Math 1230   TRIGONOMETRY   Summer 2021

Instructor: Precious Andrew   email: pandrew@unm.edu
Office: Online via Zoom or email
Office Hours/Study Sessions: Most Mondays-Thursdays 3-4pm or by appointment

Course Description
A study of trigonometry including the definitions of the fundamental trig functions using right angle triangle and unit circle approaches. Covers evaluating and graphing trig functions. Trigonometric identities will be developed and demonstrated including double angle identities. Inverse trigonometric functions will be studied. 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

Textbook: **Ebook in Learn** - Pre-calculus Mathematics for Calculus, **7th Edition**, Stewart, Redlin, Watson
Prerequisite: Grade of C (not C-) or better in Math 1220.
Grades: Your grade will be based on the following allocation of points.

Worksheets	150 points
Midterm Exam	100 points
Final Exam	150 points
Total	**400 points**

How Grades Are Determined:

A+: 97-100%	A: 93-96%	A-: 90-92%	B+: 87-89%	B: 83-86%	B-: 80-82%
C+: 77-79%	C: 73-76%	C-: 70-72%	D+: 67-69%	D: 63-66%	D-: 60-62%
F: < 60%					

Course Format:

1 - **You will be attending live online lectures for each section via Zoom**. Lectures will take place during the scheduled meeting time. These sessions must be attended in their entirety just as if you were in a classroom lecture. You must take careful notes on each and every example from each lecture. You should write down every example and all steps I show to reach a solution. These notes should be labeled clearly, organized, and neat and clear. Keep these in a notebook where you can easily access them.

2 – **You will submit written worksheets** approximately 1-2 times per week – see the assignments posted in Learn for due dates by clicking the "Submit Assignments" link on the left sidebar. These worksheets must be organized and labeled, all work and steps must be shown, and must be presented consecutively, clearly, and legibly. You'll be submitting via UNM Learn. Worksheets must be submitted as one readable pdf file. You will print each worksheet, complete it, then use a scanner or free scanner app on your device to create one pdf file of your completed worksheet to upload for a grade. The alternative is to complete your worksheets on a tablet using a stylus and submit a pdf of that work. You'll need to access to either a printer or a tablet to complete the worksheets. Note that all worksheets are posted under the "Blank Worksheets' link in Learn. This means if you'll have difficulty accessing a printer, you could have them printed up all at one time at the library if necessary. **The worksheets are designed to follow along with the lectures closely.**

3 - **You must complete written homework from the textbook for each section**. These problems are listed on the schedule towards the end of this document. These are from your textbook. These are mostly odd problems, so you have the answers. Thus, it wouldn't make sense for me to grade them. These are for you to practice. **If you don't do these, you are very unlikely to succeed in the class.**

4 - **You will complete a written midterm and a written cumulative final.** The exams will appear in UNM Learn at the designated times. You will print the exam and complete it, then upload your completed exam in Learn as you do the worksheets. All work needs to be shown and to be neat, clear, and in order or you will not receive credit. **The exams are not open book or notes, and you may not use a graphing calculator, phone, the internet, etc.** You should use only your writing instrument (and a basic 4-function calculator if you so choose) to complete the exam – nothing else. The use of anything beyond your pencil and basic calculator on the exams and final may be considered academic dishonesty, may be reported to the Dean of Students, and may be grounds for receiving an F in the course.

   Tentative dates/times for exams: (Please keep these days and times available)

   Midterm Exam Wednesday, June 30, 12pm-2pm
   FINAL EXAM Wednesday, July 28 12pm-2pm

Calculator/Notes Policy: Scientific **calculators** are **not allowed** on any exams (including the final exam). I will demonstrate examples without the use of a calculator. If you'd like, you may use a basic, 4 function calculator on exams, but nothing more. There may be a few homework problems that require a scientific calculator, but these won't be used on exams. **Notes**, books, cell phones, web searches, consultations with friends or tutors, etc. are also **not allowed** on exams. I may provide some formulas for exams (we can discuss this as exams approach).

Missed Exams: If you miss an exam, contact your instructor immediately. Make-up exams will only be given in cases of a university-excused absence or a verifiable documented emergency or illness. If you miss an exam and do not contact your instructor immediately, you may be dropped from the course.

Homework: Your homework is your most important effort in this class. Homework is how you actually practice the material covered on the worksheets and exams. Expect to do 2-3 hours of homework for every hour of class meeting time (on average 10-15 hours per week). You are expected to do all of the homework problems listed in the syllabus whether they are graded or not. **Extra Credit is not offered.** Please do not ask for any extra credit.

Attendance: Attendance is mandatory. If a student has more than three unexcused absences, he/she may be dropped from the course. **In a remote class, not turning in an assignment, not watching required lectures, or missing an exam may be regarded as an absence.** Please note that it is the student's responsibility to drop the course if he/she stops attending. A failing grade of F may be assigned if the student stops attending and does not drop before the posted deadline. No early final exams will be permitted except in <u>documented</u> emergencies: flight reservations, weddings, vacations, birthdays, non-NCAA sporting events, etc. are not considered emergencies.

Student Behavior: All students have to abide by the Student Code of Conduct: www.pathfinder.unm.edu. According to the Code of Conduct, student activities that interfere with the rights of others to pursue their education or to conduct their University duties and responsibilities will lead to disciplinary action. This includes any activities that are disruptive to the class and any acts of academic dishonesty. Students are expected to behave in a courteous and respectful manner toward the instructor and their fellow students. The use of cell phones, headphones, smart watches, etc. is not permitted during class or exams.

Academic Integrity: Academic dishonesty of any kind will not be tolerated. Examples include, looking at a neighbor's exam; plagiarizing; using a calculator when not permitted; using a book, online material, and/or notes of any kind; modifying an exam after it is graded; etc. The instructor may warn an offending student, the score of the exam may be reduced, the score may be set to zero, the student may get dropped from the class, the student may get a grade of F for the class, and in most cases the incident will be reported to the Dean of Students. You should be familiar with UNM's Policy on Academic Dishonesty and the Student Code of Conduct.

Grading: To get full credit on graded work students must address all mathematical components presented by the problem, showing all steps and calculations. The use of proper notation, well-structured procedures, and legibility will be taken into account when assigning points.

Deadlines: The Department of Mathematics and Statistics will adhere to all of the registration deadlines published by the Office of the Registrar in the schedule of classes: www.registrar.unm.edu. We will not give permission to override any deadline except in documented emergencies; failing a class is not considered an emergency.

Grade mode and Withdrawals: You must select your grade mode (Letter Grade, CR/NC, or Audit) before the UNM deadline. We will not give permission to change the grade mode after the deadline. Students who are in the regular grade mode and who withdraw after the deadline will receive a grade of "W". If you do not withdraw (but stop attending), you will receive a letter grade of A, B, C, D, or F (not a W). Students who are in the CR/NC grade mode and who withdraw after the deadline will receive a grade of "W". If you do not withdraw (but stop attending), you will receive a letter grade of NC (not a W). See the list of all deadlines: www.registrar.unm.edu

Accessibility Statement and Accommodations: We will accommodate students with documented disabilities. Those students should inform the instructor of their particular needs ASAP. The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodations of their disabilities. If you have a disability requiring accommodation, please contact http://valencia.unm.edu/students/student-services.html or by phone 505-925-8560. Information about your disability is confidential and your instructor cannot refer you for accommodations. Be aware that you will need to provide documentation. If you need assistance in obtaining documentation, the office above can assist you.

Blackboard's Accessibility statement
Microsoft's Accessibility statement

Extra Help and Resources: In addition to your instructor's office hours, there is extra help available at:
-The Learning Center - https://valencia.unm.edu/campus-resources/the-learning-center/index.html
- UNM Valencia Library - http://valencia.unm.edu/library/
- 'Life Resources" - http://valencia.unm.edu/students/student-resources.html
- Student Health and Counseling (SHAC) - https://shac.unm.edu/
- Veteran's Resource Center - vrc@unm.edu

Note: The instructor for this class reserves the right to change the syllabus at any point during the semester.

Week of		MATH 1230 Topics	Homework (Do the odd numbered problems).
June 7	5.1	Introduction/Unit Circle	1-19,41-49
	5.2	Trigonometric Functions	7-23,39-45,55-69,73,75
	5.3	Trigonometric Graphs I	3,7,11,15,19-23,31,35,36,37,39,43-49,51-53(graph by hand), 77
	5.4	Trigonometric Graphs II	3-13,17,19,23,27,29,35,39-43,47-53
June 14	5.4	FINISH	
	5.5	Inverse Trigonometric Functions	3-11, 17, 23, 25, 31-41
	6.1	Angle Measure	5,7,13-17,21,27,29,45,47,51-57,61-67,71,73,79-85
	6.2	Trig of Acute Angles	3-7,11,15-21,31,35,47-59
	6.3	Trigonometric Functions of Angles	5-15,21,27,29,35-43,47-51,63,65
June 21	6.4	Inverse Trigonometric Functions	1-17,21-27,33,35,39,41
	6.5	Law of Sines	3-9,17-21,33-41
June 28	6.6	Law of Cosines	7-15,25,39-43,49,51
	7.1	Identities	7,9,13-17,21,29-45,49,53,67,81,83,91-95
	Midterm Exam Wednesday, June 30, 12pm-2pm		
July 5	Holiday		
	7.1	FINISH	
	7.2	Addition/Subtraction Formulas	21-33,59,61
	7.3	Double/Half Angle Formulas	5-13,25,29,37,41,55,57,73,74,75
July 12	7.3	FINISH	
	7.4	Trigonometric Equations	5-9, 13, 17, 19, 25, 31, 37, 41-53
	7.5	Trigonometric Equations	3, 9, 11, 17-25, 35b, 37b, 38b
	8.1	Polar Coord	5-13,23-31,37-61
July 19	1.6	Complex Numbers	19,21,27,29,33-53,57,59,61,67,70,71
	8.3	Polar Form	5-17,21-47,53-57,61-65
	8.4	Parametric Equations	1-11 all, 31-34 all
July 26	9.1	Vectors	5-21,33-47,53-59,67
	9.2	Dot Product	5-35, 45-49
	FINAL EXAM Wednesday, July 28 12pm-2pm		

Math 1230 Student Learning Outcomes
Students should be able to:

Course Goal #1: Communication
Addresses UNM Core Area 2/HED Area II: Mathematics (Algebra Competencies)
        SLO 1: Use correct mathematical notation and terminology.
        SLO 2: Read and interpret graphs.

Course Goal #2: Trigonometry of Real Numbers
Addresses UNM Core Area 2/HED Area II: Mathematics (Algebra Competencies)
        SLO 1: use the unit circle to define the six trigonometric functions.
        SLO 2: graph the sine, cosine, and tangent functions.
        SLO 3: fit a sine or cosine function to a given graph.

Course Goal #3: Trigonometry of Angles
Addresses UNM Core Area 2/HED Area II: Mathematics (Algebra Competencies)
        SLO 1: work with radians and to solve circular motion problems.
        SLO 2: solve right triangles. They will be able to draw a sketch in an applied problem when necessary.
        SLO 3: solve non-right triangles using the law of sines and the law of cosines.

Course goal #4: Analytic Trigonometry
Addresses UNM Core Area 2/HED Area II: Mathematics (Algebra Competencies)
        SLO 1: prove trigonometric identities.
        SLO 2: apply addition and subtraction, double-angle and half-angle formulas.
        SLO 3: graph the inverse sine, cosine, and tangent functions.
        SLO 4: solve problems that require the inverse trigonometric functions.
        SLO 5: solve trigonometric equations. These may require the formulas outlined in SLO 2.
        SLO 6: S work with the trigonometric form of complex numbers. This includes DeMoivre's formula.

        SLO 7: work with the Euler form $r \cdot e^{i\theta}$ of complex numbers.
        SLO 8: 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

Course goal #5: Analytic Geometry
Addresses UNM Core Area 2/HED Area II: Mathematics (Algebra Competencies)
        SLO 1: 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.
        SLO 2: graph parametric equations in two dimensions that involve trigonometric functions.