Math 1230 TRIGONOMETRY Spring 2023

Instructor: Precious Andrew email: pandrew@unm.edu
CRN: 51445 Class Meets: Fully Online

Office Hours/Study Sessions **(feel free to stop by!)**: Tuesdays and Thursdays 1:15-3:00 in-person at Valencia Campus, Room Arts and Sciences 123 (A123). Online via Zoom (See hours in Canvas) or by appointment.

Course Description:
Welcome to a study of trigonometry! Together we'll explore the definitions of the fundamental trig functions using both the right triangle and unit circle approaches. We'll evaluate and graph trig functions and prove trigonometric identities, including double angle identities. We'lll study the inverse trigonometric functions and apply our knowledge of right angle trigonometry and the laws of sines and cosines to applications. We'll wrap up the course with a study of complex numbers and 2D vectors.

Textbook: **Ebook** - Pre-calculus Mathematics for Calculus, **7th Edition**, Stewart, Redlin, Watson

Prerequisite: Grade of C (not C-) or better in Math 1220.

MECS Division Chair: Ariel Ramirez; aramirez8@unm.edu

Grades: Your grade will be based on the following allocation of points.

Worksheets/Assignments	100 points
Midterm Exam	100 points
Final Exam	150 points
Total	**350 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 watching online lectures for each section**. Lectures are posted in Canvas via YouTube. These lectures should be watched in their entirety just as if you were in a classroom lecture. You should 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 once per week – see the assignments posted in Canvas for due dates. 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 Canvas. Worksheets must be submitted as one readable pdf file. You will print each worksheet, complete it, then use a scanner or 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 may not use your own paper for the worksheets – you need access to either a printer or a tablet to complete the worksheets.** Note that most worksheets are already posted in Canvas. This means if you'll have difficulty accessing a printer, you could have them printed up mostly all at one time if necessary. The worksheets are designed to follow along with the lectures closely. I suggest filling them in as you watch the lectures.

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 e-textbook, located in Canvas by clicking on the Redshelf link**. These are all odd problems, so you have the answers. Thus, it wouldn't make sense for me to grade these. These are for you to practice. **If you don't do these, you are very unlikely to succeed in the class. You need more practice than just the worksheets.**

4 - **You will complete a written midterm and a cumulative final.** These exams will appear in Canvas at the designated times. You will print the exam and complete it, then upload a pdf of your completed exam 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 or scientific calculator, phone, internet search, etc. You may not consult with anyone or receive help on the exams.** 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 this on the exams 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 for exams: Midterm Exam Friday, March 10, 3pm-5pm
Final Exam Friday, May 5, 3pm-5pm

Calculator/Notes Policy: Scientific/graphing **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.

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.

Extra Credit is not offered. Please do not ask for any extra credit. Instead, boost your grade by doing as well as possible on worksheets and assignments. Feel free to come by office hours to work on them with me!

Attendance: Attendance is mandatory. If a student has more than three unexcused absences, he/she may be dropped from the course. **In an online course, not submitting an assignment will 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. **Keep me updated of any extenuating circumstances.**

Credit-hour statement: This is a three credit-hour course delivered in an entirely online modality over 16 weeks during the Fall 2022 semester. Please plan for a minimum of 9 hours per week to learn course materials and complete assignments.

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: Registration deadlines are published by the Office of the Registrar in the schedule of classes: www.registrar.unm.edu.

Grade mode and Withdrawals: You must select your grade mode (Letter Grade, CR/NC, or Audit) within the first 2 weeks of the semester. Students who are in the regular grade mode and who withdraw after the end of week 3 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. Students who are in the CR/NC grade mode and who withdraw after the end of week 3 will receive a grade of "W". If you do not withdraw (but stop attending), you will receive a letter grade of NC.

Accessibility Statement and Accommodations: UNM is committed to providing equitable access to learning opportunities for students with documented disabilities. As your instructor, it is my objective to facilitate an inclusive classroom setting, in which students have full access and opportunity to participate. To engage in a confidential conversation about the process for requesting reasonable accommodations for this class and/or program, please contact the UNM-Valencia Equal Access Services, at (505) 925-8910 and/or The Accessibility Resource Center at arcsrvs@unm.edu or by phone at 505-277-3506.

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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
- Veteran's Resource Center - vrc@unm.edu
- PASOS Resource Center (505) 925-8546, mailto:pasos@unm.edu. The Resource Center is an on-campus center that serves as a "one-stop" for all non-academic needs of UNM-Valencia students.
- Student Health and Counseling (SHAC) at (505) 277-3136. If you are having active respiratory symptoms (e.g., fever, cough, sore throat, etc.) AND need testing for COVID-19; OR If you recently tested positive and may need oral treatment, call SHAC.
- LoboRESPECT Advocacy Center (505) 277-2911 can offer help with contacting faculty and managing challenges that impact your UNM experience.

Title IX Reporting Obligations: Our classroom and our university should always be spaces of mutual respect, kindness, and support, without fear of discrimination, harassment, or violence. Should you ever need assistance or have concerns about incidents that violate this principle, please access the resources available to you on campus. Please note that, because UNM faculty, TAs, and GAs are considered "responsible employees" by the Department of Education, any disclosure of gender discrimination

(including sexual harassment, sexual misconduct, and sexual violence) made to a faculty member, TA, or GA must be reported by that faculty member, TA, or GA to the university's Title IX coordinator. For more information on the campus policy regarding sexual misconduct, please see: https://policy.unm.edu/university-policies/2000/2740.html.

COVID-19 Health and Awareness: UNM is a mask friendly, but not a mask required, community. To be registered or employed at UNM, Students, faculty, and staff must all meet UNM's Administrative Mandate on Required COVID-19 vaccination. If you are experiencing COVID-19 symptoms, please do not come to class. If you have a positive COVID-19 test, please stay home for five days and isolate yourself from others, per the Centers for Disease Control (CDC) guidelines. If you do need to stay home, please communicate with me; I can work with you to provide alternatives for course participation and completion. UNM faculty and staff know that these are challenging times. Please let me, an advisor, or another UNM staff member know that you need support so that we can connect you to the right resources. Please be aware that UNM will publish information on websites and email about any changes to our public health status and community response

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:** 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:** work with vectors in two dimensions.

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.

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).
Jan 16	MLK Holiday Monday, January 16		
	5.1	Introduction/Unit Circle	1-19,41-49
	5.2	Trigonometric Functions	7-23,39-45,55-69,73,75
Jan 23	5.2	Finish	
	5.3	Trigonometric Graphs I	3,7,11,15,19-23,31,35,36,37,39,43-49,51-53(graph by hand), 77
Jan 30	5.3	Finish	
	5.4	Trigonometric Graphs II	3-13,17,19,23,27,29,35,39-43,47-53
Feb 6	5.4	Finish	
``	5.5	Inverse Trigonometric Functions	3-11, 17, 23, 25, 31-41
Feb 13	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
Feb 20	6.4	Inverse Trigonometric Functions	1-17,21-27,33,35,39,41
	6.5	Law of Sines	3-9,17-21,33-41
Feb 27	6.5	Finish	
	6.6	Law of Cosines	7-15,25,39-43,49,51
Mar 6	Review		
	Midterm Exam Friday, March 10, 3pm-5pm		
Mar 13	Spring Break		
Mar 20	7.1	Identities	7,9,13-17,21,29-45,49,53,67,81,83,91-95
	7.2	Addition/Subtraction Formulas	21-33,59,61
Mar 27	7.2	Finish	
	7.3	Double/Half Angle Formulas	5-13,25,29,37,41,55,57,73,74,75
Apr 3	7.3	Finish	
	7.4	Trigonometric Equations	5-9, 13, 17, 19, 25, 31, 37, 41-53
Apr 10	7.5	Trigonometric Equations	3, 9, 11, 17-25, 35b, 37b, 38b
	8.1	Polar Coord	5-13,23-31,37-61
Apr 17	1.6	Complex Numbers	21, 29-35, 39-69
	8.3	Polar Form	5-17,21-47,53-57,61-65
April 24	8.3	Finish	
	9.1	Vectors	5-21,33-47,53-59,67
May 1	Review		
	Final Exam Friday, May 5, 3pm-5pm		