ABSS PreCalculus Honors Scope & Sequence

Important Documents & Resources

ABSS	NCDPI
• Student Data Tracker for PreCalculus Standards	• NCDPI Unpacked Document
• ABSS High School Mathematics Differentiated Core	• NC PreCalculus Unpacked Examples
• ABSS Secondary District Provided Resources	• NCDPI PreCalculus Glossary
• ABSS Secondary Math News	• NC Literacy Instructional Standards & Mathematics 9-12 (NEW)
• ABSS Delta Math Help Sheet	• #GoOpenNC Resources (found in the NCEd Cloud)
	• NC2ML Collaborative Resources for High School

Conceptual Cluster	Standards	Recommended Timeframe
	Unit 1: Functions Graphs	**5-7 Days**
Understand the relationship of algebraic and graphical representations of exponential, logarithmic, rational,	NC.PC.F.4.1 Interpret algebraic and graphical representations to determine key features of exponential functions. *Key features include: domain, range, intercepts, intervals where the function is increasing, decreasing, positive or negative, concavity, end behavior, limits, and asymptotes.*	
	NC.PC.F.4.3 Interpret algebraic and graphical representations to determine	

power functions, and conic sections to their key features.	key features of logarithmic functions. *Key features include: domain, range, intercepts, intervals where the function is increasing, decreasing, positive or negative, concavity, end behavior, continuity, limits, and asymptotes.*	
	NC.PC.F.4.5 Interpret algebraic and graphical representations to determine key features of rational functions. *Key features include: domain, range, intercepts, intervals where the function is increasing, decreasing, positive or negative, concavity, end behavior, continuity, limits, and asymptotes.*	
	NC.PC.F.4.7 Construct graphs of transformations of power, exponential, and logarithmic functions showing key features.	
	Unit 2: Functions Concepts	**11 - 13 Days**
Apply properties of function composition to build new functions from existing functions.	NC.PC.F.5.1 Implement algebraic procedures to compose functions.	
	NC.PC.F.5.2 Execute a procedure to determine the value of a composite function at a given value using algebraic, graphical, and tabular representations.	
	NC.PC.F.5.3 Implement algebraic methods to find the domain of a composite function.	
	NC.PC.F.5.4 Organize information to build models involving function composition.	
	NC.PC.F.5.5 Deconstruct a composite function into two functions.	
	NC.PC.F.5.6 Implement algebraic and graphical methods to find an inverse function of an existing function, restricting domains if necessary.	
	NC.PC.F.5.7 Use composition to determine if one function is the inverse of another function.	

Apply properties of solving equations involving exponential, logarithmic, and trigonometric functions.	NC.PC.A.2.4 Implement algebraic techniques to rewrite parametric equations in cartesian form by eliminating the parameter.	
Apply mathematical reasoning to build parametric functions and solve problems.	NC.PC.F.7.1 Implement algebraic methods to write parametric equations in context.	
	NC.PC.F.7.2 Implement technology to solve contextual problems involving parametric equations.	
	Unit 3: Polynomial, Power, and Rational Functions	**18 Days**
Apply properties of complex numbers and the complex number system.	NC.PC.N.1.1 Execute the sum and difference algorithms to combine complex numbers.	
	NC.PC.N.1.2 Execute the multiplication algorithm with complex numbers.	
Apply properties of solving inequalities that include rational and polynomial expressions in one variable.	NC.PC.A.1.1 Implement algebraic (sign analysis) methods to solve rational and polynomial inequalities.	
	NC.PC.A.1.2 Implement graphical methods to solve rational and polynomial inequalities.	
Understand the relationship of algebraic and graphical representations of exponential,	NC.PC.F.4.6 Implement graphical and algebraic methods to solve optimization problems given rational and polynomial functions in context with support from technology.	

logarithmic, rational, power functions, and conic sections to their key features.		
	Unit 4: Exponential and Logarithmic Functions	**5-7 Days**
Understand the relationship of algebraic and graphical representations of exponential, logarithmic, rational, power functions, and conic sections to their key features.	NC.PC.F.4.2 Integrate information to build exponential functions to model phenomena involving growth or decay.	
	NC.PC.F.4.4 Implement graphical and algebraic methods to solve exponential and logarithmic equations in context with support from technology.	
Apply properties of solving equations involving exponential, logarithmic, and trigonometric functions.	NC.PC.A.2.1 Use properties of logarithms to rewrite expressions.	
	NC.PC.A.2.2 Implement properties of exponentials and logarithms to solve equations.	
	Unit 5: Trigonometric Functions	**15-17 Days**
Understand key features of sine, cosine, tangent, cotangent,	NC.PC.F.1.1 Interpret algebraic and graphical representations to determine key features of transformed sine and cosine functions. *Key features include: amplitude, domain, midline, phase shift, frequency, period, intervals where the function is increasing, decreasing, positive or negative,*	

secant and cosecant functions.	*relative maximums and minimums.*	
	NC.PC.F.1.2 Interpret algebraic and graphical representations to determine key features of tangent, cotangent, secant, and cosecant. *Key features include: domain, frequency, period, intervals where the function is increasing, decreasing, positive or negative, relative maximums and minimums, and asymptotes.*	
	NC.PC.F.1.3 Integrate information to build trigonometric functions with specified amplitude, frequency, period, phase shift, or midline with or without context.	
	NC.PC.F.1.4 Implement graphical and algebraic methods to solve trigonometric equations and inequalities in context with support from technology.	
Apply properties of a unit circle with center (0,0) to determine the values of sine, cosine, tangent, cotangent, secant, and cosecant.	NC.PC.F.2.1 Use a unit circle to find values of sine, cosine, and tangent for angles in terms of reference angles.	
	NC.PC.F.2.2 Explain how the symmetry of the unit circle is related to the periodicity of trigonometric functions.	
	Unit 6: Analytic Trigonometry	**3-5 Days**
Apply properties of solving equations involving exponential, logarithmic, and trigonometric functions.	NC.PC.A.2.3 Implement properties of trigonometric functions to solve equations including inverse trigonometric functions, double angle formulas, and Pythagorean identities.	

Apply properties of trigonometry to solve problems involving all types of triangles.	NC.PC.F.3.1 Implement a strategy to solve equations using inverse trigonometric functions.	
	NC.PC.F.3.3 Implement the Pythagorean identity to find sin(θ), cos(θ), or tan(θ) given sin(θ), cos(θ), or tan(θ) and the quadrant of the angle.	
	Unit 7: Applications of Trigonometry	**3 Days**
Apply properties of trigonometry to solve problems involving all types of triangles.	NC.PC.F.3.2 Implement Law of Sines and Law of Cosines to solve problems.	
Understand properties and operations with vectors.	NC.PC.N.3.1 Represent a vector indicating magnitude and direction.	
	NC.PC.N.3.2 Execute sum and difference algorithms to combine vectors.	
	Unit 8: Conic Sections	**5 - 7 Days**
Understand the relationship of algebraic and graphical representations of exponential, logarithmic, rational, power functions, and conic sections to their key features.	NC.PC.F.4.8 Identify the conic section (ellipse, hyperbola) from its algebraic representation in standard form.	
	NC.PC.F.4.9 Interpret algebraic and graphical representations to determine key features of conic sections (ellipse: center, length of the major and minor axes; hyperbola: vertices, transverse axis; parabola: vertex, axis of symmetry).	
	Unit 9: Systems and Matrices	**2-3 Days**

Apply properties and operations with matrices.	NC.PC.N.2.1 Execute the sum and difference algorithms to combine matrices of appropriate dimensions.	
	NC.PC.N.2.2 Execute associative and distributive properties to matrices.	
	NC.PC.N.2.3 Execute commutative property to add matrices.	
	NC.PC.N.2.4 Execute properties of matrices to multiply a matrix by a scalar.	
	NC.PC.N.2.5 Execute the multiplication algorithm with matrices.	
	Unit 10:Sequences	**3-4 Days**
Apply mathematical reasoning to build recursive functions and solve problems.	NC.PC.F.6.1 Use algebraic representations to build recursive functions.	
	NC.PC.F.6.2 Construct a recursive function for a sequence represented numerically.	