Algebra II, or Integrated Math III.

Course Rationale

At least one statistics course is typically required for majors such as education, psychology, sociology, health science, environmental science, and business. The AP Statistics course is an excellent option for any student who has successfully completed a second unit of Algebra. Student will be involved in collecting information, communicating that information, solving problems and justifying the results.

Major Instructional Goals

The intent of the Springfield R-12 Secondary Mathematics Program is to explore, investigate and understand the importance of mathematics through real-world experiences. In mathematics, students will acquire the knowledge and skills to problem solve, communicate, reason, create models and make connections. Students will:

1. Apply concepts of **Number and Operations** including:
 - a. Judge the reasonableness of numerical computations and their results. (MA1; 3.8)
2. Apply concepts of **Algebraic Relationships** including:
 - a. Compare and contrast various forms of representations of patterns. (MA4; 1.6)
 - b. Identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem. (MA4; 1.6, 3.6)
3. Apply concepts of **Geometric and Spatial Relationships** including:
 - a. Draw or use visual models to represent and solve problems. (MA2; 3.1)
4. Apply concepts of **Data Analysis and Probability** including:
 - a. Formulate questions, design studies and collect data about a characteristic. (MA3; 1.2)
 - b. Describe the characteristics of well-designed studies, including the role of randomization in a survey and experimental research. (MA3; 1.2, 3.1)
 - c. Apply statistical concepts to solve problems and distinguish between a statistic and a parameter. (MA3; 1.10, 3.4)

- d. Describe differences among various studies and which types of inferences can legitimately be drawn from each. (MA3; 1.5)
- e. Select, create and use appropriate graphical representation of data. (MA6; 1.8, 3.6)
- f. Given one-variable quantitative data, display the distribution and describe its shape and calculate summary statistics. (MA3; 1.8, 1.10)
- g. Recognize how linear transformations of single-variable data affect shape, center, and spread. (MA3; 3.1)
- h. Use simulations to describe the variability of sample statistics from a known population and to construct sampling distributions. (MA3; 1.2)
- i. Describe how basic statistical methods are used in the workplace. (MA3; 1.4)
- j. Use simulations to construct empirical probability distributions. (MA3; 1.2)
- k. Use and describe the concepts of conditional probability and independent events. (MA6; 1.10, 4.1)
- l. Use and describe how to compute the probability of a compound event. (MA2; 3.1)
- m. Evaluate published reports that are based on data by examining the design of the study, the appropriateness of the data analysis, and the validity of the conclusions. (MA3; 1.5)
- n. Compute and interpret the expected value of random variables. (MA3; 3.1)
- o. Display and analyze bivariate data where one variable is categorical and the other is numerical. (MA3; 1.6)
- p. Describe how sample statistics reflect the values of population parameters and use sampling distributions as the basis for informal inference. (MA3; 3.5)
- q. Apply various methods of hypothesis testing. (MA3; 1.2)
- r. Make conjectures about possible relationships between two characteristics of a sample on the basis of scatterplots of the data and approximate lines of fit. (MA3; 1.2, 3.5)