



MATH 108 - Trigonometry Course Outline

Approval Date: 12/13/2018

Effective Date: 08/12/2019

SECTION A

Unique ID Number CCC000561216

Discipline(s) Mathematics

Division Mathematics

Subject Area Mathematics

Subject Code MATH

Course Number 108

Course Title Trigonometry

TOP Code/SAM Code 1701.00 - Mathematics, General / E - Non-Occupational

Rationale for adding this course to the curriculum In August of 2014 we changed the pre-req for this course to allow students more flexibility in their scheduling. Unfortunately, this caused problems for students and instructors in covering the material, particularly related to transformations. Due to this and the current changes in math pathways for students, going back to the traditional pre-requisite path will be better for our students. If there is student need in the future, our department is open to the possibility of offering a combined Math 106/108 class designed to cover material from both classes in one semester and offer students an accelerated option.

Units 3

Cross List N/A

Typical Course Weeks 18

Total Instructional Hours

Contact Hours

Lecture 54.00

Lab 0.00

Activity 0.00

Work Experience 0.00

Outside of Class Hours 108.00

Total Contact Hours 54

Total Student Hours 162

Open Entry/Open Exit No

Maximum Enrollment 35

Grading Option Letter Grade Only

Distance Education Mode of Instruction On-Campus

SECTION B

General Education Information:

SECTION C

Course Description

Repeatability May be repeated 0 times

Catalog Description The course provides a strong trigonometric foundation for the study of Calculus. Included are trigonometric functions, their inverses and their graphs, identities and proofs related to trigonometric expressions, trigonometric equations, solving right triangles, solving triangles using the Law of Cosines and the Law of Sines, polar coordinates, and an introduction to vectors. A graphing calculator is required.

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SECTION D

Condition on Enrollment

1a. Prerequisite(s)

- MATH 106 with a minimum grade of C or better

1b. Corequisite(s): *None*

1c. Recommended: *None*

1d. Limitation on Enrollment: *None*

SECTION E

Course Outline Information

1. Student Learning Outcomes:

- A. Graph trigonometric equations.
- B. Solve trigonometric equations and triangles.
- C. Establish trigonometric identities.

2. Course Objectives: Upon completion of this course, the student will be able to:

- A. Identify special triangles and their related angle and side measures;
- B. Evaluate the trigonometric function of an angle in degree and radian measure;
- C. Manipulate and simplify a trigonometric expression;
- D. Solve trigonometric equations, triangles, and applications;
- E. Graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs;

- F. Evaluate and graph inverse trigonometric functions;
- G. Prove trigonometric identities;
- H. Convert between polar and rectangular coordinates and equations;
- I. Graph polar equations;
- J. Calculate powers and roots of complex numbers using DeMoivre's Theorem;
- K. Represent a vector (a quantity with magnitude and direction) in the form $a+bi$.
- L.

3. Course Content

- 1) Rectangular coordinates, angles and circular/radian measure;
- 2) Definitions of the six trigonometric functions according to the right triangle, the unit circle, and the rectangular coordinate system;
- 3) Applications of the right triangle;
- 4) Simplification of trigonometric expressions;
- 5) Proofs of trigonometric identities;
- 6) Graphs of trigonometric functions: period, amplitude, phase shift, asymptotes;
- 7) Inverse trigonometric functions and their graphs;
- 8) Trigonometric equations;
- 9) Solving Triangles: Law of Sines and Law of Cosines;
- 10) Polar coordinates and equations; and
- 11) DeMoivre's Theorem and applications
- 12) Introduction to vectors.

4. Methods of Instruction:

Activity:

Discussion:

Lecture:

Projects:

5. Methods of Evaluation: Describe the general types of evaluations for this course and provide at least two, specific examples.

Typical classroom assessment techniques

Exams/Tests -- For example, an exam on applications of trigonometric functions might include a selection of computational and application problems involving right-triangle trigonometry, The Law of Sines and The Law of Cosines. An exam on graphing trigonometric functions might include a selection of functions to graph involving the six trigonometric functions and their transformations.

Quizzes -- For example, a quiz on angle measurements might include a selection of problems involving the conversion between radian and degree measurement. A quiz on the unit circle might ask the student to identify the coordinates of points on the unit circle corresponding to the common angles.

Oral Presentation -- Students may be asked to present problems, solutions, graphs, or proofs of identities to the class.

Projects --

Home Work -- A typical homework assignment might include a selection of problems from the corresponding section of the book, or a worksheet or project to be completed outside of class.

Final Exam --

Additional assessment information:

The Mathematics Department maintains a commitment to diverse teaching methods in courses emphasizing vital quantitative skills and qualitative reasoning ability (PEP Program Mission Statement, 2011). To that end, it is expected that sufficient formative assessments

will be given to students that in frequency, length and rigor adequately assess both quantitative skills and qualitative reasoning.

Letter Grade Only

6. Assignments: State the general types of assignments for this course under the following categories and provide at least two specific examples for each section.

A. Reading Assignments

Reading assignments will be given from the text or other materials such as:

1. Read the section on the Properties of the Trigonometric Functions.
2. Read the section on The Law of Sines.

B. Writing Assignments

Writing assignments will involve students solving problems from the text or other materials such as:

1. Find the exact value of: $\sin 90 + \tan 45$
2. Solve the equation on the interval zero to 2π : $\cos(2x) = \cos x$

C. Other Assignments

As needed

7. Required Materials

A. EXAMPLES of typical college-level textbooks (for degree-applicable courses) or other print materials.

Book #1:

Author: MCKeague, C., Turner, M

Title: Trigonometry

Publisher: Cengage Learning

Date of Publication: 2017

Edition: 8

B. Other required materials/supplies.

- A graphing calculator is required.