ALGEBRA 2 CP A

Course Outline

Area: Mathematics
Course Level: Academic
Textbook: **Advanced Algebra, Tools for a Changing World**, Bellman, Bragg, Chapin, Gardella, Hall, Handlin, Manfre, Prentice Hall 2001
Course Length: Full Year
Credits: 5 Credits
Revised: August 2008

I. Prerequisite:

Students taking this course should have completed Algebra 1 Academic with at least a 75%. It is also recommended that they have completed Geometry and received at least a 75%. Students from the modified level may take Algebra 2 Academic if they had an A in the modified level and teacher recommendation.

II. Course Description:

Algebra 2 is the third year of college preparatory mathematics at an academic level. It reinforces and extends topics from Algebra 1, such as order of operations, solving equations and inequalities in one variable and related word problems, functions, operations with polynomials, laws of exponents, factoring and rational expressions and related word problems.

New topics introduced are absolute value inequalities, variation, determinants, rational exponents, radicals and irrational numbers, complex numbers, completing the square, the Quadratic Formula, conic sections, polynomial functions, rational functions, exponential and logarithmic functions and sequences and series.

Graphing calculators will be used throughout the course both for exploration and discovery, and as an aid to computation in real life problems. The graphing calculator helps students visualize concepts and utilize a graphical approach to problem solving. The use of the calculator allows students to concentrate on problem solving strategies and enables us to use the types of numbers that occur in real life situations, but may be difficult to work with if a calculator is not available. Students will be given instructions on how to use the calculators efficiently. Estimation and reasonableness of answers will be stressed so that students can recognize calculator errors.

III. Description of Instruction:

Students are expected to be active participants in the learning process. The teacher will involve them in the introduction and development of material through questioning and class discussions. Understanding of concepts is stressed rather than rote memorization of skills. When appropriate, students are guided in discovering the concepts themselves through a study of patterns and by relating the new work to their prior knowledge. Critical thinking is emphasized and students will be asked to draw, label, explain, justify, verify and interpret as they apply the concepts they learn to new situations.

Cooperative learning activities will be used throughout the course, along with both informal activities such as discussing or solving textbook problems and formal discovery and problem solving activities. Students will be encouraged to verbalize math concepts and share ideas with each other.

Homework will be given almost every day and is an important part of the course, providing students the opportunity to apply skills learned in class, strengthen their understanding of the concepts, and identify areas of uncertainty. It is imperative that students do homework regularly and conscientiously. Homework will be reviewed in class and it is the student's responsibility during that time to ask questions about problems he/she does not understand, to identify specific errors, and to take notes on any further explanations concerning these problems.

Prentice Hall provides a website coordinated with the textbook. Students can find additional help and self tests on this site: **http://www.phschool.com**

IV. District Policy: Academic Integrity

Pupils are expected to be honest in all of their academic work. This means that the students in this course will not engage in any of the following acts:

• Cheating on examinations or other school assignments, including but not limited to, the non-authorized use of books or notes, the use of crib sheets, copying from other students' papers, exchanging information with other students orally, in writing, or by signals, obtaining copies of the examination illegally and other similar activities. Cheating through the use of technology to exchange information on any school assignment, examination, etc. is prohibited. Technology is defined as, but not limited to, computers, telephones, text messaging, palm pilots, calculators, cameras or any other hand held device.

• Plagiarism is not permitted in term papers, themes, essays, reports, images, take-home examinations, and other academic work. Plagiarism is defined as stealing or use without acknowledgment of the ideas, words, formulas, textual materials, on-line services, computer programs, etc. of another person, or in any way presenting the work of another person as one's own.

• Falsifications, including forging signatures, altering answers after they have been graded, inserting answers after the fact, erasing of grader's markings, and other acts that allow for falsely taking credit.

A pupil found guilty of academic dishonesty may be subjected to a full range of penalties including, but not limited to reprimand and loss of credit for all of the work that is plagiarized. Disciplinary action may also be a consequence of such behavior. Additional consequences may apply as defined in specific department policies and guidelines.

A teacher who believes that a pupil has been academically dishonest in his/her class should resolve the matter in the following manner:

• Reprimand the student orally and/or in writing. The teacher is also authorized to withhold credit in the work due to academic dishonesty.

• If warranted, the teacher shall file a written complaint against the student with the Administration, requesting a more stringent form of discipline. The complaint must describe in detail the academic dishonesty that is alleged to have taken place, and must request that the matter be reviewed by the Administration.

• The Administration will determine if further discipline of the pupil is appropriate, and will determine the nature of the discipline on a case-by-case basis.

• If the pupil is not in agreement with the disciplinary action of the Administration, he/she may appeal the action first to the Principal and secondly to the Superintendent. If the pupil is dissatisfied with the Superintendent's disposition of the case, he/she may grieve the action in accordance with Policy No. 5710, Pupil Grievance.

V. District Policy: Discrimination

High Point Regional High School's curriculum and instruction are aligned to the State's Core Curriculum Content Standards and address the elimination of discrimination by narrowing the achievement gap, by providing equity in educational programs and by providing opportunities for students to interact positively with others regardless of race, creed, color, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, religion, disability or socio-economical status.

VI. Student Evaluation:

One to three quizzes, based on the course proficiencies will be given during a unit. And a chapter test will be given at the end of each unit. Cooperative group assignments and projects will also be assigned and graded. Teachers will explain their method of grading these. An exam will be given at the end of each semester, covering all work of that semester.

Homework will be checked daily. It will usually not be graded, but will be considered satisfactory if the work shown indicates the student has made a conscientious effort to complete the assignment. If a student is unable to complete an assignment because he/she doesn't understand the material, the student may be asked to complete the assignment after it is reviewed in class in order to receive credit.

Sometimes an assignment given for homework may be collected and graded as a quiz. This will only be done when concepts have been thoroughly reviewed.

Grades will be calculated according to the school grading policy and the following guidelines.

A. Marking Period

1.	Tests and Quizzes	90 – 95%
2.	Homework (Each teacher will explain his/her homework policy to the class)	05 – 10%
3.	Class Participation	00 – 05%

B. Final Grade

1.	Each Marking Period	20%
2.	Midterm Exam	10%
3.	Final Exam	10%

VII. Course Proficiencies

Students will be able to:

1. solve equations and inequalities including linear, literal and absolute value equations, and apply them to real life problems.

2. graph linear equations and inequalities including identification of slope, X and Y intercepts, parallel and perpendicular lines and recognition of the standard, slope intercept and point slope forms of the equation.

3. solve systems of equations and inequalities by various methods including graphing, substitution, linear combinations, augmented matrices, Cramer's Rule, and apply them to real life problems including linear programming.

4. organize data into matrices and be able to find determinants and inverses and perform matrix operations with and without a graphing calculations.

5. solve quadratic equations by completing the square, the Quadratic Formula and a graphing calculator, and apply them to real life problems.

6. perform operations with complex numbers, applying the field properties.

7. perform and apply operations on finite and infinite relations and functions including exponential and logarithmic functions.

8. perform operations and simplify polynomial, rational and radical expressions including those with rational exponents.

9. factor and solve polynomial equations and apply them to real life situations.

10. represent and analyze the relationship among a table of values, an algebraic formula, a written statement and a graph, including lines, curves and conics.

11. represent, order and use numbers and variables in a variety of equivalent forms, showing a knowledge of mathematical vocabulary and symbolic notation.

12. simplify, add, subtract, multiply and divide rational algebraic expressions and apply to real life problems.

13. classify conic sections by their equations and demonstrate a knowledge of their graphs.

14. make a probability distribution and determine conditional probabilities.

15. analyze sets of data by finding the mean, median, mode, quartiles, standard deviation and describe sets of data with normal curves.

16. identify bias in sampling methods and find margin of error.