Math 1720 Course Syllabus

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:

Webpage:

Required Materials:
Textbook: Trigonometry, 10th 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.

Learning Outcomes:
Upon completion of this course with a passing grade, the student will have:
• Use trigonometric concepts to solve relevant problems and determine if the solutions are reasonable.
• Use trigonometry to model real world behaviors and apply trigonometric concepts to the solution of real-life problems.
• Make meaningful connections between trigonometry 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 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:
- 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

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:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
</tr>
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<tbody>
<tr>
<td>90 – 100</td>
<td>A</td>
</tr>
<tr>
<td>80 – 89</td>
<td>B</td>
</tr>
<tr>
<td>70 – 79</td>
<td>C</td>
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<tr>
<td>60 – 69</td>
<td>D</td>
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<tr>
<td>Below 60</td>
<td>F</td>
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Important Dates:

Last Day to drop without a grade:

Last Day to drop with a W:

Final exam Time and Date:

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 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.

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 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].

Reasonable Accommodations for Students with Disabilities:

Reasonable Accommodations for 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 [www.mtsu.edu/dac] and/or contact the DAC for assistance at 615-898-2783 or dacemail@mtsu.edu

Free Tutoring:

Math tutoring for this course is available as a free service to MTSU students in the James E. Walker Library, 1st floor. Tutoring is fundamental to your success as a student. At every level of your academic journey, you will discover that tutoring assists your understanding, recollection, and application of what was presented in the classroom.

Take advantage of our FREE tutoring service and learn how to study, get help with understanding difficult course material, receive better test grades, or simply improve your grade point average. Tutoring is available in study skills and learning strategies that includes sessions on time management, notetaking, when and where to study, and memory principles. Tutoring is also available in over 200 courses including biology, history, computer information systems, physics, math, psychology, chemistry, economics, recording industry, and many more. The central location for tutoring is the Tutoring Spot, located in Walker Library, but is also conducted at various other campus sites. For available tutoring opportunities, visit [http://mtsu.edu/studentsuccess/tutoring.php#on]. For questions, call the Tutoring Spot at 615-904-8014.