

**York Suburban High School  
Course Syllabus**



**Algebra II CP  
531**

***I. Course Description***

1.0 Credit; Unweighted  
Length: Year; Format: Meets Daily  
Prerequisite: Algebra I

A course in Algebra II CP is for the average mathematics student. A solid foundation in algebra will be developed. Topics covered will include real number system, first degree equations and inequalities, factoring, rational expressions, second degree equations and inequalities, complex numbers, conic sections, functions, sequence and series, systems of equations, rational and negative exponents, verbal problems, and probability.

***II. Materials & Equipment***

- Glencoe Algebra 2 (2003)

***III. Course Goals & Objectives***

The student will be able to:

- 1.) Solve first degree equations and inequalities.
- 2.) Graph, interpret, and create linear functions and relations.
- 3.) Solve systems of equations and inequalities graphically and algebraically.
- 4.) Simplify monomial and polynomial expressions, simplify radical expressions, and simplify expressions containing imaginary numbers.
- 5.) Graph, interpret, create, and solve quadratic functions.
- 6.) Find the composition and inverse of functions; and reduce polynomial expressions using synthetic division.
- 7.) Multiply, divide, add, subtract, and graph rational functions and expressions.
- 8.) Find the key values of arithmetic and geometric sequences and find the sum of arithmetic and geometric series.
- 9.) Find the theoretical probability of events using simple arithmetic and permutations and combinations. Find measures of central tendency and standard deviation, and how it applies to a normal distribution curve.

- 10.) Graph, interpret, create, and define conic sections.
- 11.) Simplify exponential and logarithmic expression, and solve exponential and logarithmic equations.
- 12.) Simplify matrices and use them to solve systems of equations.
- 13.) Graph, interpret, and solve polynomial functions.

#### **IV. Course Topics (Summary Outline)**

- 1.) First degree equations and inequalities
- 2.) Linear relations and functions
  - Relations and functions
  - Graphing lines
  - Using slope
  - Writing linear equations
  - Scatter-plots
  - Linear regression
  - Graphing linear inequalities
- 3.) Systems of equations
  - Solving systems by graphing
  - Solving systems algebraically
  - Graphing systems of linear inequalities
- 4.) Polynomials
  - Operations with monomials
  - Operations with polynomials
  - Factoring
  - Simplifying rational expressions using factoring
  - Roots of real numbers
  - Radical expressions
  - Rational exponents
  - Radical equations
  - Complex numbers
- 5.) Quadratics
  - Graph quadratics with a t-chart
  - Solve quadratics by graphing
  - Solve quadratics by factoring
  - Solve quadratics by completing the square
  - Solve quadratics by the quadratic formula
  - Converting quadratic form to vertex form and graphing
- 6.) Polynomial Functions
  - Graph polynomial functions with a t-chart
  - Synthetic division
  - Composition of functions
  - Inverses of functions

7.) Rational expressions

- Multiply and divide rational expressions
- Add and subtract rational expressions
- Graph rational functions

8.) Sequences and series

- Arithmetic sequence
- Geometric sequence
- Arithmetic series
- Geometric series
- Infinite Geometric series
- Other sequences and numeric patterns

9.) Probability and Statistics

- The counting principle
- Permutations and combinations
- Basic probability
- Multiplying probabilities
- Adding probabilities
- Measures of central tendency
- Standard deviation
- Normal distribution

10.) Conic Sections

- Introduce Conics
- Distance and Midpoint formulas
- Define and graph circles
- Define and graph ellipses
- Define and graph hyperbolas
- Define and graph parabolas
- Identify conics by equations, and convert to standard form
- Maximization problems using parabolas

11.) Exponential and logarithmic relations

- Exponential expressions
- Logarithmic expressions
- Logarithmic equations

12.) Matrices

- Matrix size
- Determinants
- Determinants
- Cramer's Rule

13.) Polynomial Functions

- Graph polynomial functions with a t-chart
- Graph, factors, and roots of polynomial functions
- Synthetic division, and the factor and remainder theorem
- Roots and zeros and the Rational Zero Theorem
- Review Composition of functions

## Review Inverses of functions

### V. Assignments & Grading

- **Grading**-Parents and students are strongly encouraged to use the Infinite Campus web site to monitor progress. The overall quarter grades are arrived at based on a points scale then converted into a percent for the quarter grade. Letter grades are arrived at using the following scale: **A(4)**=90–100%, **B(3)**=80–89%, **C (2)**=70–79%, **D(1)**=64–69%, **F(0)**=0–63%. Points are accrued through homework completion, warm-up completion, notebook checks, unit test, quizzes and comprehensive quarter exams. Classwork and/or homework may occasionally be collected and graded as well. No extra credit will be accepted.
  - **Homework Policy**  
College Prep Classes: Algebra I CP, Algebra II CP, Geometry CP, Pre-Calculus CP, Trigonometry/Algebra CP, Statistics CP:
    - (1) Students will receive 10 points out of a possible 10 points at the beginning of the marking period.
    - (2) Daily homework checks will be given grades from 0 down to -4 based on completeness and effort. 0 = assignment completed and -4 = incomplete assignment
    - (3) If a student misses more than 5 assignments within a marking period, then the student will receive a 35% for that marking period.
    - (4) Late work will NOT be accepted, unless the student has an excused absence, then the school district's policy will be enforced.
  - **Quizzes and Tests**  
At least one quiz will be given most weeks. Quizzes are generally worth 15-25 points. Tests are given at the end of each unit and are generally worth 50 points. Most quarters will have three unit tests. No quizzes or tests may be retaken.
- Comprehensive Quarter Exams**
- An exam will be given at the end of each quarter covering primarily the material presented that quarter. The quarter exams will each be worth approximately 50 points.