

MATH 1720
Trigonometry
Course Syllabus

Course Description:

Trigonometry. Three credits.

This course satisfies the General Education Mathematics requirement and meets specific requirements for programs as outlined in the MTSU Undergraduate Catalog.

Prerequisites:

A grade of C or better in Math 1710 (College Algebra), or equivalent.

Instructor:

Office:

Phone:

Email:

Office Hours:

Text:

Trigonometry, 9th Edition by Lial, Hornsby and Schneider. Pearson, 2009.
ISBN: 0 - 321- 52885 - 9.

Calculator:

A TI-83 or TI-84 Plus graphing calculator is required for this course.

Evaluation:

Exams include formats that incorporate short answer and open-ended questions. All assessment tools reflect the General Education Learning Outcomes, as identified in the syllabus.

Grading:

Grading Scale: A: 90-100% B: 80-89% C: 70-79% D: 60-69% F: Below 60%

Important Dates:

Last day to drop without a grade:

Last day to drop with a "W":

Drop/Withdrawal Policy

Please note the Drop Policy and Withdrawal Procedures as they are stated in the Registration Guide. A grade of "I" will be given only in accordance with University Policy. No grade of "W" will be assigned after the official drop date, stated in the 'Important Dates' section of this syllabus, except in situations involving extreme circumstances beyond the student's control. Students should be aware that missing the official drop date and thereby receiving an "F" may affect their eligibility for financial aid.

Lottery Scholarships

To retain Tennessee Education Lottery Scholarship eligibility, you must earn a *cumulative* TELS GPA of 2.75 after 24 and 48 attempted hours and a *cumulative* TELS GPA of 3.0 thereafter.

You may qualify with a 2.75 *cumulative* GPA after 72 attempted hours (and subsequent semesters), if you are enrolled full-time and maintain a *semester* GPA of at least 3.0. A grade of C, D, F, or I in this class may negatively impact TELS eligibility. Dropping a class after 14 days may also impact eligibility; if you withdraw from this class and it results in an enrollment status of less than full time, you may lose eligibility for your lottery scholarship. Lottery recipients are eligible to receive the scholarship for a maximum of five years from the date of initial enrollment, or until a bachelor degree is earned. For additional Lottery rules, please refer to your Lottery Statement of Understanding form, review lottery requirements on the web at <http://scholarships.web.mtsu.edu/telsconteligibility.htm>, or contact the Financial Aid Office at 898-2830.

Disability Assistance

If you have a disability that may require assistance or accommodation, or you have questions related to any accommodations for testing, note takers, readers, etc., speak with me as soon as possible. Students must also contact the Office of Disabled Student Services (898-2783) with questions about scheduling such services.

General Education Mathematics Goal & Learning Outcomes:

Goal: The goal of Math 1720 is to expand students' understanding of trigonometric concepts beyond the entry-level requirements for college and to extend their knowledge of trigonometry through relevant mathematical modeling with applications, problem solving, critical thinking skills, and the use of appropriate technologies.

Learning Outcomes: Upon completion of this course, students will demonstrate the ability to:

1. Use trigonometric concepts to solve relevant problems and determine if the solutions are reasonable.
2. Use trigonometry to model real world behaviors and apply trigonometric concepts to the solution of real-life problems.
3. Make meaningful connections between trigonometry and other disciplines.
4. Use technology for mathematical reasoning and problem solving.
5. Apply mathematical and/or basic statistical reasoning to analyze data and graphs.

Course Requirements: In order to accomplish the learning outcomes of this course, the learner is required to:

- Attend class lectures
- Participate in class activities
- Read and study assignments
- Solve assigned problem sets
- Complete test, quizzes, homework, etc.
- Complete a comprehensive final examination by the scheduled date/time for their respective section as stated in the Academic Calendar on MTSU Pipeline.

Course Objectives: Upon completion of this course the student will have:

- Enhanced mathematical skills and problem solving skills.
- Applied mathematical methods to the solution of practical problems.
- Explored the capabilities of the graphing calculator to better understand trigonometric concepts.
- Developed an understanding of trigonometric functions from graphical, numeric, and symbolic viewpoints.
- Developed familiarity with the practical use of trigonometric functions in modeling real-world phenomena.

- Gained facility in the use and verification of trigonometric identities and their applications.

Course Topics for Trigonometry - Math 1720:

Algebra Review Topics.

- Exponents and Scientific Notation
- Basic techniques for solving equations
- Solving inequalities
- Equations and inequalities involving absolute value
- Graphical representation of equations and inequalities

Functions and Relations.

- Definitions of Relation and Function
- Symbolic, graphic, numeric and verbal representation of functions and relations
- The use of functions in mathematical modeling
- Domain and Range of relations and functions
- Function evaluation: symbolically, graphically and numerically
- Graphical x - and y - intercepts of functions
- Odd and even functions and their graphs
- (One to one-) functions and their inverses

Basic Trigonometric concepts

- Angles and their measure, arc length and radius
- Angle versus slope
- Sine, cosine and tangent as ratios in a right triangle
- The interpretation of the tangent as a slope in a right triangle
- Co-secant and secant as the reciprocals of sine and cosine
- The Pythagorean identities
- Verification of trigonometric identities
- Determining distance and elevation from angle measurements.
- Using the Laws of Sines and Cosines to complete non-right triangles
- Heron's formula for the area of a triangle

Analytic Trigonometry

- Sine and cosine as the coordinate functions of the unit circle.
- Graphing trigonometric functions by scale adjustment
- Modeling periodic phenomena using (co-)sine functions
- The addition and subtraction rules for (co-)sines and tangents
- The double- and half-angle formulas for sines and cosines
- Product-to-sum and sum-to-product formulas for sines and cosines
- Power reduction formulas

- The inverse trigonometric functions: their graphs, domains and ranges
- The solution of trigonometric equations