

Quinsigamond Community College
School of Math and Science

Instructor's Information:

Instructor: <Professor XXXX>
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Course Information:

Course: MAT 124 College Mathematics II: Trigonometry – Section ##
Meets on: <Tuesdays, Thursdays from 8:00am – 9:15am>
Credits: 3 credit hours
Semester: <Spring2022>

Course Description:

Students solve right and oblique triangles and related applications; perform vector computations and use vector concepts to solve applications; determine the values of trigonometric ratios of angles and the values of inverse trigonometric ratios of real numbers; work with angles measured in degrees-minutes-seconds or radians; solve uniform circular motion problems; learn the traditional trigonometric identities and use them to prove other identities; perform transformations of basic trigonometric graphs; write equations to describe specific instances of harmonic motion; and solve trigonometric equations.

Pre-requisite:

MAT 123 or appropriate placement score

Required Textbook/Materials/Website:

Textbook: *Algebra and Trigonometry*, by Robert Blitzer, Pearson Publishing, 7th edition, © 2022
Materials: Graphing calculator
Website: Access to www.mymathlab.com

Student Learning Outcomes & Instructional Objectives:

This course is designed to achieve the following student outcomes and objectives:

- Use the vocabulary of angles.
- Use degree and radian measure.
- Convert between degrees and radian measures.
- Draw and label the entire key values on a unit circle, both in degrees and radians.
- Draw angles in standard position.
- Find coterminal angles.
- Find the arclength on a unit circle.
- Use linear and angular speed in applications.
- Use a unit circle to define the 6 trigonometric functions, to find domain and range, and determine which of the functions are odd or even.
- Recognize and use the fundamental identities.

- Evaluate trigonometric functions with and without a calculator.
- Use right triangles to evaluate trigonometric functions.
- Find and use cofunctions.
- Use right triangle trigonometry to solve applied problems.
- Use the signs of trigonometry functions (All Students Take Calculus).
- Find and use reference angles.
- Graph the 6 parent trigonometric functions along with their shifts and transformations.
- Find inverse trigonometric functions.
- Evaluate inverse trigonometric functions with a calculator.
- Find exact values of composite functions with inverse trigonometric functions.
- Apply models (such as right triangles using inverse functions, bearings, and/or simple harmonic motion).
- Use the fundamental trigonometric identities to verify identities.
- Use the formulae for the cosine, sine, and tangent of the sum and difference of two angles.
- Use the double-angle, power-reducing, and half-angle formulae.
- Use the product-to-sum, and sum-to-product formulae.
- To be able to find all solutions of a trigonometric equation.
- Solve equations with multiple angles.
- Solve trigonometric equations quadratic in form.
- Use factoring to separate different functions in trigonometric equations.
- Use identities to solve trigonometric equations.
- Use a calculator to solve trigonometric equations.
- Use the Law of Sines and Law of Cosines to solve oblique problems.
- Use the Law of Sines to find and solve the ambiguous case.
- Apply models using the Law of Sines and Law of Cosines.
- Use magnitude and direction to show vectors are equal.
- Understand scalar multiplication, vector addition/subtraction as geometric vectors.
- Represent vectors in the rectangular coordinate system.
- Perform operations with vectors in terms of \mathbf{i} and \mathbf{j} .
- Find the unit vector in the direction of \mathbf{v} .
- Write a vector in terms of its magnitude and direction.
- Solve applied problems involving vectors.

Teaching Procedures:

Most classes will be a combination of lecture, group activities, and in-class assignments. You will be given homework assignments to be completed outside of class, with due dates/times. There will occasionally be a quiz or exam given in class.

Course Topics & Required Assignments/Readings:

Trigonometric Functions

- Angles and Radian measure
- Right Triangle Trigonometry

- Trigonometric Functions of any angle
- Trigonometric Functions of real numbers; Periodic Functions
- Graphs of Sine and Cosine Functions
- Graphs of other trigonometric functions
- Inverse Trigonometric Functions
- Applications of Trigonometric Functions

Analytic Trigonometry

- Verifying Trigonometric Identities
- Sum and Difference Formulas
- Double-Angle, Power Reducing, and Half Angle Formulas
- Product-to-Sum and Sum-to-Product Formulas
- Trigonometric Equations

Additional Topics in Trigonometry

- The Law of Sines
- The Law of Cosines
- Polar Coordinates
- Graphs of Polar Equations
- Vectors
- The Dot Product

Assignment & Test Schedule:

<list all assignments, quizzes, & exam dates>

Grading Breakdown:

25% Homework
 15% Quizzes
 10% Attendance
 20% Exams
 30% Final Exam/ Final Project

A	95 – 100	B –	80 – 82	D +	67 – 69
A –	90 – 94	C +	77 – 79	D	63 – 66
B +	87 – 89	C	73 – 76	D –	60 – 62
B	83 – 86	C –	70 – 72	F	0 – 59

Attendance Policy:

Students are expected to attend all classes, for the entire period. Attendance will be taken during every class and counts towards your final course grade. If you are absent from class, a doctor's note will excuse your absence.

Accessibility Statement:

If you have a disability which may require an accommodation, please notify me as soon as possible. You are responsible for forwarding your Accommodation Letter to me and discussing arrangements for this course. Your accommodations for this course begin upon my receipt of

your Accommodation Letter; accommodations are not retroactive. You may request accommodations at any time during the semester, but instructors must be provided with reasonable notice prior to exams or deadlines. Student Accessibility Services works to promote access to ensure an accessible college experience for students. If you have further questions, contact Student Accessibility Services (SAS). All discussions are confidential.

Contact Information for Student Accessibility Services:

Call: 508-854-4471

Sorenson Video Phone: 508-502-7647

Email: disabilityservices@qcc.mass.edu

Services for Veterans:

If you are a veteran of the armed forces, please visit the Veteran Affairs Office located in 258A (Administration Building) or contact them at veteranaffairs@qcc.mass.edu

Academic Honesty and Plagiarism:

Our purpose in the classroom is to seek the truth; this work requires trust and honesty between teacher and student. If we are not honest about what we know and don't know, our learning will always be impaired. Because our teaching and learning depends on this honest communication, we expect all students to understand what plagiarism is and why it is unacceptable.

Plagiarism means taking someone else's ideas or words and presenting them as one's own. The offense can take many forms including cheating on a test, passing in a paper taken from the Internet or from another student, or failing to properly use and credit sources in an essay. Sometimes the issue is subtle, involving getting too much help on an assignment from someone else. In every instance, plagiarism means cheating both oneself and the owner of the source. Since the cheating sabotages a student's learning experience, consequences range from no credit for the assignment to failure for the course and possible expulsion from the college.

For further information concerning plagiarism, refer to the QCC Student Handbook.

Math Center & QCC Math YouTube Channel:

The Math Center provides free, drop-in tutoring assistance for students in any QCC mathematics course. Located on the second floor of the Harrington Learning Center (HLC), the Math Center is a welcoming place where students have the opportunity to work collaboratively with tutors and classmates. Students can work intensively to improve their mathematical skills or simply drop by to ask a few questions. In addition to tutoring, the Math Center houses various math-related resources, and computers and software for math coursework. Visit their website for details and the semester schedule: <https://www.qcc.edu/services/tutoring/math-center>

For further help, visit the QCC Math YouTube channel. This channel has a playlist specifically for this course, with many short videos created with students like you in mind, covering many of the topics in this course: <https://www.youtube.com/user/QCCmath>