Wyoming Department of Education Required Virtual Education Course Syllabus

Natrona County School District # 1

Program Name	Natrona Virtual Learning	Content Area	MA
Course ID	NCV02110.1	Grade Level	9,10,11,12
Course Name	Pre-Calculus Sem 1	# of Credits	0.5
SCED Code	02110G0.5012	Curriculum Type	Odysseyware

COURSE DESCRIPTION

Pre-calculus is a full-year, high school credit course that is intended for the student who has successfully mastered the core algebraic and conceptual geometric concepts covered in the prerequisite courses: Algebra I, Geometry, and Algebra II. The course primarily focuses on the skills and methods of analytic geometry and trigonometry while investigating further relationships in functions, probability, number theory, limits, and the introduction of derivatives.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK (Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets
A.REI.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
F.IF.8a	Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.
F.TF.2	Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.
G.C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.
F.TF.9	(+)Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.

SCOPE AND SEQUENCE

UNIT OUTLINE	STANDARD#	OUTCOMES OBJECTIVES/STUDENT CENTERED GOALS
UNIT 1: RELATIONS AND FUNCTIONS	A.REI.6	pairs. Determine if a relation is a function, find the inverse of a function, and determine whether or not the inverse is a function. Distinguish between linear and quadratic functions, and write their equations.Utilize function notation to solve for dependent variable values.Apply arithmetic operations to equal functions. Combine functions via composition, and use composition of functions to verify that two functions are inverses of each other.Distinguish between zero, constant and

UNIT 2: FUNCTIONS	F.IF.8a	quadratic equation, the remainder theorem and the factor theorem.Relate how a quadratic equation can define the shape and location of parabolic curves.Solve for the roots of quadratic inequalities, and use them to identify their graphs.Identify factors, upper and lower limits of Nth degree polynomials.Convert complex numbers from rectangular form to polar form, and from polar form to rectangular form. Calculate the distance between two complex numbers, find their midpoint, and
UNIT 3: TRIGONOMETRIC FUNCTIONS	F.TF.2	Identify the trigonometric functions, and solve for missing components. Identify acute, right and obtuse angles, positive and negative angles in standard position. Reduce angles using reductions formulas.Determine the values of trigonometric functions at reduced and quadrantal angles.
UNIT 4: CIRCULAR FUNCTIONS AND THEIR GRAPHS	G.C.5	Understand how the unit circle can be used to solve for components of trigonometric functions.Describe movement around the unit circle.Use reduction formulas for radian angles.Identify graphs of the since, cosine, tangent, cotangent, secant and cosecant functions.Use parametric equations with trigonometric operations to model and solve problems. Calculate amplitude, period, and phase shift for graphed trigonometric functions.
UNIT 5: IDENTITIES AND FUNCTIONS OF MULTIPLE ANGLES	F.TF.9	Reduce trigonometric expressions.Simplify trigonometric expressions utilizing trigonometric identities, and double and half-angel formulas. Utilize cosine identities to simplify trigonometric expressions.Simplify expressions for adding and subtracting angles relative to the sine and tangent functionsDerive double and half-angle formulas for cosine, sine and tangent functions. Combine the identities and angle formulas learned in this unit to prove trigonometric relationships