



U3600-113: Trigonometry

Course Format: Online

Course Authors: Chris Ahrendt, Ph.D.

Course credits: 2 credits

Course Level: Introductory

Prerequisites: Completion of College Algebra with a C or better (the equivalent of IL Math 109)

Course Description: The trigonometric functions are developed in the context of right triangles and the unit circle. Properties of the trigonometric functions, including graphs and transformations, are explored. Other topics include solving trigonometric equations, establishing identities, using inverse trigonometric functions, and applications.

Required Course Materials

- Abramson, *Algebra and Trigonometry 2e*, OpenStax, Houston, TX, 2021.
<https://openstax.org/books/algebra-and-trigonometry-2e/pages/preface>
- A scientific calculator (something like the TI-30 which is capable of computing powers/square roots/trig functions like “sin”, “cos”, etc.). (Note that while online calculators are permitted to complete homework assignments, they will *not* be allowed on the final exam. If you plan to use a calculator on the final exam, it must be a dedicated calculator device.)

Optional/Recommended Course Materials

- The course has been constructed such that a basic scientific calculator is sufficient to complete it. However, graphing calculators are permitted to be used if you so choose, but one is not required.

Hardware Requirements

You will need a webcam, speakers, and a microphone. You will complete your exams through an online proctor, requiring all three components.

Course Learning Objectives

- Use the trigonometric functions in terms of the right triangle.
- Use the trigonometric functions in terms of the unit circle.
- Apply transformations to the base graphs of the trig functions both analytically and graphically.
- Establish identities.
- Solve trigonometric equations.
- Setup and solve application problems involving the tools of trigonometry.

Course Overview

UNIT #	UNIT TOPIC	EVALUATED ACTIVITIES
1.1	Angles	Unit 1.1 Homework
1.2	Right Triangles and the Six Trigonometric Functions	Unit 1.2 Homework



1.3	Fundamental Trig Identities and Applications	Unit 1.3 Homework
1.4	The Unit Circle	Unit 1.4 Homework
1.5	Other Trigonometric Functions	Unit 1.5 Homework
1.6	Law of Sines and Cosines	Unit 1.6 Homework
		Unit 1 Concept Quiz Unit 1 Test
2.1	Graphs of the Sine and Cosine Functions	Unit 2.1 Homework
2.2	Graphs of the Other Trigonometric Functions	Unit 2.2 Homework
2.3	Inverse Trig Functions	Unit 2.3 Homework
		Unit 2 Concept Quiz Unit 2 Test
3.1	Verifying and Using Trig Identities	Unit 3.1 Homework
3.2	Sum and Difference Identities	Unit 3.2 Homework
3.3	Double Angle and Half Angle Identities	Unit 3.3 Homework
3.4	Sum to Product and Product to Sum Identities	Unit 3.4 Homework
3.5	Intro to Solving Trigonometric Equations	Unit 3.5 Homework
3.6	Solving Trigonometric Equations	Unit 3.6 Homework
		Unit 3 Concept Quiz Unit 3 Test

Evaluation Methods

Your final grade will be based on your performance on the following:

- 1) Homework Assignments (30%).
- 2) Unit Concept Quizzes (4%).
- 3) Unit Exams (36%).
- 4) Final Exam (30%).

Homework Assignments (30%)

Each section of material has a corresponding homework assignment. Each problem on the homework can be attempted an unlimited number of times and the best grade achieved will be used in the final grade calculation. The homework assignments will cumulatively account for 30% of your final course grade.

Unit Concept Quizzes (4%)

Each unit of material has a corresponding concept quiz. The concept quizzes consist of questions that test your knowledge of the concepts, terminology, and notation found throughout the unit. Each concept quiz can be attempted an unlimited number of times and the best grade achieved will be used in the final grade calculation. The concept quizzes will cumulatively account for 4% of your final course grade.

Unit Exams (36%; 12% each)

Each unit of material has a corresponding unit exam. Each exam can be attempted *up to three times* and the best grade achieved will be used in the final grade calculation. Each exam accounts for 12% of your final grade, and so taken together, the three unit exams will cumulatively account for 36% of your final course grade.

Final Exam (30%)



The final exam will be cumulative and can be attempted *one time*. The final exam will account for 30% of your final course grade.

Exam Method:

The unit exams will be completed online without proctoring. Students receive three attempts on each unit exam. This course requires all students to complete the final exam online with a proctoring service. Students receive one attempt on the final exam.

Grading Scale

The following grading scale is used to evaluate all course requirements and determine your final grade. Your final course grade will be rounded to the nearest tenth of a grade. (For example, an 87.934 would be rounded to 87.9 and earn a B in the course.)

A = 93–100	B = 83–87.9	C = 70–77.9	D = 60–69.9
AB = 88–92.9	BC = 78–82.9		F = Below 60

Pass/Fail Option

Students who enroll in an Independent Learning (IL) course under the pass/fail option will receive a final grade of S in place of a final grade equivalent to an A, AB, B, BC, or C and a final grade of U in place of a final grade equivalent to a D or F.