MATH-154H: HONORS TRIGONOMETRY

Cuyahoga Community College

Viewing: MATH-154H : Honors Trigonometry

Board of Trustees:
2016-03-31

Academic Term:
Spring 2019

Subject Code
MATH - Mathematics

Course Number:
154H

Title:
Honors Trigonometry

Catalog Description:
Topics include trigonometric functions and their values for all angles, vectors and oblique triangles, graphs of trigonometric functions, trigonometric identities and equations. Applications and activities to build skills in problem solving included. Emphasis on more challenging trigonometric concepts in real-world settings are found in the form of projects and in-class presentations.

Credit Hour(s):
3

Lecture Hour(s):
3

Requisites

Prerequisite and Corequisite
MATH-1530 College Algebra or MATH-153H Honors College Algebra; or departmental approval.

Note: MATH-1275 MATH-1280, MATH-1521, or MATH-152H taken prior to Fall 2016 will be accepted to meet prerequisite requirements for this course.

I. ACADEMIC CREDIT

Academic Credit According to the Ohio Department of Higher Education, one (1) semester hour of college credit will be awarded for each lecture hour. Students will be expected to work on out-of-class assignments on a regular basis which, over the length of the course, would normally average two hours of out-of-class study for each hour of formal class activity. For laboratory hours, one (1) credit shall be awarded for a minimum of three laboratory hours in a standard week for which little or no out-of-class study is required since three hours will be in the lab (i.e. Laboratory 03 hours). Whereas, one (1) credit shall be awarded for a minimum of two laboratory hours in a standard week, if supplemented by out-of-class assignments which would normally average one hour of out-of-class study preparing for or following up the laboratory experience (i.e. Laboratory 02 hours). Credit is also awarded for other hours such as directed practice, practicum, cooperative work experience, and field experience. The number of hours required to receive credit is listed under Other Hours on the syllabus. The number of credit hours for lecture, lab and other hours are listed at the beginning of the syllabus. Make sure you can prioritize your time accordingly. Proper planning, prioritization and dedication will enhance your success in this course.

The standard expectation for an online course is that you will spend 3 hours per week for each credit hour.

II. ACCESSIBILITY STATEMENT

If you need any special course adaptations or accommodations because of a documented disability, please notify your instructor within a reasonable length of time, preferably the first week of the term with formal notice of that need (i.e. an official letter from the Student Accessibility Services (SAS) office). Accommodations will not be made retroactively.

For specific information pertaining to ADA accommodation, please contact your campus SAS office or visit online at http://www.tri-c.edu/accessprograms/. Blackboard accessibility information is available at http://access.blackboard.com.

Eastern (216) 987-2052 - Voice
III. ATTENDANCE TRACKING

Regular class attendance is expected. Tri-C is required by law to verify the enrollment of students who participate in federal Title IV student aid programs and/or who receive educational benefits through other funding sources. Eligibility for federal student financial aid is based in part on enrollment status. Students who do not attend classes for the entire term are required to withdraw from the course(s). Additionally, students who withdraw from a course or stop attending class without officially withdrawing may be required to return all or a portion of their financial aid based on the date of last attendance. Students who do not attend the full session are responsible for withdrawing from the course(s).

Therefore, attendance is recorded in the following ways:

- For in-person and blended-learning courses, students are required to attend the course by the 15th day of the semester (or equivalent for terms shorter than five weeks) to be considered attending. Students who have not met all attendance requirements for in-person and blended courses, as described herein, within the first two weeks or equivalent, will be considered not attending.
- For online courses, students are required to login at least two times per week and submit one assignment per week for the first two weeks of the semester, or equivalent to the 15th day of the term. Students who have not met all attendance requirements for online courses, as described herein, within the first two weeks or equivalent, will be considered not attending.

At the conclusion of the first two weeks of a semester or equivalent, instructors report any registered students who have “Never Attended” a course. Those students will be administratively withdrawn from that course. However, after the time period in the previous paragraphs, if a student stops attending a class or wants or needs to withdraw, for any reason, it is the student’s responsibility to take action to withdraw from the course. Students must complete and submit the appropriate Tri-C form by the established withdrawal deadline.

Tri-C is required to ensure that students receive financial aid only for courses that they attend and complete. Students reported for not attending at least one of their registered courses will have all financial aid funds held until confirmation of attendance in registered courses has been verified. Students who fail to complete at least one course may be required to repay all or a portion of their federal financial aid funds and may be ineligible to receive future federal financial aid awards. Students who withdraw from classes prior to completing more than 60 percent of their enrolled class time may be subject to the required federal refund policy. If illness or emergency should necessitate a brief absence from class, students should confer with instructors upon their return. Students having problems with coursework due to a prolonged absence should confer with the instructor or a counselor.

IV. LEARNING OUTCOMES ASSESSMENT

Occasionally, in addition to submitting assignments to their instructors for evaluation and a grade, students will also be asked to submit completed assignments, called ‘artifacts,’ for assessment of course and program outcomes and the College’s Essential Learning Outcomes (ELOs). The artifacts will be submitted in Blackboard or a similar technology. The level of mastery of the outcome demonstrated by the artifact DOES NOT affect the student’s grade or academic record in any way. However, some instructors require that students submit their artifact before receiving their final grade. Some artifacts will be randomly selected for assessment, which will help determine improvements and support needed to further student success. If you have any questions, please feel free to speak with your instructor or contact the Learning Outcomes Assessment office.

V. CONCEALED CARRY STATEMENT

College policy prohibits the possession of weapons on college property by students, faculty and staff, unless specifically approved in advance as a job-related requirement (i.e., Tri-C campus police officers) or, in accordance with Ohio law, secured in a parked vehicle in a designated parking area only by an individual in possession of a valid conceal carry permit. As a Tri-C student, your behavior on campus must comply with the student code of conduct which is available on page 29 within the Tri-C student handbook, available athttp://www.tri-c.edu/student-resources/documents/studenthandbook.pdf You must also comply with the College’s Zero Tolerance for Violence on College Property available athttp://www.tri-c.edu/policies-and-procedures/documents/3354-1-20-10-zero-tolerance-for-violence-policy.pdf

Outcomes

Course Outcome(s):
Define and evaluate trigonometric functions.

Objective(s):
1. Use a calculator to find function values and angles.
2. Define radian measure and convert to and from degree measure of angles.
3. Find the length of an arc of a circle and the measure of a central angle of a circle.
4. Use the arc length in problems concerning linear speed and angular speed.
5. Graph the six circular functions using transformations and state their properties including domain, range, period, phase shift, and amplitude.

Course Outcome(s):
Apply right triangles.

Objective(s):
1. Define and evaluate the inverse trigonometric functions under domain restrictions.
2. Solve real-world trigonometric problems using inverse trigonometric functions.
3. Solve various trigonometric equations using proven identities and algebra.
4. Solve right triangles using the Pythagorean Theorem and the trigonometric functions.
5. Solve applied problems involving right triangles and trigonometric functions.
7. State and prove Pythagorean, Sum/Difference, Cofunction, and Double Angle trigonometric identities and more complex trigonometric formulas not proven in the text.

Course Outcome(s):
Explain, interpret, and analyze applications of trigonometry.

Objective(s):
1. Solve different triangles using the Law of Sines and/or the Law of Cosines.
2. Solve applied trigonometric problems using the Law of Sines and/or the Law of Cosines.
3. Express a complex number in algebraic, trigonometric, and graphical form.
4. Perform operations with complex numbers.
5. Define and graph polar coordinates and equations.
6. Define vectors and their properties.

Course Outcome(s):
Transfer trigonometric concepts to real-world applications.

Objective(s):
1. Examine how course topics can be used in real-world applications through the use of projects which demonstrate an advanced understanding of trigonometry concepts.
2. Improve upon the mathematical reasoning that would be needed in higher level mathematics courses through research and small group activities.
3. Use technology such as a graphing calculator or computer algebra system to graph, compute, evaluate, estimate, and develop projects.

Methods of Evaluation:
1. Periodic exams.
2. Quizzes.
3. Homework.
4. In class collaborative work.
5. Comprehensive final exam.

Course Content Outline:
1. Fundamental concepts
   a. Functions
   b. Rectangular coordinate systems, angles
   c. Pythagorean Theorem
2. Trigonometric functions
   a. The trigonometric ratios
   b. Trigonometric functions of acute angles
   c. Values of trigonometric functions
   d. The Six functions Related
   e. Unit circle
   f. Graphs and properties of the six basic functions
3. Radian measure, circular functions and applications
a. Radian measure  
b. Arc Length and Central Angle  
c. Linear Speed and Angular Speed  
4. Solving right triangles  
a. Angle of elevation and depression  
b. Application problems  
5. Solving triangles (non-right)  
a. Law of Sines  
b. Law of Cosines  
6. Trigonometric Identities  
a. Fundamental identities  
b. Sum and difference identities  
c. Multiple angle identities  
7. Inverse trigonometric functions  
a. Inverse functions  
b. Inverse trigonometric functions  
c. Graphs of inverse functions  
8. Solving trigonometric equations  
9. Vectors  
a. Scalars  
b. Parallelogram Rule  
c. Applications of vectors  
10. Complex numbers  
a. Algebraic form - basic operations  
b. Graphical form  
c. Complex number operations  
11. Polar equations and polar coordinates

Resources

Instructional Services
OAN Number:  
TMM003, and TMM002 (2 of 2 courses, both must be taken)

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