

**I. COURSE INFORMATION**

- A. Mathematics 106 Plane Trigonometry
- B. 3 credit hours
- C. Lial, Hornsby, and Schneider. *Trigonometry*. 12<sup>th</sup> ed. New Jersey: Pearson, 2020
- D. Prerequisites: High school Algebra II with a grade of C or above; or completion of MAT105 College Algebra with a grade of C or above; or consent of instructor
- E. KRSN: MAT 1030 Trigonometry

The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.

**II. COURSE DESCRIPTION**

This course introduces the study of trigonometric functions. The course includes graphs of the trigonometric functions, radian measure, solution of triangles, and many other applications. The course is designed primarily for those who have not had a course of trigonometry in high school.

**III. LEARNING OUTCOMES**

- A. Define the trigonometric functions using both a right triangle and the unit circle
- B. Define and interpret radian measurement. Recognize and apply circular functions as real-valued functions
- C. Solve for unknown sides/angles within right triangles and know trigonometric function values for special angles (multiples of  $\pi/6$  and  $\pi/4$ )
- D. Analyze the graphs of the six basic trigonometric functions and their arithmetic transformations using the concepts of period, phase shift, amplitude, and displacement
- E. Derive/verify trigonometric identities, including but not limited to double angle, half angle, angle sum, and angle difference identities
- F. Define, graph, and apply inverse trigonometric functions
- G. Solve equations involving trigonometric functions
- H. Find solutions of oblique triangles using the Law of Cosines or Law of Sines
- I. Solve applications, including but not limited to vectors
- J. Derive the trigonometric form of complex numbers and perform calculations with them including products, quotient, and exponentiation
- K. Define, recognize, and graph equations and points within the polar coordinate system

**IV. MAJOR CONTENT AREAS**

- A. Trigonometric functions
- B. Acute angles and right triangles
- C. Radian measure and the unit circle
- D. Graphs of circular functions
- E. Trigonometric identities
- F. Inverse circular functions and trigonometric equations
- G. Applications of trigonometry and vectors

**V. ASSIGNMENTS** (may include but are not limited to)

- A. Reading assignments
- B. Homework
- C. Writing assignments
- D. Projects
- E. Quizzes and exams

**VI. EVALUATION METHODS** (may include but are not limited to)

- A. Attendance and participation
- B. Assignments
- C. Projects
- D. Writing assignments
- E. Quizzes and exams
- F. Comprehensive final