Planned Course: Pre-Calculus	Course Number: 308/309	Department: Math	
Unit: Trigonometric Functions	Grade Level: 10-12		
Estimated Time: 35 days	Level/Track:	Date Approved: 08/20/02	

Academic Standards	Skills/Knowledge	Activities	Assessment
2.2.11 Computation and Estimation F. Demonstrate skills for using computer spreadsheets and scientific or graphing calculators. 2.3.11 Measurement and Estimation B. Measure and compare angles in degrees and radians. 2.4.11 Mathematical Reasoning and Connections E. Demonstrate mathematical solutions to problems (e.g. in the physical sciences).	The student will be able to give the measure of an angle in degrees, find its measure in radians and vice versa. The student will be able to find the arc length of a circle. The student will be able to find the area of a sector of a circle. The student will be able to find the linear speed of objects traveling in a circular motion.	• Chalkboard examples • Exercises in textbook • Problems at chalkboard • Classroom use of a calculator • Worksheets	• Tests • Quizzes • Homework • Graded notebook • Projects/group projects
2.2.11 Computation and Estimation F. Demonstrate skills for using computer spreadsheets and scientific or graphing calculators.	The student will be able to use the definitions of the six trigonometric functions.	• Chalkboard examples • Exercises in textbook • Problems at chalkboard • Classroom use of a calculator • Worksheets	• Tests • Quizzes • Homework • Graded notebook • Projects/group projects

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2.8.11 Algebra and Functions Q. Represent functional relationships in tables, charts, and graphs. S. Analyze properties and relationships of functions (e.g. linear, polynomial, rational, trigonometric, exponential, and logarithmic). T. Analyze and categorize functions by their characteristics. 2.10.11 Trigonometry B. Identify, create, and solve practical problems involving right triangles using trigonometric functions and the Pythagorean Theorem.	The student will be able to determine the exact values of trigonometric functions using a point on the unit circle. The student will be able to determine the exact values of the six trigonometric functions of : quadrantal angles, multiples of quadrantal angles, and various other common trigonometric angles. The student will be able to use a calculator to approximate the value of a trigonometric function. The student will be able to solve real-world problems using the six trigonometric functions.		
2.8.11 Algebra and Functions Q. Represent functional relationships in tables, charts, and graphs.	The student will be able to determine the domain and range of trigonometric functions. The student will be able to determine the period of	• Chalkboard examples • Exercises in textbook • Problems at chalkboard • Worksheets • Classroom graphing with the aid of calculators	• Tests • Quizzes • Homework • Graded notebook • Projects/group projects

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S. Analyze properties and relationships of functions (e.g. linear, polynomial, rational, trigonometric, exponential, and logarithmic). T. Analyze and categorize functions by their characteristics.	trigonometric functions. The student will be able to determine the signs of trigonometric functions in a given quadrant. The student will be able to find the exact values of trigonometric functions utilizing fundamental identities. The student will be able to find the exact values of trigonometric functions using even-odd properties.	• Graphing functions using spreadsheets	
2.8.11 Algebra and Functions S. Analyze properties and relationships of functions (e.g. linear, polynomial, rational, trigonometric, exponential, and logarithmic). 2.10.11 Trigonometry A. Use graphing calculators to display periodic and circular functions;	The student will be able to graph a sinusoidal function given its equation. The student will be able to graph transformations to the sinusoidal functions. The student will be able to determine the amplitude and period of sinusoidal functions. The student will be able to graph sinusoidal functions of the form	• Chalkboard examples • Exercises in textbook • Problems at chalkboard • Classroom use of a calculator • Worksheets	• Tests • Quizzes • Homework • Graded notebook • Projects/group projects

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describe properties of the graphs.	$y = A \sin(\omega x)$. The student will be able to find the equation of a sinusoidal function given its graph and vice versa. The student will be able to graph the four non-sinusoidal functions – tangent, cotangent, secant, and cosecant. The student will be able to graph transformations of the four non-sinusoidal functions – tangent, cotangent, secant, and cosecant.		
2.4.11 Mathematical Reasoning and Connections E. Demonstrate mathematical solutions to problems (e. g., in the physical sciences). 2.8.11 Algebra and Functions S. Analyze properties and relationships of functions (e.g. linear, polynomial,	The student will be able to determine the phase shift of a sinusoidal function. The student will be able to graph sinusoidal functions. The student will be able to find a sinusoidal function from data. The student will be able to solve real-world problems involving sinusoidal functions.	• Chalkboard examples • Exercises in textbook • Problems at chalkboard • Classroom graphing with the aid of calculators	• Tests • Quizzes • Homework • Graded notebook • Projects • Group projects

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Academic Standards	Skills/Knowledge	Activities	Assessment
rational, trigonometric, exponential, and logarithmic). 2.10.11 Trigonometry A. Use graphing calculators to display periodic and circular functions; describe properties of the graphs.			