Course Syllabus
Fall 2014
Math 1720-002
Trigonometry

Class: MGB 301  TR 2:40 – 4:05

Instructor: Brents Ring, brents.ring@mtsu.edu, 615-494-8934, capone.mtsu.edu/hring

Office: KOM 258  MWF 3:00 – 4:00; TR 4:00 – 6:00

Prerequisites: A grade of C or better in Math 1710 College Algebra or equivalent.

Description: Math 1720 covers trigonometric functions of the acute and general angle, circular functions, graphs of trigonometric and inverse functions, identities, solutions of right and general triangles, equations, complex numbers, and vectors. It satisfies the General Education Mathematics requirement and meets specific requirements for programs as outlined in the MTSU Undergraduate Catalog. It is not open to those who have had MATH 1730.

Textbook: *Trigonometry*, 10th edition by Lial, Hornsby, Schneider and Daniels, which is online at www.coursecompass.com. Students must register with the website using the course ID *ring41782* and an access code that may be purchased through the website using a credit card or PayPal for $95.20. The access code may also be obtained by purchasing a *MyMathLab* student access kit or a new textbook from an authorized bookstore. Registration help.

Calculator: TI-83, TI-83+, TI-84, or TI-84+. During tests, no other calculators or electronic devices are permitted, and calculators cannot be shared.

Grading: Students may know their grade anytime by logging onto *MyMathLab* and selecting “GRADEBOOK.” *MyMathLab* calculates the grade to the nearest tenth. The associated letter grade assigned at the end of the semester will be according to the following range:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage Range</th>
<th>Component</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>90.0 – 100</td>
<td>Homework 20%</td>
</tr>
<tr>
<td>B</td>
<td>80.0 – 89.9</td>
<td>Tests 60%</td>
</tr>
<tr>
<td>C</td>
<td>70.0 – 79.9</td>
<td>Final Exam 20%</td>
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<tr>
<td>D</td>
<td>60.0 – 69.9</td>
<td>Total 100%</td>
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<tr>
<td>F</td>
<td>0 – 59.9</td>
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Homework: Homework consists of online assignments for each section covered in class at www.coursecompass.com. Students must register with the website using an access code and the course ID *ring41782*, as explained above. Tutors and computers are provided in KOM 252.
Tests: Four tests, each worth 15% of the grade, will be given. Make-ups will be given only for extreme circumstances. Students who need to be away on official university business must make prior arrangements to take the test. Students may use a TI 83/84 calculator.

Final Exam: The final exam is a multiple-choice, comprehensive examination worth 20% of the grade that takes problems from the previous four tests.

Drop/Withdrawal Policy: Please note the Drop Policy and Withdrawal Procedures as they are stated in the Fall 2014 Registration Guide. The last day to drop this course without a grade is September 7. The last day to drop this course with a W is October 29. 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.

Disability Assistance: ADA accommodation requests (temporary or permanent) are determined only by Disabled Students Services. Students are responsible for contacting the Disabled Students Services Office at 615-898-2783 to obtain ADA accommodations and for providing the instructor with the accommodation letter from Disabled Student Services.

Lottery Scholarship: 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 (www.mtsu.edu/financial-aid/forms/LOTFOD.pdf) or contact your MT One Stop Enrollment Counselor (www.mtsu.edu/onestop/counselor.php).
**Class Outline:** Tentative schedule is subject to change.

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
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<th>Week 6</th>
<th>Week 7</th>
<th>Week 8</th>
<th>Week 9</th>
<th>Week 10</th>
<th>Week 11</th>
<th>Week 12</th>
<th>Week 13</th>
<th>Week 14</th>
<th>Week 15</th>
<th>Week 16</th>
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</thead>
<tbody>
<tr>
<td>8/26 1.1/1.2</td>
<td>9/2 1.4/2.1</td>
<td>9/9 2.3/2.4</td>
<td>9/16 3.2/3.3</td>
<td>9/23 3.3/3.4</td>
<td>9/30 4.5/5.1</td>
<td>10/7 5.3/5.4</td>
<td>10/14 No Class</td>
<td>10/21 5.6/6.1</td>
<td>10/28 6.2/6.3</td>
<td>11/4 7.1/7.2</td>
<td>11/11 7.2/7.3</td>
<td>11/18 8.1/8.2</td>
<td>11/25 Test Ch. 7-8</td>
<td>12/2 Review</td>
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<tr>
<td>8/28 1.2/1.3</td>
<td>9/4 2.1/2.2</td>
<td>9/11 2.4/3.1</td>
<td>9/18 Test Ch. 1-2</td>
<td>9/25 4.1/4.5</td>
<td>10/2 5.2/5.3</td>
<td>10/9 Test Ch. 3-4</td>
<td>10/16 5.5/5.6</td>
<td>10/23 6.1/6.2</td>
<td>10/30 6.3/6.4</td>
<td>11/6 Test Ch. 5-6</td>
<td>11/13 7.3/7.4</td>
<td>11/20 8.2/8.3</td>
<td>11/27 No Class</td>
<td>12/4 No Class</td>
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9/7 Last day to withdraw from the class without a grade.
10/29 Last day to withdraw from the class with a grade of W.
12/3 Last day to withdraw from the university with a grade of W or F.
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
- Cosecant 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 Law of Sines and Law of 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 cosine functions
- The addition and subtraction rules for cosine and tangent
- The double- and half-angle formulas for sine and cosine
- Product-to-sum and sum-to-product formulas for sine and cosine
- Power reduction formulas
- The inverse trigonometric functions, their graphs, domains and ranges
- The solution of trigonometric equations