

MATH-1432-001: SYLLABUS

1. COURSE INFORMATION

- Course Title: Precalculus II: Trigonometry
- Course Number: 1432
- Credit Hours: 3; Clinical Hours: 0; Lecture Hours: 3; Lab Hours: 0
- Meet Times: Monday and Wednesday from 1:00 pm to 2:15 pm
- Meet Location: BIC 2541
- Course Description: Students will learn trigonometry with an emphasis on concepts needed for calculus. Topics include, but are not limited to, formal definition of trigonometric functions and circular functions, radian measure, inverse trigonometric functions, graphs of trigonometric functions and inverse trigonometric functions, trigonometric identities, trigonometric equations, DeMoivre's theorem, solution of triangles, polar coordinates, and applications.
- Repeatable for Credit: NO
- Pre-Enrollment Criteria: N/A
- Prerequisite: MATH 1431 Precalculus I with a grade of "C" or better, or equivalent or a qualifying score on the mathematics placement test

2. INSTRUCTOR INFORMATION

- Name: Michael McCabe, M.S.
 - Email: mccabem85@cod.edu
 - Office: 3436B or Blackboard Collaborate
 - Office Phone: 630 942 2152
 - Office Hours: Labeled on Blackboard (always available by appointment)
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3. GENERAL COURSE OBJECTIVES

Upon successful completion of the course the student should be able to do the following:

- 1 Define the six trigonometric functions as ratios in right triangles as well as within the unit circle
- 2 Demonstrate the use of standard position, as well as coterminal and reference angles
- 3 Perform degree-to-radian and radian-to-degree conversions with and without a calculator
- 4 Use trigonometry to solve applications involving any type of triangle
- 5 Demonstrate the ability to state and use the fundamental identities (reciprocal, Pythagorean, quotient, and negative angles) from memory
- 6 Determine the values of the trigonometric functions at quadrantal and special angles without the use of a calculator

- 7 Use a calculator to find trigonometric values and inverse trigonometric values
- 8 Construct the graphs of the six trigonometric functions without a calculator
- 9 Identify amplitude, period, and horizontal and vertical translations of graphs with and without a calculator
- 10 Deduce limits of trigonometric functions from their graphs
- 11 Calculate angular and linear velocity for circular motion and apply these calculations to applications
- MATH 1432: Precalculus Ii: Trigonometry 3
- 12 Calculate the area of a sector and arc length and apply these calculations to applications
- 13 Demonstrate the ability to algebraically manipulate expressions containing trigonometric functions
- 14 Demonstrate the ability to verify identities formally
- 15 Demonstrate the ability to state and use the cofunction identities as well as the sum and difference of angles identities for sine, cosine, and tangent from memory
- 16 Use the sum-to-product and product-to-sum identities
- 17 Solve trigonometric equations
- 18 Construct the graphs of the inverse trigonometric functions
- 19 Compute the values of inverse trigonometric functions and algebraic expressions involving inverse trigonometric functions without a calculator
- 20 Apply the law of sines and the law of cosines
- 21 Calculate the area of any triangle
- 22 Perform operations with vectors to include finding magnitude and direction as well as solving applications
- 23 Convert complex numbers between standard and trigonometric form
- 24 Use the trigonometric form to perform multiplication and division and to find powers and roots of complex numbers
- 25 Convert ordered pairs between rectangular and polar form
- 26 Construct the graphs of polar equations

4. TOPICAL OUTLINE

- 1.:** Trigonometric functions
 - a.:** Rectangular coordinate system, distance, and functions
 - b.:** Angles
 - c.:** Definitions of the trigonometric functions
- 2.:** Acute angle
 - a.:** Trigonometric functions of an acute angle
 - b.:** Cofunctions
 - c.:** Trigonometric values of 30° , 45° , 60° and 90° without the use of a calculator
 - d.:** Right triangles
 - e.:** Applications
- 3.:** Fundamental identities
 - a.:** Reciprocal, cofunction, opposite angle, Pythagorean, and quotient identities (to be memorized)
 - b.:** Trigonometric expressions

- c.: Verification of identities
- 4.: Related angles and radian measure
 - a.: Related angles
 - b.: Reduction to an acute angle
 - c.: Radian measure
 - d.: Conversion between degrees and radians (with and without the use of a calculator)
 - e.: Arc length, area of a sector, linear and angular velocity
 - f.: Trigonometric functions of real numbers
- 5.: Graphs of the trigonometric functions
 - a.: Periodic functions
 - b.: Amplitude, period, vertical translations, and phase shifts without a calculator
 - c.: Graphs by addition of ordinates (optional)
 - d.: Graphs involving algebraic operations (optional)
- 6.: Trigonometric identities
 - a.: Sum and difference identities (to be memorized)
 - b.: Half and double-angle identities (to be memorized)
 - c.: Verification of identities
 - d.: Product-to-sum and sum-to-product identities
 - e.: Reduction formula (optional)
- 7.: Trigonometric equations
 - a.: Basic trigonometric equations
 - b.: Equations with multiple and fractional arguments
 - c.: Equations using identities
- 8.: Inverse trigonometric relations and functions
 - a.: Inverse trigonometric relations
 - b.: Inverse trigonometric functions
 - c.: Graphs of inverse trigonometric relations and functions
 - d.: Operations with inverse trigonometric functions
 - e.: Equations with inverse trigonometric functions
- 9.: Triangles, vectors, and applications
 - a.: Law of sines
 - b.: Law of cosines
 - c.: Oblique triangles
 - d.: Area formulas
 - e.: Vectors: components and resultants
 - f.: Applications
- 10.: Complex numbers
 - a.: Complex number arithmetic review (optional)
 - b.: Graphical representation
 - c.: Graphical addition
 - d.: Multiplication and division in trigonometric form
 - e.: DeMoivre's theorem
- 11.: Polar coordinates
 - a.: Conversion between polar and rectangular coordinates
 - b.: Graphs of polar equations
- 12.: Limits involving trigonometric functions (optional)

5. REQUIRED TEXTS, MATERIALS, AND SUPPLIES

5.1. **Required Text.** The reference Textbook is: Trigonometry, 12th Edition, by Lial, Hornsby, Schneider and Daniels.

5.2. **Materials. My Math Lab** Access code, A notebook for class lecture to take notes, A notebook for homework (suggested, not required), writing devices, and access to the internet.

5.3. **Supplies.** Notebooks, writing devices, and internet.

6. SCHEDULE

6.1. Academic Calendar.

- First Day: 8/23/2022
- No Class: 11/25 to 11/28 (Fall Break)
- Last Day to Withdraw: 11/14/2022
- Final Exam: TBD

6.2. Exam Dates.

- Exam 1: Week 4
- Exam 2: Week 8
- Exam 3: Week 12

6.3. Content Coverage.

- Week 1 through 4: Cover Chapters 1 and 2
- Week 5 through 8: Cover Chapter 3 and 4
- Week 9 through 12: Cover Chapter 5 and 6
- Week 13 through 16: Cover Chapter 7 and 8

7. METHOD OF EVALUATION

7.1. Assessment Categories.

- Final Exam (Weight 20%)
- Exams (Weight 40%)
 - No drops and no curves
- My Lab Math (Weight 20%)
 - At least 3 drops
- In-class polling (Weight 20%)
 - At least 3 drops

7.2. Grading Scale.

- A:** 90% to 100%
- B:** 80% to 89%
- C:** 70% to 79%
- D:** 60% to 69%
- F:** Less than 59%

I do round to the nears percentage.

8. ACADEMIC HONESTY

As members of the College of DuPage community, we share a commitment to the highest standards of learning and ethical behavior. The College and its faculty strive to build meaningful and productive relationships with our students. The expectation of honesty and effort is the foundation of that relationship. Academic dishonesty damages the learning partnership built between student and faculty and is considered a serious breach of the principles of learning and growth. Violations of the Code of Academic Conduct will be dealt with appropriately and may become part of a student's educational record. Please don't risk it! For further information about the expectations, please review the Code of Academic Conduct found at the following website: Code of Academic Conduct.

9. ACCESS AND ACCOMMODATIONS

- As a course policy, I do not accept late work/make up for My Open Math assignments, attendance, and participation. I am committed to providing fair, equal, and unbiased accommodations. If you believe that your circumstances qualify you for accommodations, please contact the Center for Access and Accommodations at access@cod.edu. Staff from the Center can help you better understand if your situation qualifies you for an accommodation.
- If you are student who is registered with the Center for Access and Accommodations, please send me your Letter of Accommodation as soon as possible.
- Please do not send me personal medical records or similar personal documents.
- Here is a to start the process for accommodations: Center for Access and Accommodations Intake Form (https://cod-accommodate.symplicity.com/public_accommodation/).

The College of DuPage is committed to the equitable access of educational opportunities for students with disabilities in accordance with The Americans with Disabilities Act, As Amended and Section 504 of the Rehabilitation Act of 1973. Any student who feels they may need an accommodation on the basis of an illness, injury, medical condition, or disability should contact the Center for Access and Accommodations to determine eligibility for accommodations and to obtain an official Letter of Accommodation. The Center for Access and Accommodations can be reached via email at access@cod.edu. Students may also initiate a request for services by going to www.cod.edu/access and clicking on the green box labeled "complete form to request accommodations." If you are already registered with the Center for Access and Accommodations, please email me your Letter of Accommodation as soon as possible. Please DO NOT send any private health documentation or Doctor's notes to me.

10. WITHDRAW POLICY

Withdrawal from a Class. The final day for a student to withdraw from any course will be equal to 75% of the time for the respective academic session (see the Registration Calendar) through MyAccess or in person at the Registration office, Student Services Center (SSC), Room 2221.

Administrative Withdrawal. After the deadline, students will be required to appeal for late withdrawal and provide appropriate documentation to the Student Registration Services Office for all requests. Students who are granted approval to withdraw by petition will not be eligible for refunds of tuition or fees and will receive a 'W' grade on their transcript. Appeals must be submitted prior to the designated final exam period for 16-week classes and before the last class meeting for all other session classes.

Coronavirus Information. Stay up to date with information provided by the college about alternative withdrawal policies. [Coronavirus Information](#)