Course Title: Trigonometry
Course #: Math 1230
Credit Hours: 4
Semester: Spring 2022

Faculty: Bruce Lewis   **E-mail**: blewis@navajotech.edu

Office Hours: Monday and Wednesday 1pm-2pm, Tuesday and Thursday 9am-10am
Preferred Communication: Email

Modality: In-person
Class Location and Meeting Times: Building E, Room 102, Tuesday and Thursday at 10am-noon

Required Materials: textbook, notebook with paper, graph paper, ruler
Textbooks: Introductory and Intermediate Algebra (6th edition) by Bittinger, Beecher, and Johnso**n**
Tools: DESMOS graphing calculator phone app
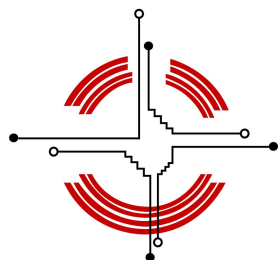
Mission, Vision, and Philosophy
Mission: Navajo Technical University honors Diné culture and language, while educating for the future.

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. Prerequisite: A grade of C or higher in MATH-1220 or satisfactory placement score. Offered: Fall, Spring, Summer, Online.

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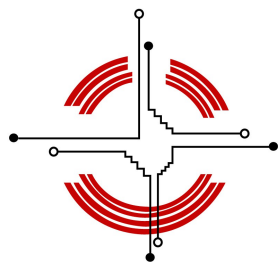
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Course Outcomes	Course Assessments
Students will be able to define and evaluate the trigonometric functions as functions of angle in both degree and radian measure using the definitions in terms of x, y, and r; as the ratio of sides of a right triangle; using the unit circle; using reference angles, commonly used (0°, 30°, 45°, 60°, 90°) angles and using a calculator.	Pre-test, weekly quizzes, midterm, and final exam (post-test).
Students will be able to solve right triangles. They will be able to draw a sketch in an applied problem when necessary.	
Students will be able to solve non-right triangles using the law of sines and the law of cosines.	
Students will be able to prove trigonometric identities and apply addition and subtraction, double-angle, half-angle and power reduction formulas.	
Students will be able to graph the six trigonometric functions, their transformations and their inverses.	
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.	
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.	
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.	
Students will be to work with the trigonometric form of complex numbers, including using De Moivre's formula.	

Connections to Program Assessment (Course-Embedded Measures)

Outcomes: Students should be able to…	Direct measures
1. Demonstrate knowledge of math foundations and context.	Pre and post tests
1. Perform computations in higher mathematics.	Pre and post tests
2. Formulate complete, concise, and correct mathematical proofs.	Pre and post tests
3. Solve real world math related problems.	Pre and post tests
4. Use technology to address mathematical ideas.	Pre and post tests

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Course Assignments

Week	Chapters/Reading	Assignments	Assessments
1	Chapter 1	See Course Outline	Quiz 1
2	"	"	Quiz 2
3	Chapter 2	"	Quiz 3
4	"	"	Quiz 4
5	Chapter 3	"	Quiz 5
6	"	"	Quiz 6
7	Chapter 4	"	Quiz 7
8	"	"	Midterm
9	Chapter 5	"	Quiz 8
10	"	"	Quiz 9
11	Chapter 6	"	Quiz 10
12	"	"	Quiz 11
13	Chapter 7	"	Quiz 12
14	"	"	Quiz 13
15	Chapter 8	"	Quiz 14
16	"		Final Exam

Grading Plan

Weekly Quizzes	30%	90-100%	A
Midterm Exam	35%	80-89%	B
Final Exam	35%	70-79%	C
		60-69%	D
		Below 60%	F

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.

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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.

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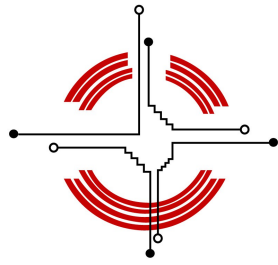
Diné Philosophy of Education
The Diné Philosophy of Education (DPE) is incorporated into every class for students to become aware of and to understand the significance of the four Diné philosophical elements, including its affiliation with the four directions, four sacred mountains, the four set of thought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

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Final Exam Date: Tuesday May 10 at 10am

Important Dates:

Martin Luther King Holiday is January 17th
Last day to add/drop without a W is January 21
Presidents' Day is February 21
Spring graduation petition is due on February 25
Midterm exams are March 7 to March 11
Spring Break is March 14 to March 18
Last day to withdraw with a W is March 31
Final exams is May 9 to May 12
Spring graduation is on May 13

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