

**FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT**

**Course Outline  
Honors Algebra 2/Trigonometry**

**Date:** May 2003

**Subject Area:** Mathematics

**Proposed Grade Level(s):** 10 -12

**Course Length:** 1 Year

**Grading:** A-F

**Number of Credits:** 5/Semester

**Prerequisites:** ‘C’ or better in Honors Geometry and teacher recommendation, and ‘A’ or ‘B’ in Algebra 1, or 80% or better on district Algebra 1 final.

**BRIEF COURSE DESCRIPTION:**

Honors Algebra 2 completes the course content begun in Honors Geometry. Students will complete coursework usually taught in both Algebra 2 and Pre-calculus (Trigonometry and Analytical Geometry). Students successfully completing this course should be prepared for Calculus.

**GENERAL GOALS/PURPOSES:**

The state framework describes Algebra 2 as an expansion of the content of Geometry and Algebra 1. New concepts and techniques are introduced in this course, which will prove to be basic to more advanced courses in mathematics and the sciences. The emphasis is on abstract thinking skills, the function concept, and the algebraic solution of problems in various content areas. This course completes and combines the trigonometry, geometric, and algebraic techniques needed to prepare students for the study of calculus. Functional viewpoint is emphasized in this course.

**STUDENT READING COMPONENT:**

Students will receive instruction on the effective use of their textbook. This course includes applications where effective reading and analysis are taught as part of the course.

**STUDENT WRITING/ORAL COMPONENT:**

Students will have opportunities to express their understanding of concepts in writing as well as presenting work orally in class discussions. All written work will follow standard rules of English. Any research projects will follow MLA format, which has been distributed at all secondary sites.

**Final Assessment:**

Students will take the CA Mathematics Diagnostic Testing Project’s Mathematical Analysis Readiness Test in addition to a comprehensive final specific to the course content.

**DETAILED UNITS OF INSTRUCTION:**

**Note:** This course covers material from the CA Mathematics Framework, which can be found under the headings of "Algebra 2", "Trigonometry", "Mathematical Analysis", "Linear Algebra", and "Probability and Statistics".

1. Fundamental Concepts of Algebra
  - a. Real Numbers
  - b. Exponents and Radicals
  - c. Algebraic Expressions
  - d. Fractional Expressions
2. Equations and Inequalities
  - a. Equations (Linear, Rational, Absolute Value, Radical)
  - b. Applied Problems
  - c. Quadratic Equations
  - d. Complex Numbers
  - e. Inequalities (Linear, Rational, Absolute Value, Quadratic)
3. Functions and Graphs
  - a. Lines
  - b. Definition of Function
  - c. Graphs of Functions
  - d. Quadratic Functions
  - e. Operations on Functions
  - f. Inverse Functions
  - g. Variation
4. Polynomial and Rational Functions
  - a. Polynomial functions of degree greater than 2
  - b. Properties of Division
  - c. Zeros of polynomials
  - d. Complex and Rational zeros of polynomials
  - e. Rational Functions
5. Exponential and Logarithmic Functions
  - a. Exponential Functions
  - b. Natural Exponential Functions
  - c. Logarithmic Functions
  - d. Properties of Logarithms
  - e. Exponential and logarithmic Equations
6. Trigonometric Functions
  - a. Angles
  - b. Trig functions of angles
  - c. Trig functions of real numbers
  - d. Values of trig functions
  - e. Trigonometric graphs
  - f. Applied problems
7. Analytical Trigonometry
  - a. Verifying Trig Identities\
  - b. Trigonometric equations
  - c. Addition and subtraction formulas
  - d. Multiple-angle formulas
  - e. Product-to-sum and Sum-to-product formulas
  - f. Inverse Trig Functions
8. Applications of Trigonometry
  - a. Law of Sines
  - b. Law of Cosines
  - c. Trig form for complex numbers
  - d. DeMoivre's Theorem and nth roots of complex numbers
  - e. Vectors
  - f. Dot Product

9. Systems of Equations and Inequalities
  - a. Systems of Equations
  - b. Systems of linear equations in more than two variables
  - c. Partial fractions
  - d. Systems of inequalities
  - e. Linear Programming
  - f. Algebra of Matrices
  - g. Inverse of a matrix
  - h. Determinants
  - i. Properties of determinants
10. Sequences, Series, and Probability
  - a. Infinite Sequences and Summation Notation
  - b. Arithmetic Sequences
  - c. Geometric Sequences
  - d. Mathematical Induction
  - e. Binomial Theorem
  - f. Permutations
  - g. Distinguishable Permutations and combinations
  - h. Probability
11. Topics from Analytical Geometry+
  - a. Plane Curves and parametric equations
  - b. Polar coordinates
  - c. Polar equations of conics

**THIS COURSE WILL PREPARE STUDENTS FOR THE HSEE AND/OR FCUSD EXIT EXAM IN:**

Math

**LAB FEE, IF REQUIRED:** None

**SUBJECT AREA CONTENT STANDARDS TO BE ADDRESSED:**

See “Detailed Units of Instruction”

**DISTRICT ESLRs TO BE ADDRESSED:**

When students exit a secondary mathematics course, they will be:

- **Self-directed Learners** who will be able to use notes and a textbook to assist them in continuing their learning outside of the classroom setting.
- **Efficient Communicators** who can explain mathematical concepts to others and use mathematics to organize and explain data.
- **Quality Producers** who understand the importance of neat, organized work that demonstrates their thinking and understanding of the solution they’ve formed to solve a problem.
- **Constructive Thinkers** who are able to attack problems with organization, logic, and mathematical skills they’ve developed in a systematic fashion.
- **Collaborative Workers** who can work in a variety of settings in culturally diverse groups. They will be able to form and use study groups to strengthen their own understanding in addition to providing the same service for classmates.
- **Responsible Citizens** who accept the consequences of their actions and who demonstrate their understanding of their role in the learning process.