

**Course Title:**

Trigonometry

Course Description:

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

Course Prerequisites:

A grade of C or better in MATH 1710 (College algebra), or equivalent.

Instructor Information:

Instructor:

Office:

E-mail:

Phone:

Office Hours:

Attendance:

Attendance is required at each class meeting. Participation in University sanctioned activities or in military duties and situations where the institution's policy on inclement weather is applicable are considered excused absences. However, non-attendance does not relieve a student of the responsibility for work covered or assigned. The instructor will keep a record of attendance for each student.

Required Materials:

Textbook: Trigonometry, 12th Edition by Lial, Hornsby and Schneider,

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

Course Purpose:

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.

General Education Mathematics Goal and Learning Outcomes:

Goal:

The goal of mathematics is to expand students' understanding of mathematics beyond the entry-level requirements for college and to extend their knowledge of mathematics 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:

- 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.

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 exam

If you do not take the final exam, you cannot pass the course.

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:

❖ 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

❖ Analytical 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

Course Evaluation and Grading:

- Alternative assessments, such as collaborative investigations, projects, presentations, homework, group work, attendance etc. will account for 25% of the final grade. (most of this is the online homework)
- In-class quizzes and tests will account for 55% of the final grade.
- Comprehensive final exam accounts for 20% of the final grade.

Grading Scale:

Percentage	Grade
90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
Below 60	F

Important Dates:

Last Day to drop without a grade:

Last Day to drop with a W:

Final exam Time and Date:

Incomplete grades are given rarely and only in extenuating circumstances. Page 56 of the MTSU [Undergraduate Catalog](#) states: “The grade I indicates that the student has not completed all course requirements because of illness or other uncontrollable circumstances, especially those which occur toward the end of the term. Mere failure to make up work or turn in required work on time does not provide the basis for the grade of “I” unless extenuating circumstances noted above are present for reasons acceptable to the instructor.” Please refer to the Undergraduate Catalog for the complete Incomplete Grade Policy.

Math Tutoring Lab (MTL):

Math tutoring for this course is available as a free service to MTSU students in KOM 252. Tutoring is conducted by Graduate Teaching Assistants (GTAs), work study students, and a faculty coordinator. The lab is closed on weekends and scheduled MTSU holidays. The hours of operation are posted in the lab. More information is available at <http://mtsu.edu/math/students.php#tutoring>.

Academic Integrity/Misconduct:

Please review the [information on Academic Integrity and Misconduct](#). Academic integrity is a hallmark of Middle Tennessee State University. We expect students to present original work for all academic assignments turned in for credit and appropriately credit all sources used.

Academic misconduct includes, but is not limited to:

1. Plagiarism: The adoption or reproduction of ideas, words, statements, images, or works of another person as one's own without proper attribution. This includes self-plagiarism, which occurs when an author submits material or research from a previous academic exercise to satisfy the requirements of another exercise and uses it without proper citation of its reuse.
2. Cheating: Using or attempting to use unauthorized materials, information, or study aids in any academic exercise. This includes unapproved collaboration, which occurs when a student works with others on an academic exercise without the express permission of the professor. It also includes purchasing assignments or paying another person to complete a course for you.
3. Fabrication: Unauthorized falsification or invention of any information or citation in an academic exercise.

Going online and using information without proper citation, copying parts of other students' work, creating information to establish credibility, or using someone else's thoughts or ideas without appropriate acknowledgment is academic misconduct. If you have a question about an assignment, please ask me to clarify. All cases of academic misconduct will be reported to the Director of Student Academic Ethics and may result in failure on the test/assignment or for the course.

Students guilty of academic misconduct are immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions (including suspension from the university), which may be imposed through the regular institutional procedures as a result of academic misconduct, the instructor has the authority to assign an "F" or zero for an activity or to assign an "F" for the course. Students accused of plagiarism will be immediately reported to the Director of Student Academic Ethics.

Drop/Withdrawal Policy and Dates:

Please note the Drop Policy and Withdrawal Procedures as they are stated in the Current Registration Guide. A grade of "I" will be given only in accordance with the University Policy. No grade of "W" will be assigned after the official drop date except in situations involving extreme extenuating circumstances beyond the student's control. In particular, a "W" will not be granted merely because the student is failing. Students should be aware that missing the official drop date and thereby receiving an "F" can have ramifications on financial aid.

General conduct in class:

The instructor has primary responsibility for control over all classroom behavior and can direct the temporary removal or exclusion from the classroom of any student engaged in disruptive conduct or conduct which otherwise violates the general rules and regulations of MTSU.

Make-Up Policy:

Make-ups will not be given for anything other than in-class exams, and only with the instructor's prior consent (emergencies accepted). A University approved excuse must be provided in order to

be given a make-up exam and, depending on circumstances, the instructor has the right to not give a make-up exam.

Grade Appeals:

[University Policy 313, Student Grade Appeals](#), provides an avenue for MTSU students to appeal a final course grade in cases in which the student alleges that unethical or unprofessional actions by the instructor and/or grading inequities improperly impacted the final grade.

Lottery Scholarship Policy:

Do you have a lottery scholarship? To retain the 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. A grade of C, D, F, FA, or I in this class may negatively impact TELS eligibility. If you drop this class, withdraw, or if you stop attending this class you may lose eligibility for your lottery scholarship, and you will not be able to regain eligibility at a later time.

For additional Lottery rules, please refer to your Lottery Statement of Understanding form (<http://www.mtsu.edu/financial-aid/forms/LOTFOD.pdf>) or contact your MT One Stop Enrollment Counselor (<http://www.mtsu.edu/one-stop/counselor.php>).

Students with Disabilities:

Middle Tennessee State University is committed to campus access in accordance with Title II of the Americans with Disabilities Act and Section 504 of the Vocational Rehabilitation Act of 1973. Any student interested in reasonable accommodations can consult the [Disability & Access Center \(DAC\)](#) website and/or contact the DAC for assistance at 615-898-2783 or dacemail@mtsu.edu.

Title IX:

Students who believe they have been harassed, discriminated against or been the victim of sexual assault, dating violence, domestic violence or stalking should contact a Title IX/Deputy Coordinator at 615-898- 2185 or 615-898-2750 for assistance or review [MTSU's Title IX website](#) for resources. MTSU faculty are concerned about the well-being and development of our students and are legally obligated to share reports of sexual assault, dating violence, domestic violence and stalking with the University's Title IX coordinator to help ensure student's safety and welfare. Please refer to [MTSU's Title IX website](#) for contact information and details.

Mental Health:

As a college student, you may experience a range of challenges and issues that can interfere with your physical and mental well-being, hinder your academic experience, and negatively impact your daily life. Some of these experiences may include overwhelming depression/sadness, anxiety, high levels of stress, use of alcohol/drugs, difficulty sleeping, difficulty concentrating, and/or loss of motivation. These challenges and issues can lead to thoughts of self-harm and suicide. If you or any of your classmates are experiencing these issues, it is important to reach out and ask for help. Discuss your

situation with a friend, a family member, your instructor, or an academic advisor. Remember: Everyone struggles. It's okay to talk about it. Ask for help. YOU ARE NOT ALONE!

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The True Blue Pledge:

[I am True Blue](#)

As a member of this diverse community, I am a valuable contributor to its progress and success. I am engaged in the life of this community. I am a recipient and a giver. I am a listener and a speaker. I am honest in word and deed. I am committed to reason, not violence. I am a learner now and forever. I am a BLUE RAIDER. True Blue!

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