Algebra II/Block – Credit Recovery

COURSE DESCRIPTION: In this course students will use their prior knowledge from previous courses to learn and apply Algebra II skills. This course will include topics such as functions, radical functions, rational functions, exponential and logarithmic functions, trigonometry, geometry, conic sections, systems of equations, probability, and statistics. Students will apply the skills that they learn in this course to real world situations.

COURSE OBJECTIVES:

- Understand the major topics in Algebra II.
- Identify how the major topics in Algebra II relate to real world situations.
- Apply the topics in Algebra II to various problems.
- Explain how the topics in Algebra II relate to the greater context of mathematics.

PREREQUISITES: None

COURSE LENGTH: Two Semesters

REQUIRED TEXT: No required textbook for this course.

MATERIALS LIST: Java is needed for the embedded graphing calculator applet (GCalc). A free download is available at http://www.java.com/en/download/.

COURSE OUTLINE:

Unit 1: Linear and Quadratic Functions

- Section 1 - Functions and Relations
- Section 2 - Solving Linear Equations and Inequalities
- Section 3 - Writing and Graphing Linear Equations and Inequalities
- Section 4 - Graphing Quadratic Functions
- Section 5 - Solving Quadratic Equations and Inequalities
- Section 6 - Graphing Zeros and Min/Max Values
- Section 7 - Determining a Quadratic Function

Unit 2: Radical Functions

- Section 1 - Roots and Properties of Exponents
- Section 2 - Graphing Radical Functions and Domain and Range
- Section 3 - Solving Radical Equations

Unit 3: Rational Functions

- Section 1 - Direct and Inverse Variation
- Section 2 - Graphing Rational Functions and Domain and Range
- Section 3 - Solving Rational Equations

Unit 4: Exponential and Logarithmic Functions

- Section 1 - Comparing Exponential and Logarithmic Functions
- Section 2 - Graphing Exponential Functions and Domain and Range
- Section 3 - Exponential Growth and Decay
- Section 4 - Graphing Logarithmic Functions and Domain and Range
- Section 5 - Solving Exponential and Logarithmic Equations

Unit 5: Trigonometric Functions

- Section 1 - Right Triangle Trigonometry
- Section 2 - Basic Angles and Radian Measure
- Section 3 - Trigonometric Values in all Four Quadrants
- Section 4 - Inverse Trigonometric Values
- Section 5 - Graphing Trigonometric Functions

Semester 1 Exam

Unit 6: Systems of Equations and Inequalities

- Section 1 - Matrices and Determinants
- Section 2 - Systems of Equations
- Section 3 - Systems of Inequalities
- Section 4 - Systems of Equations with Three Variables

Unit 7: Geometry

- Section 1 - Geometry of Quadrilaterals
- Section 2 - Geometry of Triangles
- Section 3 - Geometry of Circles

Unit 8: Conic Sections

- Section 1 - Introduction to Conic Sections
- Section 2 - Parabolas
- Section 3 - Circles
- Section 4 - Ellipses
- Section 5 - Hyperbolas

Unit 9: Probability and Statistics

- Section 1 - Introduction to Probability
- Section 2 - Permutations and Combinations
- Section 3 - Binomial Theorem
- Section 4 - Statistics
- Section 5 - The Normal Distribution

Unit 10: Discrete Mathematics: Sequences and Series

- Section 1 - Arithmetic Sequences and Series
- Section 2 - Geometric Sequences and Series

Semester 2 Exam