



Northern York County School District

Curriculum Overview

Course: Honors Precalculus	
Grade Level: 10/11	
Approval Date:	Length of Time: 180 days
Course Description: Honors Precalculus builds on Algebra 1, Geometry, and Algebra 2 concepts with a strong emphasis on algebraic functions, transcendental functions, unit circle trigonometry, analytic geometry and matrices. The goal of this course is to accelerate students, so they have an opportunity to study mathematics at a collegiate level in their junior and/or senior years. Students may also choose to take the College Board's AP Precalculus Exam at the conclusion of this course.	
Prerequisite: Students must have a teacher's recommendation. An Honors Algebra II grade of 77% or higher is recommended.	
Course Objectives: <ul style="list-style-type: none"> • Use and apply Precalculus terminology and theorems appropriately • Determine and utilize the characteristics of functions • Use trigonometric identities and the unit circle to solve equations • Graph and apply trigonometric functions to real-life problems • Utilize right triangle trigonometry, the Law of Sines and the Law of Cosines to solve real-life problems • Perform and apply matrix operations to solve systems of equations • Use technology to analyze functions and matrices 	
Related Standards: <ul style="list-style-type: none"> • CC.2.1.HS.F.3 – Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays. • CC.2.2.HS.D.2 – Write expressions in equivalent forms to solve problems. • 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.7 – Apply radian measure of an angle and the unit circle to analyze the trigonometric functions. • CC.2.2.HS.C.8 – Choose trigonometric functions to model periodic phenomena and describe the properties of the graphs. • CC.2.2.HS.C.9 – Prove the Pythagorean identity and use it to calculate trigonometric ratios. • CC.2.3.HS.A.7 – Apply trigonometric ratios to solve problems involving right triangles. 	
Units: <ul style="list-style-type: none"> • Linear, Radical, Composite, and Inverse Functions • Polynomial and Rational Functions • Exponential and Logarithmic Functions • Trigonometric and Polar Functions • Analytic Trigonometry • Systems of Equations & Inequalities • Matrices and Determinants 	

<p>Concepts:</p> <ul style="list-style-type: none"> • Functions – Understanding how functions behave is essential to the study of Calculus. • Trigonometry – Right triangle trigonometry helps establish unit circle trigonometry and is a fundamental skill used to solve many real-life problems. • Matrices – Matrices are used to organize information in a manner that allows for easier calculations through a study known as linear algebra. 	<p>Competencies:</p> <ul style="list-style-type: none"> • Graph algebraic and transcendental functions. • Identify key characteristics of algebraic and transcendental functions. • Construct a function that is an additive and/or multiplicative transformation of another function. • Solve algebraic and transcendental equations. • Determine the sine, cosine, and tangent of an angle using the unit circle. • Model data with algebraic and transcendental functions. • Construct analytical and graphical representations of the inverse of the sine, cosine, and tangent functions over a restricted domain. • Rewrite trigonometric expressions in equivalent forms using identities. • Apply matrix operations to solve real-life problems.
<p>Learning Activities:</p> <ul style="list-style-type: none"> • Warm Up Problems • Direct Instruction • Class Discussions/Presentations • Collaboration Activities • Guided Practice • Independent Practice 	<p>Performance Tasks:</p> <ul style="list-style-type: none"> • Quizzes • Unit Tests • Unit Activities • Unit Project(s)/Lab(s)
<p>Other Assessment Measures: Homework Classwork Presentations AP Precalculus Exam (Optional)</p>	
<p>Textbook/Primary Resource: Larson, Precalculus 11th Edition</p>	
<p>Supplemental Resource Materials:</p> <ul style="list-style-type: none"> • District/Teacher Created Resources • Online Resources (Math Medic, College Board Website, Khan Academy, etc.) 	