Course Title: Pre-Calculus/Honors Pre-Calculus
Board Approval Date: January 7, 2020
Credit / Hours: 1.0 Credit

Course Description:
    The course provides students with knowledge of linear, quadratic, polynomial, rational, exponential, logarithmic functions and conics. Students learn to graph these functions and likewise to investigate various applications of these functions.

Honors:
Practical applications and solution of triangular problems are also studied as well as verifying and proving trigonometric identities/polar coordinates and vectors.

*Students will use a TI-89 graphing calculator/Desmos for this course.

Learning Activities / Modes of Assessment	Stations
	Scavenger Hunt
	Nearpod
Teacher Observation	**Edpuzzles**
Kahoot	**Flipgrid**
Quizlet	**SAT Practice**
Notability	**Task Cards**
Bell Ringer	**Schoology Assignments**
Exit Ticket	**Error Analysis**
Collaborative Projects	**Self-Checking with Answer Key**
Small/Whole Groups	**Real Life Problems**
Partner Work	**Application**
Whiteboard Practice	**Quizzes**
Review Games	**Unit Tests/Midterm/Final**
Desmos Activities	
Geogebra	
Think/Pair/Share	

Instructional Resources:
   ● **Desmos**
   ● **SAS**
   ● **Online Practice Tools**
   ● **Khan Academy**
   ● **Teachers Pay Teachers**
   ● **Teacher Created Resources**
   ● **Kuta Software**
   ● **Instructional Multimedia Tools**
   ● **Graphing Calculator Activities**	

Curriculum: **Pre-Calculus**
Course: **Pre-Calculus**

Know:	Understand:	Do:
Unit 1: Review of Linear Functions Review of identifying types of lines and linear functions Review of characteristics of functions Review of composition and inverse functions	**Unit 1** Apply properties of real numbers Evaluate and simplify algebraic expressions/equations Evaluate and simplify exponents and radicals Identify domain within rational functions Use problem solving strategies and model Solve inequalities, linear equations, and absolute value Apply coordinate geometry	**Unit 1** CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems. 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 system of equations/ inequalities algebraically and graphically. CC.2.2.HS.C.1 Use the concept and notation of functions to interpret and apply them in terms of their context. CC.2.2.HS.C.2 Graph and analyze functions and use their properties to make connections between different representations. CC.2.2.HS.C.3 Write functions or sequences that model relationship is between two quantities. CC.2.2.HS.C.6 Interpret functions in terms of the situations they model.

		Unit 2
Unit 2: Functions of Higher Degree Graph Polynomial Functions	**Unit 2** How to graph polynomial functions Stating domain, range of polynomial functions Applying rate of change Describing transformations from a set function Recognizing even and odd functions Use problem solving strategies and model Solve and apply one-to-one functions and their inverses Find all maxima/minima	CC.2.2.HS.D.2 Extend the knowledge of arithmetic operations and apply to polynomials. CC.2.2.HS.D.4 Understand the relationship between zeros and factors of polynomials to make generalizations about functions and their graphs. CC.2.2.HS.D.5 Use polynomial identities to solve problems. CC.2.2.HS.D.8 Apply inverse operations to solve equations or formulas for a given variable.. CC.2.2.HS.C.4 Interpret the effects transformations have on functions and find the inverses of functions. CC.2.2.HS.D.9 Use reasoning to solve equations and justify the solution method. CC.2.2.HS.C.1 Use the concept and notation of functions to interpret and apply them in terms of their context. CC.2.2.HS.C.2 Graph and analyze functions and use their properties to make connections between different representations. CC.2.2.HS.C.3 Construct and compare linear,

		quadratic, and exponential models to solve problems. **Unit 3**
Unit 3: Polynomial and Rational Functions Graph Rational Functions Use rational functions to model and solve real life problems	**Unit 3** How to find asymptotes and other discontinuities of rational graphs and end-behaviors How to determine domain and range of rational functions How to find the zeros of polynomial functions How to identify the real and imaginary parts of complex numbers	CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems CC.2.2.HS.D.3 Extend the knowledge of arithmetic operations and apply to polynomials CC.2.2.HS.D.4 Understand the relationship between zeros and factors of polynomials to make generalizations about functions and their graphs. CC.2.2.HS.D.5 Use polynomial identities to solve problems. CC.2.2.HS.D.6 Extend the knowledge of rational functions to rewrite in equivalent forms. CC.2.2.HS.D.7 Create and graph equations or inequalities to describe numbers or relationships. CC.2.2.HS.D.8 Apply inverse operations to solve equations or formulas for a given variable. CC.2.2.HS.D.9 Use reasoning to solve equations and justify the solution method. 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.4 Interpret the effects transformations have on functions and find the inverses of functions. CC.2.2.HS.C.6 Interpret functions in terms of situations they model.
Unit 4: Exponential and Logarithmic Functions Graphs of exponential functions Properties of exponentials Properties of Logarithms Logarithmic equations Definition of a logarithm Graphing Logarithmic Functions Applications of Exponential and Logarithmic Functions	**Unit 4** To graph an exponential function To interpret the key characteristics of the graphs of exponential functions To use the properties of exponents to solve exponential equations To use the properties of logarithms to solve exponential and logarithmic equations To evaluate logarithms To solve applications of exponential and logarithmic functions	**Unit 4** CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems. CC.2.2.HS.D.8 Apply inverse operations to solve equations or formulas for a given variable. 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.4 Interpret the effects transformations have on functions and find the inverses of functions.

CC.2.2.HS.C.5 Construct and compare linear, quadratic, and exponential models to solve problems.

CC.2.2.HS.C.6 Interpret functions in terms of the situations they model. |
| **Unit 5: Conics**

Parabolas

Ellipses

Hyperbolas

Circles | **Unit 5**

Graph and solve at the origin and translated in space

How to complete the square and write in standard form

How to identify conics | **Unit 5**

CC.2.3.HS.A.1 Use geometric figures and their properties to represent transformations in the plane.

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

Pre-Cal Pacing Guide

Course: **Pre-Calculus**

Course Unit (Topic) (Class Periods)	Length of Instruction (Class Periods)
Unit 1: Review of Linear Functions	35 days
Unit 2: Functions of Higher Degree	12 days
Unit 3: Polynomial and Rational Functions	18 days
Unit 4: Exponential and Logarithmic Functions	12 days
Unit 5: Conics	13 days
Total Days:	90 days

Course: **Honors Pre-Calculus**

Course Unit (Topic) (Class Periods)	Length of Instruction (Class Periods)
Unit 1: Review of Linear Functions	12 days
Unit 2: Functions of Higher Degree	10 days
Unit 3: Polynomial and Rational Functions	10 days
Unit 4: Exponential and Logarithmic Functions	13 days
Total Pre-Calculus Days:	45 days
Unit 5: Trigonometric Functions	10 days
Unit 6: Trigonometric Functions of Angles	10 days
Unit 7: Analytic Trigonometry	13 days
Unit 8: Polar Coordinates and Vectors	12 days
Total Trigonometric Days:	45 days
Total Days:	90 days