



Course Syllabus

COURSE TITLE: Functions, Algebra, and Data Analysis

PREREQUISITE: Algebra I

DESCRIPTION: Students will study functions and their behaviors, systems of inequalities, probability, experimental design and implementation, and analysis of data within the context of mathematical modeling and data analysis. Students will solve problems that require the formulation of linear, quadratic, exponential, or logarithmic equations or a system of equations. Through the investigation of mathematical models and interpretation/analysis of data from real life situations, students will strengthen conceptual understandings in mathematics and further develop connections between algebra and statistics. Students should use the language and symbols of mathematics in representations and communication throughout the course.

MAIN TOPICS: Investigate and analyze function (linear, quadratic, exponential, and logarithmic) families and their characteristics.

Use knowledge of transformations to write an equation given the graph of a function

Design and conduct experiments using the concepts of sample size, sampling technique, and controlling sources of bias and experimental error.

Using experimental data, generate an equation for the curve of best fit to model real-world problems or applications.

Use the best fit equation to interpolate function values, make decisions, and justify conclusions with algebraic and/or graphical models.

Analyze multiple representations of functions including algebraic formulae, graphs, tables, and words. Sand use appropriate representations for analysis, interpretation, and prediction.

Determine optimal values in problem situations by identifying constraints and using linear programming techniques.

Calculate probabilities.

Analyze the normal distribution. Key concepts include the characteristics of normally distributed data, percentiles, normalizing data using z-scores, the area under the standard normal curve and probability

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.

CREDIT INFO: This course may provide a standard unit of credit for a Standard, Standard Technical, Advanced Technical, or Advanced Studies Diploma.