

Algebra II

Pre-Requisites: Algebra I

Credits: 0.5 (per segment)

Estimated Completion Time: 2 segments / 32-36 weeks

Earliest Start Date: March 2014

Description

This course allows students to learn while having fun. Interactive examples help guide students' journey through customized feedback and praise. Mathematical concepts are applied to everyday occurrences such as earthquakes, stadium seating, and purchasing movie tickets. Students investigate the effects of an equation on its graph through the use of technology. Students have opportunities to work with their peers on specific lessons.

Algebra II is an advanced course using hands-on activities, applications, group interactions, and the latest technology.

Major Topics and Concepts

Segment 1

Review of Algebra

- Review of Algebra 1
- Solving Literal Equations
- Variations
- Absolute Value Equations and Inequalities in One Variable
- Graphing Linear Equations and Inequalities
- Writing the Equation of a Line
- Parallel and Perpendicular Lines
- Absolute Value Equations and Inequalities in Two Variables

Systems of Equations and Inequalities

- Graphing Systems of Equations
- Solving a System of Equations through Elimination
- Solving a System of Equations through Substitution
- Solving a System of Equations with Three Variables
- Solving Word Problems
- Solving Systems of Inequalities

Factoring

- Review of Polynomials
- Polynomial Operations
- Greatest Common Factors and Special Products
- Factoring Trinomials
- Factoring by Grouping
- Sum and Difference of Cubes

Radical Expressions

- Simplifying Radicals
- Adding and Subtracting Radical Expressions
- Multiplying and Dividing Radical Expressions
- Rational Exponents
- Properties of Rational Exponents
- Complex Numbers
- Operations on Complex Numbers
- Solving Radical Equations

Solving Quadratic Equations

- Graphing Quadratics
- Solving Quadratics by Factoring
- Solving Quadratics using the Quadratic Formula
- Completing the Square

- Solving Quadratic Equations with Complex Numbers
- Investigating Quadratics

Segment 2

Polynomial Functions

- Introduction to Functions
- Graphing Polynomial Functions
- Polynomial Long Division
- Synthetic Division
- Theorems of Algebra
- Rational Root Theorem and Descartes' Rule of Signs
- Solving Polynomial Equations

Rational Expression

- Simplifying Rational Expressions
- Multiplying and Dividing Rational Expressions
- Adding and Subtracting Rational Expressions
- Discontinuities of Rational Functions
- Solving Rational Equations

Exponents and Logarithms

- Graphs of Common Functions
- Graphing Exponential Functions
- Exponential Growth and Decay Functions
- Solving Exponential Equations
- Logarithmic Functions
- Change of Base Formula
- Graphing Logarithmic Functions
- Properties of Logarithms
- Solving Exponential Equations with Unequal Bases
- Exponential and Logarithmic Functions Activity

Sequences and Series

- Arithmetic Sequences
- Arithmetic Series
- Geometric Sequences
- Geometric Series

Required Materials

Course Objectives

Grading Policy

Besides engaging students in challenging curriculum, the course guides students to reflect on their learning and evaluate their progress through a variety of assessments. Assessments can be in the form of practice lessons, multiple choice questions, writing assignments, projects, research papers, oral assessments, and discussions. The course will use the state-approved grading scale and each course contains a unique end of course assessment. This assessment counts for 20% of the student's overall grade and must be passed with a score of 60% or higher.

Communication Policy

To achieve success, students are expected to submit work in each course weekly. Students can learn at their own pace; however, "any pace" still means that students must make progress in the course every week. To measure learning, students complete self-checks, practice lessons, multiple choice questions, projects, discussion-based assessments, and discussions. Students are expected to maintain regular contact with teachers; the minimum requirement is monthly. When teachers, students, and parents work together, students are successful