

Course Proficiency Outline **Algebra II College Prep- 2306**

Purpose

This course serves to satisfy one of the prerequisites for college. It will contain some of the basic concepts from Algebra I and build on that foundation to enable students to apply what they learn to real world problems.

Algebra is the language through which most of the mathematics is communicated, and therefore, is a fundamental lifetime skill. Students should learn to use the calculator as a tool for processing data and performing calculations to investigate and solve problems where appropriate. Algebra II extends the fundamental concepts and skills of elementary algebra to higher level and, while introducing new concepts, draws upon the same basic notions previously studied

- I. Content Clusters 4.1, 4.3, 4.4, 4.5
 - A. Equations/ Inequalities
 - B. Numbers Systems
 - C. Language of Algebra
 - D. Algebraic Expressions
 - E. Relations, Functions and Graphing

- II. Student Outcomes 4.1, 4.2, 4.3, 4.4, 4.5
 - A. Equations/ Inequalities
Students will be able to:
 1. Understand the process of solving equations and inequalities with one variable and where appropriate, represent solutions graphically.
 2. Understand the process of solving quadratic equations by various methods
 3. Understand the process of solving systems of equations in two variables.
 4. Understand the process of solving systems of linear inequalities in two variables by graphing.
 5. Understand the process of solving absolute value equations and inequalities.
 6. Apply the process of solving problems using equations and inequalities.
 - B. Number Systems
Students will be able to
 1. Understand and apply the field properties of the complex numbers, including operations with complex number and matrices
 2. Represent, order, and use number in a variety of equivalent forms (fractions, decimals, percent, exponential/ scientific notation, radical, rational exponents, calculator display)

C. Language of Algebra

Students will be able to

1. Understand the concept of use of variables
2. Understand the use of mathematical vocabulary and symbolic notation to represent and communicate ideas
3. Formulate, simplify, and evaluate algebraic expressions.

D. Algebraic Expressions

Students will be able to

1. Perform operations and simplify polynomial, rational and radical expressions and expressions with rational exponents.
2. Factor polynomial expressions
3. Use algebraic expressions to represent real-world situations

E. Relations, Functions and Graphing

Students will be able to

1. Understand and apply the concept of finite and infinite relations and functions (including domain and range)
2. Represent and analyze the relationship among a table of values and algebraic formula, a written statement, and a graph, including the line, the parabola, and the circle.
3. Understanding operations on, and the general properties and behavior of functions including the basic concepts of exponential functions.
4. Apply the concepts of skills and coordinate geometry, such as midpoint, distance and slope.
5. Construct, interpret, and/or inferences from graphs, tables and charts that reflect data from real-world situations (to include evaluate arguments of other persons.)

F. Probability and Statistics

1. Apply the counting principal and permutations
2. Define and use combinations
3. Define and use probability

III. Materials

A. Text: McDougal Littell. Algebra II, 2008

B. Notebook and pencils must be provided by the student

C. Calculators will be provided when necessary

IV. Evaluation

A. The students will be expected to complete class work, homework, keep a notebook and take tests and quizzes. These will be checked and reviewed by the teacher

- B. The students will be expected to demonstrate an acceptable level of proficiency in the objectives and content of this course.
- C. The student will be expected to demonstrate at all times appropriate classroom behavior such as self-control, respect for others, respect for property and mature attitude.
- D. The student will be expected to adhere to the school rules and regulations for behavior and the district policy for attendance.
- E. Students will be required to successfully pass the High School Proficiency Test as mandated in the graduation law (N.J.S.A. 6:8-4.2)
- F. Students who fail the HSPA examination will be placed in a Basic Skills Math class as required by N.J.S.A 6:8-4:2. There will be no exceptions to this requirement
- G. The student will be expected to take a comprehensive final exam covering the entire school year's work. This exam will count as 1/5 of the final grade.
- H. The final grade represents the teacher's professional judgment of the student's performance and all of the aforementioned activities and/or requirements are included in the evaluative process.

Reviewed and Revised July 2010