

DEPARTMENT: MATHEMATICS		COURSE TITLE: PRECALCULUS : ANALYSIS (HONORS)			
GRADE(S): 11,12		COURSE NUMBER: 336			
		PRE-REQUISITES (IF ANY): PRECALCULUS : TRIGONOMETRY (HONORS) OR MATHEMATICAL MODELING			
UNIT	LENGTH	CONTENT	SKILLS	METHODS OF ASSESSMENT	FRAMEWORK STRAND(S) & STANDARD(S)
Complex Numbers	6-8days	<ul style="list-style-type: none"> • Geometry of complex numbers • Rectangular and polar form • Multiplication, powers and roots 	<ul style="list-style-type: none"> • Draw Argand diagrams • Convert between polar and rectangular form • Understand the advantage of calculating in polar form • Find products, quotients, powers, and roots of complex numbers • Understand the geometry of powers and roots • Be familiar with the vocabulary of the unit. 	<ul style="list-style-type: none"> • Homework • Test • Paper 	1, 3
Vectors and Parametric Equations	8-10 days	<ul style="list-style-type: none"> • Geometric representation of vectors • Algebraic representation of vectors • Calculations with vectors • Vector equations, parametric equations and graphs 	<ul style="list-style-type: none"> • Graph vectors • Understand magnitude • Gain familiarity with component form • Perform calculations on vectors graphically and algebraically • Use vector equations to model linear movement • Understand the need for parametric equations • Graph parametric equations • Convert parametric equation to Cartesian form • Compute a dot product • Find the angle between two vectors • Be familiar with the vocabulary of the unit. • Be able to apply the concepts to real life situations. 	<ul style="list-style-type: none"> • Homework • Quiz • Test • Graded assignment 	8, 11
Sequences and Series	14-15 days	<ul style="list-style-type: none"> • Arithmetic and geometric sequences • Recursive formulas • Explicit formulas • Infinite sequences • Arithmetic and geometric series 	<ul style="list-style-type: none"> • Recognize different types of sequences • Find explicit and/or recursive formulas • Understand the concept of 	<ul style="list-style-type: none"> • Homework • Quiz • Test • Graded assignment 	2

		<ul style="list-style-type: none"> • Infinite series • Summation notation 	<p>an infinite sequence and a limit</p> <ul style="list-style-type: none"> • Be familiar with the formulas involved with arithmetic and geometric series • Recognize when an infinite series has a limit and calculate it • Represent series using sigma notation • Be familiar with the vocabulary of the unit • Be able to apply the concepts to real life situations 		
Optional Unit: Fractals	8 days	<ul style="list-style-type: none"> • Definition and properties of fractals • Creation of the Mandelbrot Set • Fractal dimension 	<ul style="list-style-type: none"> • Understand iteration and self-similarity • Apply sequences/series and complex numbers to fractals • Understand the geometry of the Mandelbrot Set • Gain exposure to fractional dimensions 	<ul style="list-style-type: none"> • Portfolio and/or Project 	
Conic Sections	10-12 days	<ul style="list-style-type: none"> • Circles, parabolas, ellipses, and hyperbolas • Systems of second degree equations 	<ul style="list-style-type: none"> • Understand the geometric definitions of each type of conic • Understand the algebraic equation for each conic • Graph a conic function • Determine the equation from the graph • Recognize the specific conic from the second degree general form • Find the intersection of two or more conics • Be familiar with the vocabulary of the unit • Be able to apply the concepts to real life situations 	<ul style="list-style-type: none"> • Homework • Quiz/Test • Analysis paper 	9