



Official Course Outline
MAC 1114
College Trigonometry

General Course Information

Common Course Number: MAC1114

Course Title: College Trigonometry

Prerequisite(s): Minimum grade of C in MAC 1102 or Mac 1104 or 1105 or appropriate score on placement test.

Contact Hour Breakdown: CR 3 CLASS 3 LAB 0

Discipline: Mathematics

Catalog Description: Prerequisite: Minimum grade of C in MAC 1102 or MAC 1104 or MAC 1105 or an appropriate score on an approved assessment. Topics include a symbolical, graphical and numerical analysis of trigonometric functions; solutions of plane triangles and vectors. Applications emphasizing connections with other disciplines and with the real world will be included. Technology tools will be utilized in addition to analytical methods. Gordon Rule course. Minimum grade of C required if MAC 1114 is used to satisfy Gordon Rule and general education requirements. Credit not given for both MAC 1114 and MAC 1132 nor MAC 1114 and MAC 1142, nor for MAC 1114 and MAC 1147.

Major Topics/ Concepts/ Skills/ Issues

- TRIGONOMETRIC FUNCTIONS, THEIR PROPERTIES AND GRAPHS
- INVERSE TRIGONOMETRIC FUNCTIONS, THEIR PROPERTIES AND GRAPHS
- TRIGONOMETRIC IDENTITIES
- CONDITIONAL TRIGONOMETRIC EQUATIONS
- SOLUTIONS OF TRIANGLES
- VECTOR ALGEBRA
- PARAMETRIC EQUATIONS
- POLAR COORDINATES
- APPLICATIONS

Major Learning Outcomes with Evidence, Core Competencies and Indicators

Learning Outcome 1:

Demonstrate an understanding of the definitions of the trigonometric functions.

Corresponding Evidence of Learning

- Given an angle in standard position and either the x- coordinate, y-coordinate, or radius, find the other two.
- Given a point on the terminal side of an angle in standard position, find the values of the trigonometric functions.
- Given special angles (multiples of $\pi/2$, $\pi/3$, $\pi/4$, $\pi/6$), find the exact values of the trigonometric functions.
- Given a right triangle, express the trigonometric ratios in terms of the sides of the triangle.

Core Competency: Act

Indicators	Level of Integration	Method of Assessment
<ul style="list-style-type: none"> • implement effective problem-solving, decision-making, and goal-setting strategies 	<ul style="list-style-type: none"> • Instruct • Practice 	

Core Competency: Communicate

Indicators	Level of Integration	Method of Assessment
<ul style="list-style-type: none"> • employ methods of communication appropriate to your audience and purpose 	<ul style="list-style-type: none"> • Instruct • Practice 	

Core Competency: Think

Indicators	Level of Integration	Method of Assessment
<ul style="list-style-type: none"> • analyze data, ideas, patterns, principles, perspectives 	<ul style="list-style-type: none"> • Instruct • Practice 	
<ul style="list-style-type: none"> • employ the facts, formulas, procedures of the discipline 	<ul style="list-style-type: none"> • Instruct • Practice • Assess 	<ul style="list-style-type: none"> • Knowledge recall quiz • Locally developed exam/objective • Locally developed multiple choice exam • Problem-solving quiz • Project • Instructor may choose one of the above assessments, or use one of their own.

Learning Outcome 2:

Use the trigonometric functions to solve problems that are based on triangles.

Corresponding Evidence of Learning		
<ul style="list-style-type: none"> Given an applied problem involving right triangles, make a graphic representation that describes the situation, and solve the problem. Given an applied problem that requires the use of the Law of Sines and/or the Law of Cosines, make a graphic representation that describes the situation, and solve the problem. 		
Core Competency: Act		
Indicators	Level of Integration	Method of Assessment
<ul style="list-style-type: none"> implement effective problem-solving, decision-making, and goal-setting strategies 	<ul style="list-style-type: none"> Instruct Practice 	
Core Competency: Communicate		
Indicators	Level of Integration	Method of Assessment
<ul style="list-style-type: none"> employ methods of communication appropriate to your audience and purpose 	<ul style="list-style-type: none"> Instruct Practice 	
Core Competency: Think		
Indicators	Level of Integration	Method of Assessment
<ul style="list-style-type: none"> draw well-supported conclusions 	<ul style="list-style-type: none"> Instruct Practice 	
<ul style="list-style-type: none"> employ the facts, formulas, procedures of the discipline 	<ul style="list-style-type: none"> Instruct Practice Assess 	<ul style="list-style-type: none"> Knowledge recall quiz Locally developed exam/objective Locally developed multiple choice exam Problem-solving quiz Project Instructor may choose one of the above assessments, or use one of their own.

Learning Outcome 3:

Demonstrate an understanding of the graphs of the trigonometric functions.

Corresponding Evidence of Learning

- Given the equation of a trigonometric function, determine the amplitude, period, phase shift, and vertical shift, and the graph of the function.
- Given the graph of a sine or cosine function, determine the equation of the function.
- Given an applied problem involving a periodic function, determine a graphic and symbolic representation of the problem.

Core Competency: Communicate

Indicators	Level of Integration	Method of Assessment
<ul style="list-style-type: none"> • employ methods of communication appropriate to your audience and purpose 	<ul style="list-style-type: none"> • Instruct • Practice 	

Core Competency: Think

Indicators	Level of Integration	Method of Assessment
<ul style="list-style-type: none"> • employ the facts, formulas, procedures of the discipline 	<ul style="list-style-type: none"> • Instruct • Practice • Assess 	<ul style="list-style-type: none"> • Knowledge recall quiz • Locally developed exam/objective • Locally developed multiple choice exam • Problem-solving quiz • Project • Instructor may choose one of the above assessments, or use one of their own.
<ul style="list-style-type: none"> • analyze data, ideas, patterns, principles, perspectives 	<ul style="list-style-type: none"> • Instruct • Practice 	

Learning Outcome 4:**Use trigonometric identities to find equivalent expressions.****Corresponding Evidence of Learning**

- Simplify trigonometric expressions using the fundamental identities.
- Prove or verify trigonometric identities using algebraic manipulation.
- Apply trigonometric identities for sum, difference, or multiple angles to find equivalent trigonometric expressions.

Core Competency: Communicate

Indicators	Level of Integration	Method of Assessment
<ul style="list-style-type: none"> • employ methods of communication appropriate to your audience and purpose 	<ul style="list-style-type: none"> • Instruct • Practice 	

Core Competency: Think		
Indicators	Level of Integration	Method of Assessment
<ul style="list-style-type: none"> employ the facts, formulas, procedures of the discipline 	<ul style="list-style-type: none"> Instruct Practice Assess 	<ul style="list-style-type: none"> Knowledge recall quiz Locally developed exam/objective Locally developed multiple choice exam Problem-solving quiz Instructor may choose one of the above assessments, or use one of their own.
<ul style="list-style-type: none"> draw well-supported conclusions 	<ul style="list-style-type: none"> Instruct Practice 	

Learning Outcome 5:

Demonstrate the ability to solve equations involving trigonometric functions.		
Corresponding Evidence of Learning		
<ul style="list-style-type: none"> Determine the solutions of a trigonometric equation within a given interval. Use the inverse trigonometric functions to solve trigonometric equations. Solve trigonometric equations that arise from applied problems. 		
Core Competency: Act		
Indicators	Level of Integration	Method of Assessment
<ul style="list-style-type: none"> implement effective problem-solving, decision-making, and goal-setting strategies 	<ul style="list-style-type: none"> Instruct Practice 	
Core Competency: Communicate		
Indicators	Level of Integration	Method of Assessment
<ul style="list-style-type: none"> employ methods of communication appropriate to your audience and purpose 	<ul style="list-style-type: none"> Instruct Practice 	
Core Competency: Think		
Indicators	Level of Integration	Method of Assessment

<ul style="list-style-type: none">• employ the facts, formulas, procedures of the discipline	<ul style="list-style-type: none">• Instruct• Practice• Assess	<ul style="list-style-type: none">• Knowledge recall quiz• Locally developed exam/objective• Locally developed multiple choice exam• Problem-solving quiz• Project• Instructor may choose one of the above assessments, or use one of their own.
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