Course Outline
MAC 1114
College Trigonometry Fall13

General Course Information

Common Course Number: MAC1114

Course Title: College Trigonometry Fall13

Prerequisite(s): Minimum grade of C in MAC 1105 or appropriate score on an approved assessment.

Contact Hour Breakdown: **CR** 3 **CLASS** 3 **LAB** 0

Discipline: Mathematics

Catalog Description: 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

Demonstrate an understanding of the definitions of the trigonometric functions.

Corresponding Evidence of Learning

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

Core Competency: Think

Indicators	Assessments
• analyze data, ideas, patterns, principles, perspectives • employ the facts, formulas, procedures of the discipline	• 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.

Core Competency: Communicate

Indicators	Assessments
• employ methods of communication appropriate to your audience and purpose	

Core Competency: Act

Indicators	Assessments
• implement effective problem-solving, decision-making, and goal-setting strategies	

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

Corresponding Evidence of Learning

• Student will be able to , given an applied problem involving right triangles, make a graphic representation that describes the situation, and solve the problem.
• Student will be able to , 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: Think

Indicators	Assessments
• draw well-supported conclusions • employ the facts, formulas, procedures of the discipline	• 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.

Core Competency: Communicate

Indicators	Assessments
• employ methods of communication appropriate to your audience and purpose	

Core Competency: Act

Indicators	Assessments
• implement effective problem-solving, decision-making, and goal-setting strategies	

Demonstrate an understanding of the graphs of the trigonometric functions.

Corresponding Evidence of Learning

• Student will be able to , given the equation of a trigonometric function, determine the amplitude, period, phase shift, and vertical shift, and the graph of the function.
• Student will be able to , given the graph of a sine or cosine function, determine the equation of the function.
• Student will be able to , given an applied problem involving a periodic function, determine a graphic and symbolic representation of the problem.

Core Competency: Think

Indicators	Assessments
• employ the facts, formulas, procedures of the discipline • analyze data, ideas, patterns, principles, perspectives	• 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.

Core Competency: Communicate

Indicators	Assessments
• employ methods of communication appropriate to your audience and purpose	

Use trigonometric identities to find equivalent expressions.

Corresponding Evidence of Learning

- Student will be able to simplify trigonometric expressions using the fundamental identities.
- Student will be able to prove or verify trigonometric identities using algebraic manipulation.
- Student will be able to apply trigonometric identities for sum, difference, or multiple angles to find equivalent trigonometric expressions.

Core Competency: Think

Indicators	Assessments
• employ the facts, formulas, procedures of the discipline • draw well-supported conclusions	• 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.

Core Competency: Communicate

Indicators	Assessments
• employ methods of communication appropriate to your audience and purpose	

Demonstrate the ability to solve equations involving trigonometric functions.

Corresponding Evidence of Learning

- Student will be able to determine the solutions of a trigonometric equation within a given interval.
- Student will be able to use the inverse trigonometric functions to solve trigonometric equations.
- Student will be able to solve trigonometric equations that arise from applied problems.

Core Competency: Think

Indicators	Assessments
• employ the facts, formulas, procedures of the discipline	• 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.

Core Competency: Communicate

Indicators	Assessments
• employ methods of communication appropriate to your audience and purpose	

Core Competency: Act

Indicators	Assessments
• implement effective problem-solving, decision-making, and goal-setting strategies	

General Education Outcome Indicators

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

CRITICAL THINKING
Effectively analyze, evaluate, synthesize and apply information and ideas from diverse sources and disciplines.

Indicators	Assessments
• Comprehending data/information • Analyzing data • Developing a viable solution plan	• A common question will be embedded in the final exam. A stratified random sample of students will be selected. The student artifacts will be evaluated using a set of common rubrics for each learning outcome.

Demonstrate an understanding of the graphs of the trigonometric functions.

QUANTITATIVE AND SCIENTIFIC REASONING - QUANTITATIVE
Use processes, procedures, data, or evidence to solve problems and make effective decisions.

Indicators	Assessments
• Classifying and utilizing facts and formulas correctly • Constructing a mathematical model	• A common question will be embedded in the final exam. A stratified random sample of students will be selected. The

• Constructing a mathematical model	stratified random sample of students will be selected. The student artifacts will be evaluated using a set of common rubrics for each learning outcome.

Shared Assessment(s) in this Course

- common final exam question
