

THE UNIVERSITY OF NEW MEXICO — LOS ALAMOS
COURSE SYLLABUS
Math 123 TRIGONOMETRY (3 credit hours)

INSTRUCTOR: Mary Anne Beard

TITLE: Trigonometry

NUMBER: Math 123 CRN: 35783

MEETING TIME: Tuesdays, Thursdays: 8:30 – 9:45 AM, Room 608

CONTACT:

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OFFICE HOURS: Mondays 5:15 – 6:15, excluding holidays. Other hours available by appointment.

TEXTBOOK: A Graphical Approach to Precalculus with Limits, 7th edition; Hornsby, Lial, Rockswold; Pearson Publishers. (chapters 9, 10 & 11) This book is also used for Math 121, Math 150 and Math 153.

MyMathLab Access required. **MyMathLab course ID: beard62692**

Catalog Description:

Definition of the trigonometric functions, radian and degree measure, graphs, basic trigonometric identities, inverse trigonometric functions, complex numbers, polar coordinates and graphs, vectors in 2 dimensions.

Prerequisite: Prerequisite: ACT \geq 25 or SAT \geq 570 or MATH 121 or Compass College Algebra $>$ 54.

Course Objectives and Learning Outcomes

Assessment

UNM-Los Alamos conducts ongoing assessments of student learning so it can continue to improve its curriculum to give you the best education possible. The mechanism for this assessment will be selected by your instructor and may include exams, projects or other assignments. The assessment will focus on the learning outcomes listed in this syllabus. The data from this assessment will be collected anonymously. It will be reported to the department, the Office of Instruction and posted on the web. The information collected will be used to make improvements to curriculum and teaching. This assessment is not a reflection of your grade and is not a grading exercise; it is simply an evaluation of how well students are mastering certain skills.

Course Student Learning Outcomes

At the conclusion of the course,

1. Communication: Students will use mathematics as a tool and a language to describe parts of the world and universe in which we live.
2. Trigonometry of Real Numbers: Students will be able to correctly define and use the trigonometric functions as related to the unit circle.
3. Trigonometry of Angles: Students will solve problems using radians, right triangles and non-right triangles.
4. Analytic Trigonometry: Students will use trigonometric identities, formulas, and functions.
5. Analytic Geometry: Students will use polar coordinates and parametric equations.

Learning Skills:

The Course Student Learning Outcomes are assessed using the following Learning Skills.

At the conclusion of this course, the student should be able to:

Course Student Learning Outcome # 1 Communication

Related Skills

1. Use correct mathematical notation and terminology.
2. Read and interpret graphs.

Course Student Learning Outcome # 2 Trigonometry of Real Numbers

Related Skills

3. Use the unit circle to define the six trigonometric functions.
4. Graph the sine, cosine, and tangent functions.
5. Fit a sine or cosine function to a given graph.

Course Student Learning Outcome # 3 Trigonometry of Angles

Related Skills

6. Work with radians and to solve circular motion problems.
7. Solve right triangles and draw a sketch in an applied problem when necessary.
8. Solve non-right triangles using the law of sines and the law of cosines.

Course Student Learning Outcome # 4 Analytic Trigonometry

Related Skills

9. Prove trigonometric identities.
10. Apply addition and subtraction, double-angle and half-angle formulas.
11. Graph the inverse sine, cosine, and tangent functions.
12. Solve problems that require the inverse trigonometric functions.
13. Solve trigonometric equations.
14. Work with the trigonometric form of complex numbers, including DeMoivre's formula.
15. Use Euler form $r \cdot e^{i\theta}$ of complex numbers.
16. Add and subtract vectors in two dimensions, use the dot product to project one vector onto another and to determine the angle between two vectors, and solve a variety of word problems using vectors

Course Student Learning Outcome # 5 Analytic Geometry

Related Skills

17. Use polar coordinates including graphing in polar coordinates and transforming an equation with polar coordinates into one with rectangular coordinates, and vice versa.
18. Graph parametric equations in two dimensions that involve trigonometric functions.

Course Policies

Evaluation Criteria/Grading

Your grade will be based on the following:

- 6% online homework
- 6% written homework
- 6% attendance - calculated using daily attendance problems
- 20% exam 1
- 20% exam 2
- 20% exam 3
- 22% final exam

Please note that homework will be a significant part (12%) of your grade. Online and written homework assignments for a given week will be due the following Tuesday. Online homework problems have been pre-chosen. One does the whole assignment seen on each section. The problems for each section will be available after their due date, until the end of the course, with a potential penalty. **If you don't have time to do the homework, you should not take this class.** Register at <http://pearsonmylabandmastering.com> using access code from your book and use ID: beard62692

Cell phones should be put on vibrate or turned off during class. They may not be used as calculators. Laptops may not be open during class. No cell phones nor laptops will be allowed outside of zipped backpacks during exams. If you are caught **cheating** on an exam, you will receive a zero for that exam and may be asked to drop the class. For you and for your instructor, cheating is a waste of time and money.

Attendance Policy

You are expected to come to all scheduled classes. As seen above, attendance counts for 6% of your final grade. If you have to miss class for illness or work, arrange to get the notes from a classmate. Makeup exams are not given unless prior arrangements are made and agreed upon. Advance notice must be given, when possible, not the day of the exam or assignment. If you decide to stop coming, you will need to drop to avoid an "F" recorded.

Academic Honesty Policy Statement

You are expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, including dismissal, against any student who is found responsible for academic dishonesty. Any student who has been judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course. Academic dishonesty includes, but is not limited to, dishonesty on quizzes, tests, or assignments; claiming credit for work not done or done by others (plagiarism); and hindering the academic work of other students. A brief guide to what constitutes plagiarism and how to avoid it can be found here: <http://losalamos.unm.edu/library/docs/avoiding-plagiarism.pdf>.

You should take care not to leave your computer or thumb drive where others can steal or copy your work or make your files "public." When using a public computer, you should make sure that you erase your work from the computer and remove your thumb drive. **Course Communications**

Response Time Policy

You can expect a response from me within 24 hours on weekdays and 48 hours on weekends to email messages, text messages, or phone calls. When you receive a communication from me, you should attempt to reply within 48 hours.

Unexpected Class Cancellation

If the class has to be canceled due to my illness or an emergency, I will attempt to notify you by email, text, or phone, but that may not be possible. If I'm not present at the beginning of class, you should wait 15 minutes (in case I am simply late), then go to the front desk in Building 1 to see if they have information (available 8-5 M-F). If there is no information, you should assume that class has been canceled for the day and that you are free to leave. When possible, the instructor will call or email students to let them know of a canceled class meeting.

Campus Closings and LoboAlerts

Class will be canceled if UNM-LA closes (e.g., in case of bad weather). Here are several ways to check for closing:

- Call the University switchboard at 505-662-5919 or 1-800-894-5919 and listen for a recorded announcement.
- Check your local TV and radio stations, or check local TV station web sites, e.g., <http://www.kob.com> (Channel 4), <http://www.krqe.com> (Channel 13) or <http://www.koat.com> (Channel 7). If UNM-Los Alamos is not specifically mentioned, the campus has not been closed.

Weather and road conditions vary a lot from place to place in this region, and if you feel that it is unsafe to drive to campus from where you live or work, even if classes have not been canceled, notify me about the reason for your absence, and we'll work it out. Don't jeopardize your safety.

You can receive a text message about campus emergencies via LoboAlerts. Confirm that you are signed up to receive notifications on <http://loboalerts.unm.edu>.

Technical Needs

Computer Requirements

Since this is a computer based class, frequent use of a computer is required. You must have access to a computer and to the Internet, and you will need to be familiar with the use of a browser such as Internet Explorer, Chrome, Edge, Safari, or Firefox. Access at least part time to a broadband (high speed) internet network, such as DSL, cable, wireless, or satellite, is strongly recommended because some of the assignments may involve audio and video clips. You can access a broadband network at many libraries and on campus.

From the UNM-LA campus, you can access the internet from public computers, from computers in computer labs, and from computers in the library. If you wish to use your own computer on campus, you can connect to one of the UNM-LA Wireless networks. Instructions for accessing these are given here:

<http://losalamos.unm.edu/campus-life/computing-services/wireless-network.html>

UNM-LA Computer Account Policy

You are required to have a UNM campus account (NetID). You will use this account to register for classes through MyUNM, <http://my.unm.edu>. This account is also used to read and send e-mail (the UNM email address looks like NetID@unm.edu), print transcripts, check financial status, and check degree progress.

You are **required** to check your UNM email (LoboMail) periodically, because this is the main communication method used by the university. You may forward your LoboMail to another email address; however, this is not encouraged by UNM and not supported by UNM IT personnel.

https://unm.custhelp.com/app/answers/detail/a_id/6701/kw/forward%20lobomail .

You can access your email via MyUNM by clicking on the "MyUNM" link on either the UNM-Los Alamos web page (<http://losalamos.unm.edu>) or the Main Campus web page (<http://www.unm.edu>), or by typing in the web address <http://my.unm.edu>. You must then log in using your NetID and password. Email is available on the "UNM E-mail" tab.

You should be aware of the computer use policies as they affect your education at UNM-LA. See Computer Use Policy links on this page: <http://losalamos.unm.edu/campus-life/computing-services/index.html> .

Computer Support and Resources

Technical and Academic Support

If you are having computer or software problems, you can contact free UNM and UNM-LA technical support in one of the following ways:

- UNM IT Computer Support: 505-277-5757. For hours of operation, see https://unm.custhelp.com/app/answers/detail/a_id/3351 .
- Learn Technical Support: call 505-277-0857, option 2, email learn@unm.edu , or click on “Support” box after logging into Learn
- Web: <http://online.unm.edu/help/learn/support>
- UNM FastInfo: <https://unm.custhelp.com/> (UNM searchable knowledge base)
- UNM-LA IT support: go to <http://losalamos.unm.edu/campus-life/computing-services/index.html>

Academic Support

Academic Support Center (ASC)

The Academic Support Center at UNM-LA offers tutoring and academic help. For more information, go to <http://losalamos.unm.edu/asc/index.html>. Questions related to course organization or setup should be directed to me.

Libraries

You can link to the **UNM-LA Library** web site here: <http://losalamos.unm.edu/library/index.html> . This page contains information about library holdings and services and electronic resources available in the UNM-LA Library.

You can access many electronic resources, including books and journals, through the **UNM Main Campus Libraries** at: <http://library.unm.edu> .

Student Services

Student Services is a central hub of information for prospective, current, and former students to find assistance and answers to questions about admissions, academic advising, registration, financial aid, and other resources on campus. <http://losalamos.unm.edu/faculty-staff/student-services/index.html>

UNM and UNM-Los Alamos Policies

Drop Policy

If students decide to drop the class, it is their responsibility to do so; they should be aware of University-wide posted deadlines for tuition refunds and mandatory assignment of grades. Students should not assume that the instructor will drop them before a deadline if they simply stop attending a live class or logging in to an online class.

Dropping a course may affect students' financial aid status and/or tuition refund. A drop will result in a grade of W. Students who do not officially drop the class will receive the grade earned based on the syllabus grading criteria, which may be an F.

Students' Online Classroom Participation May Be Monitored

Online learning environments provide tools for instructors to monitor students' participation and use of the environment. In addition to seeing all of the work that you submit online, I have access to records of when

you logged in and what course materials you opened and submitted during each session. This data is made available to me to enable evaluation of class participation and to help me identify students having difficulties using the online environment.

Course Evaluations

You will be requested to participate in a course evaluation near the end of the course. UNM-LA requests that all students participate, because the information they provide is helpful in improving courses for future students.

American Disabilities Act

If you have special needs, please inform me as soon as possible so that those needs may be met in a timely manner.

"In accordance with University Policy 2310 and the American Disabilities Act (ADA), reasonable academic accommodations may be made for any qualified student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention, as the instructor is not legally permitted to inquire. The student is responsible for demonstrating the need for an academic adjustment by providing Student Services with complete and appropriate current documentation that establishes the disability, and the need for and appropriateness of the requested adjustment(s). However, students with disabilities are still required to adhere to all University policies, including policies concerning conduct and performance. Students who may require assistance in emergency evacuations should contact the instructor as to the most appropriate procedures to follow. Contact Accessibility Services at 505-661-4692 for additional information." The UNM Accessibility Resource Center's web site is at this link: <http://as2.unm.edu>

The UNM Online Accessibility Support policy statement is available here:

<http://online.unm.edu/help/learn/students/accessibility-support.html>

Sexual Misconduct Policy

In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered "responsible employees" by the Department of Education (see pg 15 - <http://www2.ed.gov/about/offices/list/ocr/docs/qa-201404-title-ix.pdf>). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity (oeo.unm.edu). For more information on the campus policy regarding sexual misconduct, see: <https://policy.unm.edu/university-policies/2000/2740.html>.

Citizenship and/or Immigration Status

All students are welcome in this class regardless of citizenship, residency, or immigration status. Your professor will respect your privacy if you choose to disclose your status. As for all students in the class, family emergency-related absences are normally excused with reasonable notice to the professor, as noted in the attendance guidelines above. UNM as an institution has made a core commitment to the success of all our students, including members of our undocumented community. The Administration's welcome is found on our website: <http://undocumented.unm.edu/>

Other Policies – Student Handbook

UNM-LA follows the UNM policies as stated in the **Pathfinder – Student Handbook**, which can be found at this link: <http://pathfinder.unm.edu/campus-policies/other-campus-policies.html> .

Course Outline

Schedule

We will tentatively cover the following sections on the given days. If we should get ahead or behind, this schedule may be modified.

Jan. 15, 17	pretest, 9.1, 9.2
Jan. 22, 24	9.3, 9.4
Jan. 29, 31	9.5, 9.6
Feb. 5, 7	9.7, 9.8
Feb. 12, 14	Review, Chapter 9 Exam
Feb. 19, 21	10.1,10.2
Feb. 26, 28	10.3, 10.4
Mar. 5, 7	10.5, 10.6
Mar. 12, 14	Spring Break
Mar. 19, 21	Review, Chapter 10 Exam
Mar. 26, 28	11.1, 11.2
Apr. 2, 4	11.3, 11.4
Apr. 9, 11	11.5, 11.6
Apr. 16, 18	11.7
Apr. 23, 25	Review, Chapter 11 Exam
Apr. 30	Review for Final
May 7	Cumulative Final

Written Homework (to be handed in the Tuesday after covered in class and assigned)

- 9.1 (17, 51,77,95,111)
- 9.2 (13,35,55,63,73)
- 9.3 (21,29,39,47,69)
- 9.4 (19,29,43,49,57)
- 9.5 (17,71,85,111,117)
- 9.6 (7,11,57,63,71)
- 9.7 (3,15,19,35,39)
- 9.8 (7,11,17,19,23)

- 10.1 (31,37,55,81,95)
- 10.2 (9,11,45,47,55)
- 10.3 (11,17,31,47,59)
- 10.4 (5,23,67,79,97)
- 10.5 (5,21,30,31,41)
- 10.6 (3,11,13,23,43)

- 11.1 (15,33,41,49,57)
- 11.2 (9,17,31,43,51)
- 11.3 (17,25,51,71,77)
- 11.4 (9,27,35,49,53)
- 11.5 (3,7,23,39,53)
- 11.6 (11,25,39,45,59)
- 11.7 (5,9,17,19,43)