



## Northern York County School District

### Curriculum Overview

<b>Course:</b> Honors Algebra II	
<b>Grade Level:</b> 9/10	
<b>Development/Revision Date:</b> May 2022	<b>Length of Time:</b> 180
<b>Course Description:</b> Honors Algebra II is designed for students who have successfully completed Algebra I in 7 <sup>th</sup> or 8 <sup>th</sup> grade. This course thoroughly examines nonlinear functions and explores sequences, series, and matrices. Additional topics such as irrational numbers, complex numbers, Pascal's Triangle, rational exponents, conic sections, and advanced factoring techniques are addressed. A goal of this course is to accelerate students so they have the opportunity to study mathematics at a collegiate level during their junior and/or senior years. Furthermore, this course will prepare students for the Passport to Advanced Math portion of the College Board's SAT. Students must meet the prerequisite requirements outlined in the course handbook in order to enroll in this course.	
<b>Course Objectives:</b> <ul style="list-style-type: none"> <li>Understand how to simplify, graph, solve, and write linear functions, quadratic functions, polynomial functions, radical functions, exponential functions, logarithmic functions, and rational functions.</li> <li>Solve linear and nonlinear systems of equations algebraically and using matrices.</li> <li>Utilize a graphing calculator to enhance understanding of algebraic and transcendental functions.</li> <li>Solve real-life problems that involve algebraic and transcendental functions.</li> <li>Analyze sequences and series.</li> </ul>	
<b>Foundational Units:</b> <ul style="list-style-type: none"> <li>Linear Functions</li> <li>Quadratic Functions</li> <li>Quadratic Equations and Complex Numbers</li> <li>Polynomial Functions</li> <li>Rational Exponents and Radical Functions</li> <li>Exponential and Logarithmic Functions</li> <li>Rational Functions</li> <li>Sequences and Series</li> <li>Matrices</li> <li>Trigonometric Ratios and Functions</li> </ul>	
<b>Related Standards:</b> CC.2.2.HS.D.7 Create and graph equations or inequalities to describe numbers or relationships. CC.2.2.HS.D.9 Use reasoning to solve equations and justify the solution method. CC.2.2.HS.D.10 Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically CC.2.2.HS.C.2 Graph and analyze functions and use their properties to make connections between the different representations. CC.2.2.HS.C.3 Write functions or sequences that model relationships between two quantities. CC.2.2.HS.C.6 Interpret functions in terms of the situations they model. CC.2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles.	

CC.2.2.HS.C.7 Apply radian measure of an angle and the unit circle to analyze the trigonometric functions.

CC.2.3.HS.A.10 Translate between the geometric description and the equation for a conic section.

**Concepts:**

- Review of linear functions
- Quadratic functions including conic sections
- Polynomial functions
- Radical functions
- Exponential functions
- Logarithmic functions
- Trigonometric functions
- Sequences and series
- Systems of equations
- Matrices

**Competencies:**

Students will be able to...

- Simplify algebraic and transcendental expressions
- Graph algebraic and transcendental functions
- Solve algebraic and transcendental equations
- Write algebraic and transcendental functions
- Apply algebraic techniques to solve real-life problems
- Utilize a Graphing Calculator to justify solutions

**Learning Activities:**

- Note-making (Jig-Saw, Class Discussion, Direct Instruction)
- Warm up Problems
- Writing Prompts
- Collaborative Activities
- Guided Practice
- Independent Practice

**Performance Tasks:**

- Unit Assessments
- Labs
- Projects

**Other Assessment Measures:**

Homework, Classwork, Presentations

**Textbook/Primary Resource:** Ron Larson & Laurie Boswell, Algebra 2, Big Ideas Learning

**Supplemental Resource Materials:**

District created resources, Online resources