

## Probability and Statistics

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**This discipline is an introduction to the study of probability, interpretation of data, and fundamental statistical problem solving. Mastery of this academic content will provide students with a solid foundation in probability and facility in processing statistical information.**

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- 1.0 Students know the definition of the notion of *independent events* and can use the rules for addition, multiplication, and complementation to solve for probabilities of particular events in finite sample spaces.

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- 2.0 Students know the definition of *conditional probability* and use it to solve for probabilities in finite sample spaces.

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- 3.0 Students demonstrate an understanding of the notion of *discrete random variables* by using them to solve for the probabilities of outcomes, such as the probability of the occurrence of five heads in 14 coin tosses.

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- 4.0 Students are familiar with the standard distributions (normal, binomial, and exponential) and can use them to solve for events in problems in which the distribution belongs to those families.

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- 5.0 Students determine the mean and the standard deviation of a normally distributed random variable.

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- 6.0 Students know the definitions of the *mean*, *median*, and *mode* of a distribution of data and can compute each in particular situations.

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- 7.0 Students compute the variance and the standard deviation of a distribution of data.

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- 8.0 Students organize and describe distributions of data by using a number of different methods, including frequency tables, histograms, standard line and bar graphs, stem-and-leaf displays, scatterplots, and box-and-whisker plots.