Probability and Statistics provides a curriculum focused on understanding key data analysis and probabilistic concepts, calculations, and relevance to real-world applications. Students are challenged to work toward mastery of computational skills, apply calculators and other technology in data analysis, deepen their understanding of key ideas and solution strategies, and extend their knowledge through a variety of problem-solving applications.

Course topics include types of data, common methods used to collect data, and representations of data, including histograms, bar graphs, box plots, and scatterplots. Students learn to work with data by analyzing and employing methods of extending results, involving samples and populations, distributions, summary statistics, experimental design, regression analysis, simulations, and confidence intervals.

Ideas involving probability — including sample space, empirical and theoretical probability, expected value, and independent and compound events — are covered as students explore the relationship between probability and data analysis.

Extended projects allow for more open-ended, extended applications of concepts and skills. Students collect and analyze statistical data about a topic that interests them, and they apply probability concepts in a real-world context.

Length: Two Semesters

Unit 1: Introduction to Statistics

Unit 2: Describing Data Graphically

Unit 3: Measures of Center and Spread

Unit 4: Describing Data Sets

Unit 5: Modeling Data

Unit 6: Semester 1 Review and Exam

Unit 7: Introduction to Probability

Unit 8: Applications of Probability

Unit 9: Discrete Probability Distributions

Unit 10: Continuous Probability Distributions

Unit 11: Sampling and Confidence Intervals

Unit 12: Semester 2 Review and Exam