



BAKER COLLEGE
STUDENT LEARNING OUTCOMES

MTH 1210 Trigonometry

3 Semester Credit Hours

Student Learning Outcomes and Enabling Objectives

1. Apply concepts of angles and triangles.
 - a. Express angles in radian and degree measures.
 - b. Solve problems involving radian and degree measures.
 - c. Solve problems involving right and oblique triangles for both special and non-special angles.

2. Analyze trigonometric functions.
 - a. Define trigonometric functions in terms of right triangles and the unit circle.
 - b. Represent trigonometric functions graphically, algebraically, and numerically.
 - c. Graph trigonometric functions to visualize key information related to amplitude, period, phase shift, intercepts, domain, range, asymptotes, and symmetry.
 - d. Perform various transformations of trigonometric functions; including the implications for amplitude, period, and phase-shift

3. Verify trigonometric identities algebraically.
 - a. Explore fundamental trigonometric identities such as reciprocal, quotient, even-odd, Pythagorean, sum and difference of angles, double-angle, and half-angle identities.
 - b. Apply trigonometric identities to solve problems.

4. Apply vectors to describe magnitude and direction.
 - a. Represent vectors algebraically and graphically in both rectangular and polar coordinates.
 - b. Perform basic vector operations algebraically and graphically.

5. Examine complex numbers and polar equations.
 - a. Perform basic operations on complex numbers both algebraically and graphically.
 - b. Convert points and equations from polar to rectangular forms and vice versa.
 - c. Describe the polar coordinate system.
 - d. Graph complex numbers in both rectangular and polar form in the complex plane.
 - e. Utilize DeMoivre's Theorem to determine roots of complex numbers.

6. Apply trigonometric functions, vectors, and polar equations to real world situations.
 - a. Solve equations involving trigonometric functions, vectors, and polar equations.
 - b. Solve problems using Law of Sines and Law of Cosines.
 - c. Apply trigonometric functions to harmonic motion problems.
 - d. Perform calculations involving complex numbers.
 - e. Utilize technology in solving trigonometric problems.

Big Ideas and Essential Questions

Big Ideas

- Angles and Triangles
- Trigonometric Functions and Graphs
- Trigonometric Identities
- Vectors, including Complex Numbers and Polar Coordinates
- Applications of Trigonometry

Essential Questions

1. How can trigonometry be used to solve problems involving three points on a plane?
2. How can trigonometry be used to describe wave motion?
3. How can the relationship between trigonometric functions and identities help me simplify expressions?
4. How do you solve application problems involving magnitude and direction?
5. How does understanding complex numbers and polar equations allow me to describe more abstract relationships?

These SLOs are approved for experiential credit.

Effective: Fall 2023