

**Tennessee Technological University
Mathematics Department**

MATH 1720: Precalculus Trigonometry

I. COURSE DESCRIPTION FROM CATALOG:

Circular functions and radian measure, graphs of the trigonometric functions, trigonometric identities and equations, the inverse trigonometric functions, polar coordinates. Applications involving triangles, vectors in the plane, and complex numbers. Lec. 3. Cr. 3.

II. PREREQUISITE(S):

A minimum ACT Math sub-score of 22 or SAT Math sub-score of 520 or COMPASS Algebra score of 60, OR a minimum grade of C in MATH 1000.

III. COURSE OBJECTIVES(S):

Build on (not replicate) the competencies gained through the study of two years of high school algebra and one year of high school geometry. Use mathematics to solve problems and determine if the solutions are reasonable. Use mathematics to model real world behaviors and apply mathematical concepts to the solution of real-life problems. Make meaningful connections between mathematics and other disciplines. Use technology for mathematical reasoning and problem solving. Apply mathematical and/or basic statistical reasoning to analyze data and graphs. Refine the algebraic, geometric, trigonometric and reading comprehension skills necessary in the study of calculus.

IV. STUDENT LEARNING OUTCOMES:

Upon successful completion of this course the students will be able to determine exact and/or approximate trigonometric and inverse trigonometric values; manipulate and prove trigonometric identities; create graphs of trigonometric functions incorporating transformations; and solve equations involving trigonometric functions.

V. TOPICS TO BE COVERED:

Chapter 5 **Trigonometric Functions:**
Unit Circle Approach

- 5.1 The Unit Circle
- 5.2 Trigonometric Functions of Real Numbers
- 5.3 Trigonometric Graphs
- 5.4 More Trigonometric Graphs
- 5.5 Inverse Trigonometric Functions and Their Graphs
- 5.6 Modeling Harmonic Motion-
Optional

Chapter 6 **Trigonometric Functions:**
Right Triangle Approach

- 6.1 Angle Measure
- 6.2 Trigonometry of Right Triangles
- 6.3 Trigonometric Functions of Angles
- 6.4 Inverse Trigonometric Functions and Right Triangles

- 6.5 The Law of Sines
- 6.6 The Law of Cosines

Chapter 7 **Analytic Trigonometry**

- 7.1 Trigonometric Identities
- 7.2 Addition and Subtraction Formulas
- 7.3 Double-Angle, Half-Angle, and Product-Sum Formulas
- 7.4 Basic Trigonometric Equations
- 7.5 More Trigonometric Equations

Chapter 8 **Polar Coordinates and Parametric Equations**

- 8.1 Polar Coordinates
- 8.2 Graphs of Polar Equations
- 8.3 Polar Form of Complex Numbers: De Moivre's Theorem
- 8.4 Plane Curves and Parametric Equations

VI. ADDITIONAL INFORMATION:

VII. POSSIBLE TEXTS AND REFERENCES:

Precalculus: MATHEMATICS for Calculus, 7th edition James Stewart Lothar Redlin and Saleem Watson

VIII. ANY TECHNOLOGY THAT MAY BE USED:

Scientific Calculator
WebAssign

IX. STUDENT ACADEMIC MISCONDUCT POLICY:

Maintaining high standards of academic integrity in every class at Tennessee Tech is critical to the reputation of Tennessee Tech, its students, alumni, and the employers of Tennessee Tech graduates. The Student Academic Misconduct Policy describes the definitions of academic misconduct and policies and procedures for addressing Academic Misconduct at Tennessee Tech. For details, view the Tennessee Tech's Policy 217 – Student Academic Misconduct at [Policy Central](#).

X. DISABILITY ACCOMMODATION:

Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119. For details, view the Tennessee Tech's Policy 340 – Services for Students with Disabilities at [Policy Central](#).