THE UNIVERSITY OF TOLEDO
COLLEGE OF NATURAL SCIENCES AND MATHEMATICS
DEPARTMENT OF MATHEMATICS AND STATISTICS
SYLLABUS
SPRING 2024

COURSE: MATH-1330-002 Trigonometry (CRN 10233)

This course can be challenging. The University has determined that you have the background to be in this class. The University has resources to help you succeed in this class. These resources include me, my office hours, tutoring, and computer learning programs like Knewton Alta. It is my hope that you will let me know if you encounter any problems in this class. You are still developing your intellect. It is hoped that the work that you do in this class, in order to learn the material, will contribute to your developing intellect.

CREDIT HOURS: 3

PREREQUISITES: MATH-1320 with minimum grade of C–, or minimum ACT score of 22, or minimum SAT score of 520, or minimum score of 61 on the math placement test.

PROFESSOR: Jim Anderson (he/him/his)

I have always enjoyed most of the topics in mathematics, but it has been hard for me. I remember my father using toothpicks on a paper plate to help me learn subtraction. I remember in the fourth grade, my teacher had me work on multiplication tables during one recess period because I needed it. I remember as a senior in high school, I struggled with the topic of limits in calculus and most of the other topics in calculus. I had a good teacher. So, the problem was the material itself and trying to understand it. I have worked hard to learn the mathematics that I know today. I hope that you will also put in the effort to learn the material in this class and to get help when you need it.

OFFICE: Online through Blackboard

OFFICE HOURS: Monday   4:00 - 5:00
                           Tuesday   11:30 - 12:30
                           Wednesday   3:30 - 4:30
                           Thursday   12:30 - 1:30
                           Friday   10:00 - 11:00

                           Other times are available by appointment.

E-MAIL: jim.anderson@utoledo.edu

WEBPAGE: http://www.math.utoledo.edu/~janders

DAILY SCHEDULE: The Daily Schedule link on Blackboard will keep you informed on what is being done in class each day.

LECTURE: MWF 11:30 am - 12:25 pm   FH 2230

MATERIALS: All the needed materials for this course are posted on Blackboard.

TEXTBOOK: The textbook is an OpenStax book, titled Algebra and Trigonometry, Second Edition.

COURSE DESCRIPTION: Definitions and graphs of trigonometric functions and their inverses, solving trigonometric equations, applications and topics in analytic geometry. This course is not applicable toward the undergraduate Math major requirements. No credit given for students who have credit for MATH-1340.

COURSE INSTRUCTION: You are to prepare for each class by looking at and working some of the Study Problems. You will **not** turn in the Study Problems. Some of the Study Problems will be discussed in class and then you will work on the Practice Problems and/or the Knewton Alta Practice. The Practice Problems are similar to the Study Problems.   The Knewton Alta Practice will have you do mastery learning of the problems. You can earn a maximum of 50 Bonus Points for the Knewton Alta Practice.

DAILY PROBLEMS: You need to study the material in this class every day and not the day before our exams. If you wait to study the day before an exam, you will be overwhelmed and will probably not do well on it. This is the reason we will have these daily problems. A problem will be given in class each day on the material covered in the previous class. This problem will be similar to problems in the Study Problems, Practice Problems, and to problems to be given on the exams. On each problem, you will receive a score between 0 and 1. The total of all your Daily Problems will determine a score of 50 points for Bonus Points. Your performance on the Daily Problems might be an indication of how you will perform on the exams. **NOTE: The Daily Problems will also be used to keep a record of your attendance in the class.**

COURSE OUTLINE: Your semester grade for this course will be based on the following:

2 Exams (worth 100 pts. each)	200 pts.
Final Exam	150 pts.
TOTAL	350 pts.

Your final exam percentage can be used to replace your lowest exam score if this percentage is higher. The dates for the exams will be announced in class and posted on the Daily Schedule and under the "Exams" link on Blackboard.

BONUS POINTS: You will have a chance to earn bonus points during the semester. In addition to the offerings listed under the "Bonus Points" link on Blackboard, bonus points will be offered on some of the course material that we will use in the class.

GRADE INFORMATION: All your scores and course grade will be posted on Blackboard after the first and second exams and before the Final Exam if time permits.

GRADING CRITERIA:

A	350.0 – 325.5	C	269.4 – 255.5
A–	325.4 – 315	C–	255.4 – 245
B+	314.9 – 304.5	D+	244.9 – 234.5
B	304.4 – 290.5	D	234.4 – 220.5
B–	290.4 – 280	D–	220.4 – 210
C+	279.9 – 269.5	F	Below 210

These numbers could go lower if there is a curve for the exams.

If this course is a prerequisite for your next math course, then you need to earn a C– grade in order to take that course.

WEBPAGE MISTAKES: I want all the material on Blackboard to be mistake free. So, if you find a mistake on any of the material on Blackboard, you will receive one bonus point for notifying me about it by email or stopping by the office during office hours.

EXAM 1: Exam 1 will be given on Friday, February 23 from 11:30 am to 12:25 pm. It will cover Study and Practice Problems 1 - 8, Lessons 1 - 6 in the Lecture Notes, and Pre-Exam (Word, PDF) Problems 1 - 12.

EXAM 2: Exam 2 will be given on Wednesday, April 10, from 11:30 am to 12:25 pm. It will cover Study and Practice Problems 9 - 21, Lessons 7 - 11 in the Lecture Notes, and Pre-Exam (Word, PDF) Problems 13 - 21, 25, and 26.

FINAL EXAM: The Final Exam is comprehensive covering Study and Practice Problems 1 - 24, Lessons 1 - 12 in the Lecture Notes, and Pre-Exam (Word, PDF) Problems 1 - 26 and will be given on Monday, April 29, from 12:30 to 2:30 pm.

CALCULATORS: NO calculators will be allowed for any of the exams. The only time that you will need to use a calculator in this class is when you are asked to approximate an answer on the Study and Practice Problems.

You will not be asked to approximate answers on the exams.

FORMULAS FOR EXAMS: If you use a formula, which has not been used in class or in the course material, you will need to derive the formula. Otherwise, you will not receive any credit for the problem(s) where the formula(s) is (are) used.

ATTENDANCE POLICY: You must attend class. You should arrive for class on time. You should not leave class early. Your attendance will be determined by the Daily Problems. I am required to submit a record of your class attendance with your course grade. You are responsible for all material which you miss if you are absent. Please read the University's Missed Class Policy. If you know that you have to miss a class, you must notify me in writing or by email before your absence. In the case of an emergency, you must notify me as soon as possible. If you have an excused absence, you will be permitted to make up an exam with the appropriate written documentation. There is NOT any make-up work for an unexcused absence. The last day to withdraw from this class is Friday, March 22.

SENSE OF BELONGING: My father is a retired minister. With him being a minister, we moved every two to three years. I have lived in eleven different towns or cities. So, I was continually starting over at a new school and being the new kid on the block. I enjoyed playing sports and was able to quickly make new friends through sports. This experience helped me when I went off to college for the first time. This may be the first time that you are starting over at a new school. So, I know some of the feelings that you have. As you get older, you will discover that this will not be the only time that you start over in your life. Your life will have a new start if you go on to graduate school or start that new job after your college graduation. You will have a new start if you change jobs, get married, have children, or when you buy a house. Life is a journey.

LECTURE NOTES

LEARNING OBJECTIVES:

The objective of this course is to develop your mathematical skills, with emphasis on problems requiring the use of trigonometric functions. At least 70% of the course time will be devoted to these essential outcomes.

- **Representation**: Graphical, algebraic, numerical, and verbal representation of trigonometric and inverse trigonometric functions verbally, numerically, graphically and algebraically.
- **Definitions**: Define the six trigonometric functions in terms of right triangles and the unit circle.
- **Graphs**: Determine whether a trigonometric relation or given graph represents a function; perform transformations on graphs and operations with functions; determine intercepts, domain, range, intervals of monotonicity, vertex of a quadratic, asymptotes, symmetry; and match graphs to trigonometric definitions.
- **Modeling**: Use trigonometric and inverse functions to model a variety of real-world problem-solving applications.
- **Equations**: Solve a variety of trigonometric and inverse trigonometric equations, in degrees and radians for both special and non-special angles; solve application problems that involve such equations.
- **Angles/Triangles**: Express angles in both degree and radian measure. Solve right and oblique triangles in degrees and radians for both special and non-special angles and solve application problems that involve right and oblique triangles.
- **Identities**: Verify trigonometric identities by algebraically manipulating trigonometric expressions using fundamental trigonometric identities, including the Pythagorean, sum and difference of angles, double-angle and half-angle identities.
- **Vectors**: Represent vectors graphically in both rectangular and polar coordinates and understand the conceptual and notational difference between a vector and a point in the plane; perform basic vector operations both graphically and algebraically; solve application problems using vectors.

TOPICS TO BE COVERED: *The learning objective(s) covered by that topic in addition to the Representation learning objective follow(s) in italics.*

1. Radian and Degree Measure *Angles*

2. The Six Trigonometric Functions in Terms of a Right Triangle *Triangles, Modeling*
3. Applications Involving Right Triangles *Modeling*
4. Definition of the Six Trigonometric Functions Using the Unit Circle *Definitions*
5. Reference Angles *Definitions, Angles*
6. Coterminal Angles *Definitions, Angles*
7. The Graphs of the Trigonometric Functions *Graphs*
8. The Inverse Trigonometric Functions *Definitions, Modeling*
9. The Graphs of the Inverse Trigonometric Functions *Graphs*
10. Fundamental Trigonometric Identities
11. Pythagorean Identities
12. Solving Trigonometric Equations *, Modeling*
13. Sum and Difference Formulas *Identities*
14. Double-Angle Formulas *Identities*
15. Half-Angle Formulas *Identities*
16. The Law of Sines *Identities, Modeling*
17. The Law of Cosines *Identities, Modeling*
18. Vectors *Vectors, Modeling*

UNIVERSITY POLICIES:

POLICY STATEMENT ON NON-DISCRIMINATION ON THE BASIS OF DISABILITY (ADA)

The University is an equal opportunity educational institution. Please read The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance.

ACADEMIC ACCOMODATIONS

The University of Toledo is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustments in this course, please contact the Student Disability Services Office (Rocket Hall 1820; 419-530-4981; studentdisabilitysvs@utoledo.edu) as soon as possible for more information and/or to initiate the process for accessing academic accommodations. For the full policy see: http://www.utoledo.edu/offices/student-disability-services/sam/index.html

ACADEMIC POLICIES:

STUDENT PRIVACY

Federal law and university policy prohibits instructors from discussing a student's grades or class performance with anyone outside of university faculty/staff without the student's written and signed consent. This includes parents and spouses. For details, see the "Confidentiality of student records (FERPA)" section of the University Policy Page at
http://www.utoledo.edu/policies/academic/undergraduate/index.html

MISSED CLASS POLICY

If circumstances occur in accordance with "The University of Toledo Missed Class Policy" (found at https://www.utoledo.edu/policies/academic/undergraduate/pdfs/3364-71-14%20Missed%20class%20policy.pdf) result in a student missing a quiz, test, exam or other graded item, the student must contact the instructor in advance by phone, e-mail or in person, provide official documentation to back up his or her absence, and arrange to make up the missed item as soon as possible.

ACADEMIC DISHONESTY
Any act of academic dishonesty as defined by the University of Toledo policy on academic dishonesty (found at http://www.utoledo.edu/dl/students/dishonesty.html) will result in an F in the course or an F on the item in question, subject to the determination of the instructor. Please note that any use of, or visibility of, a cell phone or smart watch (or any other device capable of connecting to the internet or storing information, or anything not approved by the instructor) during a test, quiz or exam will be considered academic dishonesty.

SUPPORT SERVICES:

TECHNICAL SUPPORT
If you encounter technical difficulties with Blackboard, please contact the UT Online Help Desk at (419) 530-8835 or utdl@utoledo.edu.   The Help Desk offers extended hours in the evenings and on weekends to assist students with technical problems. When calling after hours, leave a detailed message, including your Rocket Number and phone number, and a UT Online staff member will respond on the next business day.

Technical questions related to on-campus Internet access, virtual labs, hardware, software, personal website hosting, and UTAD account management can be directed to UT's IT Help Desk at (419) 530-2400 or ithelpdesk@utoledo.edu.

Technical questions related to ALEKS can be directed to ALEKS Technical Support at 1-800-258-2374.

LEARNER SUPPORT
The University of Toledo offers a wide range of academic and student support services that can help you succeed:

Learning Resource Center
Mathematics tutoring is provided online by the Mathematics Learning and Resource Center (LRC), phone number (419) 530-2176.

eTutoring Services
The Ohio eTutoring Collaborative, in partnership with The University of Toledo, now provides online tutoring support for undergraduate UT students. eTutoring Services are offered in a wide array of subjects, including Writing, Math, Calculus, Statistics, Accounting, Biology, Chemistry, and Anatomy and Physiology.

eLibrary Services Portal

The eLibrary is a customized gateway to UT Libraries. It was designed to help you locate the best online library resources without leaving Blackboard.

Student Disability Services

Student Disability Services provides accommodations and support services to students with disabilities.

Counseling Center

The Counseling Center is The University's primary facility for personal counseling, psychotherapy, and psychological outreach and consultation services. The Counseling Center staff provide counseling (individual and group), mental health and wellness programming, and crisis intervention services to help students cope with the demands of college and to facilitate the development of life adjustment strategies.

Military Service Center

UT's Military Service Center recognizes the sacrifices of our service members and their families and is dedicated to helping them achieve continued success in life. They provide accessible educational and degree completion opportunities and a wide range of customized support services, including educational benefit processing, mentoring, advocacy, and networking.

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Fall 2023 Special Course Expectations During COVID-19 and Flu Season

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Maintaining a safe campus during the ongoing COVID-19 pandemic and flu season remains a top priority. UToledo continues to follow the guidance of the U.S. Centers for Disease Control and Prevention and Ohio Department of Health to keep our campus safe.

ATTENDANCE

The University of Toledo has a missed class policy. It is important that students and instructors discuss attendance requirements for the course. Anyone with a temperature at or above 100.0 degrees Fahrenheit or who is experiencing symptoms consistent with COVID-19 or the flu should not come to campus until symptoms abate. It is recommended that the student do a self-administered COVID test or contact their primary healthcare provider or the University Health Center at 419.530.3451 or Health Science Campus Student Health and Wellness Center at 419.383.5000 to be treated. Free Over the Counter COVID-19 tests are available at various locations across both campuses including, many residence halls at the main desk, both Rec. Centers, and the Student Affairs Office in the Student Union. For more information on the symptoms of COVID-19, along with the differences of flu vs. COVID-19 please click link for the latest CDC guidelines on symptoms and testing.

Testing is available for students who are experiencing symptoms of COVID-19 on both Main Campus and Health Science Campus. On Main Campus, no appointment is needed. Symptomatic students should go the University Health Center, door 2 at the front of the building and call 419.530.3451 to notify the staff. You will be immediately let into the sick area for COVID testing. On the Health Science Campus, symptomatic COVID testing is done at UTMC by appointment only, call 419.383.4545 for an appointment.

Absences due to testing positive for COVID-19 are considered excused absences. Students should notify their instructors and follow the protocols summarized in this document on Navigating COVID-Related Course Concerns. If a student has been exposed to someone with COVID-19, they should wear a mask for 10 days and test at day 5, but they DO NOT have to quarantine and can still attend classes. Click here for the most up to date CDC Exposure Guidelines.

In the event that you have tested positive for COVID-19 please review the CDC guidance on isolation and precautions for people with COVID-19 and report the disclosure to the Division of Student Affairs by emailing StudentAffairs@utoledo.edu or by connecting with their on-call representative at 419.343.9946. Disclosure is voluntary and will only be shared on a need-to-know basis with staff such as in the Office of Student Advocacy and Support, The Office of Residence Life, and/or the Office of Accessibility and Disability Resources to coordinate supportive measures or to assist the student as needed.

FACE COVERINGS

Face coverings are currently not required while on campus, but students should feel free to wear them as risk of exposure to individuals with COVID, the flu, or other respiratory illnesses is ongoing. To maintain campus safety the health experts on campus will continue to monitor the situation as infection rates fluctuate, and changes to this policy may be made after consulting CDC and County Health Department guidelines.

Face masks ARE required at UTMC (including the cafeteria) and in all University clinics including the Main Campus Health Clinic Building. Health science students must also follow all COVID and other health requirements of the particular clinical settings in which they have clinical experiences.

Keep in mind, if your instructor gets COVID, the flu, or other respiratory illnesses, the class will be held online if the instructor is physically able to do it. Otherwise, you will have a substitute instructor if one is available.

VACCINATION

To promote and protect the health and safety of our campus, the University requires all students and employees to be fully vaccinated against COVID-19 or have an approved exemption. Students new to UToledo are required to be fully vaccinated or have an approved exemption within eight weeks of the first day of classes in their first semester.

Full vaccination is defined as having received all recommended doses in the primary COVID-19 vaccination series. Proof of vaccination should be shared through the University's secure vaccine registry portal. Exemption request forms also can be downloaded and submitted through the portal. The University is strongly encouraging all members of the campus community to receive a COVID-19 booster shot when eligible.

Students can receive a COVID-19 vaccine on Main Campus at the Main Campus Pharmacy and on Health Science Campus at the outpatient pharmacy in the UTMC Medical Pavilion. For more information, call the Main Campus pharmacy at 419.530.3471 or the UTMC outpatient pharmacy at 419.383.3750.

SPECIAL NOTES

It's important to note, that based on the unpredictability of the COVID-19 virus, things can change at any time. So please be patient and understanding as we move through the semester. Please refer to https://www.utoledo.edu/coronavirus/ on a regular basis for updates to current requirements or mandates. I also ask that you keep me informed of concerns you may have about class, completing course work/assignments timely and/or health concerns related to COVID.