ALGEBRA II SYLLABUS

ZAMA AMERICAN HIGH SCHOOL

Course Name and Number: Algebra II MAA401

Course Description:

Major Concepts/Content: This course engages students in advanced algebraic concepts through the study of functions of functions, polynomials, complex matrices, and sequences and series. Students will make connections by integrating algebra into geometry, data analysis, and into other curricular areas. Student reasoning will involve linear equations and inequalities, systems of linear equations, matrices and determinants, quadratic equations and relations, functions and graphs, powers, roots, and radicals, exponential and logarithmic functions, polynomials and polynomial functions, rational expressions and functions, sequences and series, probability and statistics, and circular trigonometric functions.

Major Instructional Activities: Students will be involved in communicating ideas trough conjecture and validation of thinking involving linear and quadratic equations, and polynomial and rational functions. Included will be the use of technology and calculators to explore mathematical patterns and graphs as well as many methods of solving equations. Students will use properties, models, and transformations in interesting, authentic real-life applications. Students will be engaged in cooperative groups, whole-class settings, or individually to reinforce concepts in algebra, geometry, sequences, series, probability, and statistics. Students should have access to calculators at all times.

Major Evaluative Techniques: Many evaluative processes should be used to assess students' written and oral work. These include multiple-choice, short-answer, discussion, or open-ended interview; homework; projects; journals; essays; dramatization; and class presentations. Testing formats will include restricted-time written tests, two staged tests, take-home tests, oral tests and student produced tests. Assessment methods can be supplemented by student-produced analysis of problem situations, solutions to problems, reports on investigations and journal entries. Students will be provided the opportunity to do chapter projects that capture the concepts and skills presented throughout the chapter unit that emphasizes real world situations.

Essential Expectations: Upon successful completion of Algebra II course, the student should be able to:

- Carry out counting procedures such as those involving sets (unions and intersections) and arrangements (permutations and combinations)
- Use appropriate technology effectively and efficiently in carrying out complex calculations
- Define, use and manipulate expressions involving variables, parameters, constants, and unknowns in work with formulas, functions, equations, and inequalities
- Represent geometric curves and graphs of functions in standard coordinate systems
- Describe, generalize, and use basic types of functionsar, exponential, power, rational, square and square root, and cube and cube root
- Use arithmetic sequences and geometric sequences and their sums, and sees these as the discrete forms of linear and exponential functions, respectively
- Solve equations symbolically, graphically, and numerically and knows how to use the quadratic formula for solving quadratic equations
- Use equations to represent curves such as lines, circles, and parabolas
- Use functions to analyze patterns and represent their structure
- Identify conic sections and their properties to include parabolas, ellipses, and hyperbolas
- Interpret representations of data, compares distribution of data, and critiques conclusions and uses of statistics, both in school materials and public documents
- Explore questions of experimental design, use of control groups, and reliability
- Use relative frequencies based on empirical data to arrive at an experimental probability for a chance event
- Design simulations to estimate probabilities
- Works with the normal distribution in some of its basic applications
- Use matrix theory with graphics calculators to solve systems of equations, transformations, and finite functions
- Use technology to create graphs or spreadsheets that contribute to the understanding of a problem

- Evaluate and analyze formulas and functions of many kinds, using both pencil and paper and more advanced technology

Text : "ALGEBRA 2" McDougal Littell

Materials: Graphing Calculator

Grading Policy:

DoDEA Grading Scale:
90-100 = A
80-89 = B
70-79 = C
60-69 = D
59 or below = F

Assessment:

Category Weights:

Assignments	25%
Quizzes	75%

Homework:

Assignments that are not completed in class will be homework.

Late Work Policy:

Late work can be turned in for half credit up until the end of the quarter.

Tutoring/Extra Help:

First, the student should use their class time wisely so that they are learning the material being presented. If they need extra help, I am available during seminar. If they are still having trouble, I am available after school.

Classroom Management:

I expect all students to do the work assigned without distracting others. This means controlling their behavior so that the student, myself, and others can get their work done without distraction. I set limits on unacceptable behavior verbally in class. If the student continues to disrupt class, I will deduct up to ten points a day from their daily grade. A student that is still interfering with classroom procedures will be giving a time-out. If this is still not effective, the student will get an office referral and/or phone call home. Should further action be required, I will work with the parents, counselors, and/or administration to rectify the situation.

Content Outline:

ALGEBRA II COURSE OUTLINE

Functions
- Relations & Functions ____
- Domain & Range ____
- Function Rule ____
- Inverse ____
- Graphing Inverses ____

Linear Equations
- Two-Step Equations ____
- Distributive Property ____
- Harder Equations ____
- X on Both Sides ____
- Literal Equations ____
- Absolute Value Equations ____
- Direct Variation ____
- Inverse Variation ____

Graphing Linear Equations
- Graphing Lines ____
- Eqns. from a Graph ____
- Eqns. From Two Points ____
- Standard Form ____
- Best fit line ____
- Absolute Value ____

Systems of Linear Equations
- Graphing ____
- Substitution ____
- Linear Combination ____
- Matrices ____
- Linear Programming ____
- 3-D Graphing ____
- 3 Variables ____

Inequalities
- Solving Inequalities ____
- Compound Inequalities ____
- Absolute Value ____
- Two Variable Inequalities ____

Matrices ____
- Add & Subtract ____
- Multiplication ____
- Inverse & Identity ____
- Matrix Equations ____

Quadratic Equations
- Naming Polynomials ____
- Multiplying Binomials ____
- Factor Common Terms ____
- Factor Trinomials (a=1) ____
- Factor Trinomials (a>1) ____
- Difference of Two Squares ____
- Completing the Square ____
- Solving Quadratic Equations ____
- Quadratic Formula ____

Graphing Quadratic Equations
- Standard Form ____
- Vertex Form ____

Complex Numbers
- Simplify ____
- Absolute Value ____
- Solving Equations ____
- Graphing ____

Polynomials
- Graphing ____
- Solving Equations ____
- Dividing Polynomials ____

Exponents
- Negative Exponents ____
- Fractional Exponents ____
- Properties of Exponents ____
- Equations ____
- Graphing ____

Logarithms
- Log vs. Exponent Form ____
- Properties of Logarithms ____
- Solving Equations ____
- Natural Logs ____

Sequences and Series ____
- Arithmetic ____
- Geometric ____

Radicals
- Simplifying Radicals ____
- Mult & Divide Radicals ____
- Add & Subtract Radicals ____
- Solve Radical Equations ____

Rational Expressions ____
- Simplifying Rationals ____
- Mult & Divide Rationals ____
- Add & Subtract Rationals ____
- Solve Rationals ____
- Graphing Rationals ____

Conics
- Parabolas ____
- Circles ____
- Ellipses ____
- Hyperbolas ____

Additional Information:

Standards:

Shortcut to standards:
http://www.dodea.edu/instruction/curriculum/New%20Standards/Math/PDF/Gr9-12_Math_Stand.pdf