



**Course Title: Trigonometry**  
**Course #: MATH 1230**

**Credit Hours: 4**  
**Semester: Spring 2022**  
**Cap: 15**

**Faculty:** Mohamed Illafe  
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**Office Hours:** (face-to-face, hybrid, or online): online: Email anytime but will respond within 24 hours Monday-Thursday, will respond within 48 hours Friday-Sunday.

**Preferred Communication** (email and/or text; will respond within 24 hours):

**Modality** (face-to-face, hybrid, or online): Face-to-Face

**Class Location and Meeting Times** (if face-to-face): Mod 9 [MW 2:00 – 03:40 pm]

**Meeting Hours and Online Hours** (if hybrid):

**Required Materials:** **WebAssign Access Code please get this from the bookstore ASAP.**

**Textbooks: (OPTIONAL):** College Trigonometry, 6th Edition  
R.N. Aufmann, V.C. Barker, R.D. Nation  
ISBN-13: 978-0-618-82507-3  
ISBN-10: 0-618-82507-X

**Tools:** Scientific Calculator/Graph calculator

**Laptop and Internet Access:** Every student is required to own a laptop and have internet access.

**Lab Fee (if applicable):** None

**Prerequisite:** “C” or above in MATH 1220 (College Algebra) or satisfactory Placement score. Each student is required to have a laptop. Students who don’t have laptops, the cost of the laptops will be deducted from their Pell grant and then NTU will purchase laptops for them.

**Mission, Vision, and Philosophy**

**Mission:** Navajo Technical University honors Diné culture and language, while educating for the future.

**Vision:** Navajo Technical University provides an excellent educational experience in a supportive, culturally diverse environment, enabling all community members to grow intellectually, culturally, and economically.

**Philosophy:** Through the teachings of Nitsáhákees (thinking), Nahátá (planning), Íína (implementing), and Siihasin (reflection), students acquire quality education in diverse fields, while preserving cultural values and gaining economic opportunities.

### Course Description

A study of plane trigonometry including the definitions of the fundamental trig functions using right angle triangle and unit circle approaches. Trig functions of any real number will be evaluated and the functions graphed along with their transformations. Trigonometric identities will be developed and demonstrated including multiple angle identities and identities developed from them. Inverse Trigonometric functions will be developed and used to solve trigonometric equations. Trigonometric applications will be solved using right angle trigonometry and the laws of sines and cosines. Trigonometric methods will be applied to complex numbers and the use of 2D vectors and vector dot products.

Week	Chapters	Assignments	Quizzes
1	Chapter 1.- Functions and Graphs	TBD	
2	Chapter 1.- Functions and Graphs	TBD	
3	Chapter 1.- Functions and Graphs	TBD	
4	Chapter 1.- Functions and Graphs	TBD	Quiz 1
5	Chapter 2.- Trigonometric Functions	TBD	
6	Chapter 2.- Trigonometric Functions	TBD	
7	Chapter 2.- Trigonometric Functions	TBD	
8	Chapter 2.- Trigonometric Functions	TBD	Quiz 2
	<b>Midterm grades are due</b>	<b>Midterm</b>	
9	Chapter 3.- Trigonometric Identities and Equations	TBD	
10	Chapter 3.- Trigonometric Identities and Equations	TBD	
11	Chapter 3.- Trigonometric Identities and Equations	TBD	
12	Chapter 3.- Trigonometric Identities and Equations	TBD	Quiz 3
13	Chapter 4.- Applications of Trigonometry	TBD	
14	Chapter 4.- Applications of Trigonometry	TBD	
15	Chapter 4.- Applications of Trigonometry	TBD	
16	Chapter 4.- Applications of Trigonometry	TBD	Quiz 4
	<b>Final Exams</b>	<b>Finals</b>	

**Schedule Disclaimer:** The course schedule outlined in the table above is subject to adjustment depending on the needs of the class to focus more on a specific chapter.

### COURSE OUTCOMES

1. Students will be able to define and evaluate the trigonometric functions as functions of angle in both degree and radian measure using the definitions in terms of  $x$ ,  $y$ , and  $r$ ; as the ratio of sides of a right triangle; using the unit circle; using reference angles, commonly used ( $0^\circ$ ,  $30^\circ$ ,  $45^\circ$ ,  $60^\circ$ ,  $90^\circ$ ) angles and using a calculator. 2. Students will be able to solve right triangles. They will be

able to draw a sketch in an applied problem when necessary. 3. Students will be able to solve non-right triangles using the law of sines and the law of cosines. 4. Students will be able to prove trigonometric identities and apply addition and subtraction, double-angle, half-angle and power reduction formulas. 5. Students will be able to graph the six trigonometric functions, their transformations and their inverses. 6. Students will be able to use algebraic methods, including the use of identities and inverses, to solve trigonometric equations and demonstrate connections to graphical and numerical representations of the solutions. 7. Students will be able to add and subtract vectors in two dimensions. They will be able to use the dot product to project one vector onto another and to determine the angle between two vectors. They will be able to solve a variety of word problems using vectors. 8. Students will be able to work with polar coordinates; this includes graphing in polar coordinates and transforming an equation with polar coordinates into one with rectangular coordinates, and vice versa. 9. Students will be able to work with the trigonometric form of complex numbers, including using De Moivre's formula.

## COURSE MEASUREMENTS

Complete reading assignments, homework assignments, quizzes and exams.

### Grading Plan

Homework	25%	A = 100 - 90%
Mid-term	20%	B = 89 - 80%
Final Exam	25%	C = 79 - 70%
Quizzes	25%	D = 69 - 60%
Participation & Attendance	5%	F < 60%

**Dropping Class:** It is the student's responsibility to find out when is the last day of dropping classes.

### Grading Policy

Students must do their own work. Cheating and plagiarism are strictly forbidden. Cheating includes (but is not limited to) plagiarism, submission of work that is not one's own, submission or use of falsified data, unauthorized access to exams or assignments, use of unauthorized material during an exam, or supplying or communicating unauthorized information for assignments or exams.

### Participation

Students are expected to attend and participate in all class activities. Points will be given to students who actively participate in class activities including guest speakers, field trips, laboratories, and all other classroom events.

### Cell phone and headphone use

Please turn cell phones off **before** coming to class. Cell phone courtesy is essential to quality classroom learning. Headphones must be removed before coming to class.

### Attendance Policy

Students are expected to attend all class sessions. If more than ten minutes late, students will be counted as absent. A percentage of the student's grade will be based on class attendance and participation. Absence from class, regardless of the reason, does not relieve the student of responsibility to complete all course work by required deadlines. Furthermore, it is the student's responsibility to obtain notes,

handouts, and any other information covered when absent from class and to arrange to make up any in-class assignments or tests if permitted by the instructor. Incomplete or missing assignments will necessarily affect the student's grades. Instructors will report excessive and/or unexplained absences to the Counseling Department for investigation and potential intervention. **Instructors may drop students from the class after three (3) absences unless prior arrangements are made with the instructor to make up work and the instructor deems any excuse acceptable.**

### **Study Time Outside of Class for Face-to-Face Courses**

**For every credit hour in class, a student is expected to spend two hours outside of class studying course materials.**

### **Study Time for Hybrid or Blended Courses**

**For a hybrid or blended course of one credit hour, a student is expected to spend three hours per week studying course materials.**

### **Study Time for Online Courses**

**For an online course of one credit hour, a student is expected to spend four hours per week studying course materials.**

### **Academic Integrity**

Integrity (honesty) is expected of every student in all academic work. The guiding principle of academic integrity is that a student's submitted work must be the student's own. Students who engage in academic dishonesty diminish their education and bring discredit to the University community. Avoid situations likely to compromise academic integrity such as: cheating, facilitating academic dishonesty, and plagiarism; modifying academic work to obtain additional credit in the same class unless approved in advance by the instructor, failure to observe rules of academic integrity established by the instructor. **The use of another person's ideas or work claimed as your own without acknowledging the original source is known as plagiarism and is prohibited.**

### **Diné Philosophy of Education**

The Diné Philosophy of Education (DPE) is incorporated into every class for students to become aware of and to understand the significance of the four Diné philosophical elements, including its affiliation with the four directions, four sacred mountains, the four set of thought processes and so forth: Nitsáhákees, Nahát'á, Íina and Siih Hasin which are essential and relevant to self-identity, respect and wisdom to achieve career goals successfully.

At NTU's Zuni Campus, the A:shiwí Philosophy of Education offers essential elements for helping students develop Indigenous and Western understandings. Yam de bena: dap haydoshna: akkya hon detsemak a:wannikwa da: hon de:tsemak a:ts'umme. *Our language and ceremonies allow our people to maintain strength and knowledge.* A:shiwí core values of hon i:yyułashik'yanna:wa (respect), hon delank'oha:willa:wa (kindness and empathy), hon i:yyayumola:wa (honesty and trustworthiness), and hon kohoł lewuna:wediyahnan, wan hon kela i:tsemanna (think critically) are central to attaining strength and knowledge. They help learners develop positive self-identity, respect, kindness, and critical thinking skills to achieve life goals successfully.

### **Students with Disabilities**

Navajo Technical University is committed to serving all students in a non-discriminatory and accommodating manner. Any student who feels that she or he may need special accommodations should contact the Accommodations Office (<http://www.navajotech.edu/student-services#accomodations->

[services](http://www.navajotech.edu/images/about/policiesDocs/Disability_Exhibit-A_6-26-2018.pdf)) in accordance with the university's Disability Accommodations Policy (see [http://www.navajotech.edu/images/about/policiesDocs/Disability\\_Exhibit-A\\_6-26-2018.pdf](http://www.navajotech.edu/images/about/policiesDocs/Disability_Exhibit-A_6-26-2018.pdf)).

**Email Address**

Students are required to use NTU's email address for all communications with faculty and staff.

**Final Exam Date:**

**Final exam will be on Monday of the week number sixteen 16.**