JEFFERSON COLLEGE

COURSE SYLLABUS

MTH133

TRIGONOMETRY

3 Credit Hours

Prepared by:
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Revised by:
Skyler Ross
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Ms. Linda Abernathy, Division Chair, Math, Science, & Business
MTH133 Trigonometry

I. CATALOGUE DESCRIPTION

A. Course pre-requisites/co-requisites:
   COMPASS Algebra score of 66 or higher, or COMPASS College Algebra score of 31 or higher, or ACT Math score of 22 or higher, or MTH128 (Intermediate Algebra) with a grade of “C” or better; Reading proficiency

B. 3 semester credit hours

C. Trigonometry deals with angles, trigonometric and inverse trigonometric functions, solving triangles, vectors, polar coordinates, and complex numbers. Students may not apply both MTH133 and MTH141 toward graduation. A graphing calculator is required (F, S)

II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

Note: Throughout all outcomes, students will employ technology to approximate solutions and predict and verify results. Wherever appropriate, students will apply the tools to real-world situations

<table>
<thead>
<tr>
<th>Expected Learning Outcomes</th>
<th>Assessment Measures</th>
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<tr>
<td>Recall from memory, in a timely fashion, the exact trigonometric functions of standard (multiples of 30° and 45°) angles given in degree and radian measure</td>
<td>Classwork, homework, quizzes, tests, comprehensive final exam</td>
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<tr>
<td>Apply the standard trigonometric identities to transform trigonometric expressions, and find exact trigonometric functions of non-standard angles</td>
<td>Classwork, homework, quizzes, tests, comprehensive final exam</td>
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<tr>
<td>Solve linear and quadratic trigonometric equations using the standard identities and inverse-trigonometric functions</td>
<td>Classwork, homework, quizzes, tests, comprehensive final exam</td>
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<td>Graph trigonometric functions that are shifted horizontally and vertically, with modified, amplitude, and period, and will determine equations of such graphs</td>
<td>Classwork, homework, quizzes, tests, comprehensive final exam</td>
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<tr>
<td>Employ geometry, the law of cosines, and the law of sines to solve triangles</td>
<td>Classwork, homework, quizzes, tests, comprehensive final exam</td>
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<tr>
<td>Employ Heron’s formula and trigonometry to determine the area of a triangle</td>
<td>Classwork, homework, quizzes, tests, comprehensive final exam</td>
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Graphically represent relations in polar and rectangular form, indicating important aspects, and will convert relations between these forms, when possible

Perform calculations (sum, dot and cross product) on two and three dimensional vectors in standard, complex, and polar form, and convert between forms

III. OUTLINE OF TOPICS

A. Graphs and Functions
   1. Distance and midpoint formulas
   2. Graphs of equations in two variables: circles
   3. Functions and their graphs
   4. Properties of functions
   5. Library of functions: piecewise-defined functions
   6. Graphing techniques: transformations
   7. One-to-one functions: inverse functions

B. Trigonometric Functions
   1. Angles and their measure
   2. Trigonometric functions: unit circle approach
   3. Properties of the trigonometric functions
   4. Graphs of the sine and cosine functions
   5. Graphs of the tangent, cotangent, cosecant, and secant functions
   6. Phase shifts sinusoidal curve fitting

C. Analytic Trigonometry
   1. The inverse sine, cosine, and tangent functions
   2. The inverse trigonometric functions (continued)
   3. Trigonometric equations
   4. Trigonometric identities
   5. Sum and difference formulas
   6. Double-angle and half-angle formulas
   7. Product-to-sum and sum-to-product formulas

D. Applications of Trigonometric Functions
   1. Right triangle trigonometry: applications
   2. The law of sines
   3. The law of cosines
   4. Area of a triangle
   5. Simple harmonic motion: damped motion: combining waves

E. Polar Coordinates; Vectors
   1. Polar coordinates
2. Polar equations and graphs
3. The complex plane: DeMoivre’s theorem
4. Vectors
5. The dot product
6. Vectors in space
7. The cross product

IV. METHODS OF INSTRUCTION

A. Lectures
B. Discussion
C. In-class activities
D. MyMathLab interactive assignments

V. REQUIRED TEXTBOOKS


VI. REQUIRED MATERIALS

Graphics calculator required
TI-83/84 recommended
Symbolic manipulating calculators prohibited

VII. SUPPLEMENTAL REFERENCES

Contained within MyMathLab:

A. Student solutions manual
B. Graphing calculator manual
C. Study plan

VIII. METHODS OF EVALUATION

A. Homework 10%-20%
   Students will submit homework in MyMathLab. Additional problems may also be assigned
B. Classwork 0%-20%
Additional worksheets and projects may be assigned, at the discretion of the instructor, to reinforce various concepts.

C. Quizzes 0%-20%
Both in-class and online quizzes may be used to evaluate mastery of concepts.

D. Tests 30%-60%
There will be a minimum of three unit tests, each covering no more than 2 chapters of material. These exams may be administered on paper or online.

E. Comprehensive final examination 15%-25%
All students will be required to take a comprehensive final exam, the score of which must be included in the final course grade.

F. Letter grades will be assigned as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>F</td>
<td>0-59%</td>
</tr>
<tr>
<td>D</td>
<td>60-69%</td>
</tr>
<tr>
<td>C</td>
<td>70-79%</td>
</tr>
<tr>
<td>B</td>
<td>80-89%</td>
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<tr>
<td>A</td>
<td>90-100%</td>
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IX. ADA AA STATEMENT
Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Library; phone 636-481-3169)

X. ACADEMIC HONESTY STATEMENT
Students who are caught cheating or plagiarizing material in this course will not receive credit for the assignment in question and may be dropped from the course with a failing grade. A detailed description of the Academic Honesty Policy statement can be found in the Jefferson College Student Handbook or online at [http://www.jeffco.edu](http://www.jeffco.edu)

XI. ATTENDANCE STATEMENT
Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.