

JEFFERSON COLLEGE

COURSE SYLLABUS

MTH133

TRIGONOMETRY

3 Credit Hours

Prepared by:
Skyler Ross
August 2012

Revised by:
Skyler Ross
January 2015

Dr. Robert Brieler, Division Chair, Math & Science
Dr. Shirley Davenport, Dean, Arts & Science Education

MTH133: Trigonometry

I. CATALOG 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)
- D. Elective course applies toward AA and AAT degree requirement. May not apply both MTH133 and MTH141 toward graduation.

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

Expected Learning Outcomes	Assessment Measures
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	Classwork, homework, quizzes, tests, comprehensive final exam
Apply the standard trigonometric identities to transform trigonometric expressions, and find exact trigonometric functions of non-standard angles	Classwork, homework, quizzes, tests, comprehensive final exam
Solve linear and quadratic trigonometric equations using the standard identities and inverse-trigonometric functions	Classwork, homework, quizzes, tests, comprehensive final exam
Graph trigonometric functions that are shifted horizontally and vertically, with modified, amplitude, and period, and will determine equations of such graphs	Classwork, homework, quizzes, tests, comprehensive final exam
Employ geometry, the law of cosines, and the law of sines to solve triangles	Classwork, homework, quizzes, tests, comprehensive final exam
Employ Heron’s formula and trigonometry to determine the area of a triangle	Classwork, homework, quizzes, tests, comprehensive final exam

Graphically represent relations in polar and rectangular form, indicating important aspects, and will convert relations between these forms, when possible	Classwork, homework, quizzes, tests, comprehensive final exam
Perform calculations (sum, dot and cross product) on two and three dimensional vectors in standard, complex, and polar form, and convert between forms	Classwork, homework, quizzes, tests, comprehensive final exam

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 shift 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

- A. Sullivan, M., *Trigonometry: a unit circle approach* (Current Edition). Boston: Pearson.
- B. *MyMathLab – Student Access Kit*. (Current Edition). Boston: Pearson.

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:

0-59%	60-69%	70-79%	80-89%	90-100%
F	D	C	B	A

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Technology Center 101; phone 636-481-3169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College website, <http://www.jeffco.edu>).

XI. ATTENDANCE STATEMENT

Regular and punctual attendance is expected of all students. Any one of these four options may result in the student being removed from the class and an administrative withdrawal being processed: (1) Student fails to begin class; (2) Student ceases participation for at least two consecutive weeks; (3) Student misses 15 percent or more of the coursework; and/or (4) Student misses 15 percent or more of the course as defined by the instructor. 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.

XII. OUTSIDE OF CLASS ACADEMICALLY RELATED ACTIVITIES

The U.S. Department of Education mandates that students be made aware of expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically related activities such as reading, studying, and completing assignments. Specifically, time spent on academically related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.