Online Courses for High School Students
1-888-972-6237

Algebra II – Credit Recovery

A diagnostic driven credit recovery course is designed to give an expanded opportunity for students who did not succeed the first time in the course.

Students are given the opportunity in each learning unit to demonstrate their knowledge in that area of study. If they demonstrate competency in their unit assessment they will be presented with the following unit. If they do not demonstrate competency then they are required to do the entire unit.

Requirement: For a student to take a credit recovery course, they must have already taken the class unsuccessfully and have the appropriate seat time.

Course Description:
In this course, students build on their work with linear, quadratic, and exponential functions, and extend their repertoire to include polynomial, rational, radical, and trigonometric functions. Students also expand their ability to model situations and solve equations, including solving quadratic equations over the set of complex numbers and solving exponential equations using the properties of logarithms. The course covers sequences and series, probability distributions, and more advanced data analysis techniques.

Prerequisite: Algebra 1 and Geometry or equivalent
Course Length: One Semester
Required Text: Algebra 2: A Reference Guide (E-book is included within the course).
Materials List: Texas Instruments TI-84 Plus Graphics Calculator

Course Outline
Semester 1

Unit 1: Systems of Linear Equations and Inequalities
Lesson Goals
- Graph a system of two linear inequalities in two variables.
- Write a system of linear inequalities in two variables, given its graph.
- Graph a system of three or more linear inequalities in two variables.

Unit 2: Radical and Complex Numbers
Lesson Goals

- Simplify radical expressions whose radicands contain perfect square factors.

Unit 3: Polynomials
Lesson Goals
- Solve a formula for a specific variable.
- Transform a quadratic equation into a perfect square equation by completing the
- square.
- Solve quadratic equations by taking the square root of each side.
- Solve quadratic equations by completing the square.
- Solve quadratic equations by using the quadratic formula.
- Solve equations in the form $x2 + a = 0$, when $a > 0$.
- Solve quadratic equations with real coefficients that have complex solutions.

Unit 4: Polynomial Functions
Lesson Goals
- Factor a polynomial function (with polynomial of degree three or higher), given a zero of the function.
- Factor a polynomial function (with polynomial of degree three or higher) by using the rational root theorem.
- Evaluate a polynomial function using the polynomial remainder theorem.
- Determine whether a linear binomial in the form x−ax minus a is a factor of a polynomial function.
- Determine the zeros of a polynomial function (with polynomial of degree three or higher).

Unit 5: Radical and Rational Expressions
Lesson Goals
- Explain how parts of an expression with multiple operations can be viewed as a single entity.
- Simplify the ratio of two monomials.
- Simplify rational expressions.
- Determine domain restrictions for a rational expression.
- Interpret parts of a rational expression within the context of the situation it represents.

Unit 6: Exponential and Logarithmic Functions
Lesson Goals
- Convert expressions between exponential and logarithmic forms.
- Explain the inverse relationship between exponential and logarithmic functions.
- Evaluate logarithmic expressions.

Unit 7: Radians and Trigonometric Functions
Lesson Goals
- Prove the Pythagorean identity.
- Determine trigonometric function values using the Pythagorean identity.
- Determine unknown trigonometric function values using trigonometric identities.

Unit 8: Semester Exam

Course Outline
Semester 2

Unit 1: Graphs of Sinusoidal Functions
Lesson Goals
- Determine the period of a sinusoidal function from a graph.
- Determine the minimum value of a sinusoidal function from a graph.
- Determine the maximum value of a sinusoidal function from a graph.

Unit 2: More Function Types
Lesson Goals
- Graph an absolute value function, given its equation.
- Graph a piecewise-defined function, given its rule.
- Graph a step function, given its equation.

Unit 3: Using Function Models
Lesson Goals
- Compare key features of two functions represented in different ways.

Unit 4: Sequences and Series
Lesson Goals
- Write an explicit rule for an arithmetic sequence.
- Write a recursive rule for an arithmetic sequence.
- Convert from a recursive rule for an arithmetic sequence to the explicit rule.
- Convert from an explicit rule for an arithmetic sequence to the recursive rule.
- Write the rule for an arithmetic sequence that models a real-world situation.

Unit 5: Counting and Probability
Lesson Goals
- Determine if two events are independent using conditional probability.
- Determine if two events are independent from a two-way table.
- Explain the concept of conditional probability and independence.

Unit 6: Probability Distributions
Lesson Goals
- Prepare for the course by previewing the course structure and key course components.

Unit 7: Data Gathering and Analysis
Lesson Goals
- Determine a reasonable way to collect a random sample for a specified survey.
- Determine a reasonable way to randomly assign subjects to groups in an experiment.

- Determine whether a survey, an experiment, or an observational study would be the best way to gather data for a situation.
- Explain the differences between surveys, experiments, and observational studies.
- Explain why randomization may not apply to an observational study.
- Evaluate reports based on data.

Unit 8: Algebra 2 Project
Lesson Goals
- Determine the amplitude of a sinusoidal function from a graph.
- Determine the equation of the midline of a sinusoidal function from a graph.
- Determine the maximum value of a sinusoidal function from a graph.
- Determine the minimum value of a sinusoidal function from a graph.
- Determine the period of a sinusoidal function from a graph.
- Sketch the graph of a trigonometric function, given a description of the situation it represents.
- Graph a sinusoidal function, given characteristics of the function.
- Graph a trigonometric function, given its equation in any form.
- Determine the trigonometric function equation that represents a mathematical or real world situation.

Unit 9: Semester Exam