MAC1114 Trigonometry
Sections: 4C65, 4C66
Summer B 2024

I. General Information

Class Meetings

- This is an online course. All materials can be found on the Canvas course page.
- Office hours are held via Zoom. The Zoom links for office hours are on the Canvas page.

Instructors

- Name: Avi Mukhopadhyay
- Office: LIT417
- Office Hours: See Canvas
- Email: mukhopadhyay.avi@ufl.edu

- Name: David Maynoldi
- Office: LIT431
- Office Hours: See Canvas
- Email: david.maynoldi@ufl.edu

Course Description & Objectives

This course is the sequel to MAC1140 Precalculus Algebra and serves as an introduction to Trigonometry. Topics include a basic introduction to trigonometric functions, graphing trigonometric functions, inverse trigonometric functions, and analytic trigonometry. Although this course has no official UF course prerequisite, it assumes prior knowledge of intermediate algebra (Algebra 2 from high school). Students should be able to do arithmetic **without** a calculator.

After completing this course, students will be able to define and analyze trigonometric functions, their inverses, their graphs, and their properties, formulate mathematical models and solve problems using trigonometric functions and their inverses, trigonometric equations, right triangle trigonometry, and various trigonometric formulas (e.g., laws of sines and cosines, sum difference, multiple angles, product-to-sum), and verify trigonometric identities. They will also develop and solve mathematical models of real-world word problems involving trigonometric functions and communicate mathematical solutions clearly and effectively.

General Education Credit

- Mathematics

This course accomplishes the General Education objectives of the subject area listed above. A minimum grade of C is required for General Education credit. Courses intended to satisfy General Education requirements cannot be taken S-U.

Course Materials

Textbook: There are no required textbooks for this course; we will be using lecture notes and videos provided in Canvas. However, an open-resource textbook which is a good source for additional explanations and supplementary exercises is available here: https://d3bxy9euw4e147.cloudfront.net/oscmsprodcms/media/documents/Precalculus-OP_9wwF7YT.pdf

Online Homework: In this course we will use the online platform, Xronos, which has been developed at UF and is supported by the Office of the Provost and the College of Liberal Arts and Sciences. Xronos is accessible through the Canvas site. More details will be provided in Canvas.

Calculators: A calculator is **NOT** required for this course. Furthermore, a calculator is prohibited during all exams. It is recommended that students do NOT use calculators during any assignments so that they are prepared for the exams.

Honorlock: Honorlock is an online proctoring service that allows students to take exams on-demand 24/7. There are no scheduling requirements or fees. You will need a laptop or desktop computer with a webcam, a microphone, and a **photo ID**. The webcam and microphone can be either integrated or external USB devices. Honorlock requires that you use the Google Chrome browser and that you must add the Honorlock extension to Chrome.

For further information, FAQs, and technical support, please visit Honorlock.

Minimum Technology Requirements: The University of Florida expects students entering an online program to acquire computer hardware and software appropriate to their degree program. Most computers can meet the following general requirements. A student's computer configuration should include:

- Webcam
- Microphone
- Broadband connection to the internet and related equipment (cable/DSL modem)
- Microsoft Office Suite installed (provided by the university)

Individual colleges may have additional requirements or recommendations, which students should review before starting their program.

Minimum Technical Skills: To complete your tasks in this course, you will need a basic understanding of operating a computer and using word processing software.

Materials and Supply Fees: You do not need to purchase any textbook or access code for this course.

II. Graded Work

Description of Graded Work

Assignment	Assignment Description	General Education Mathematics SLOs Met	% of Grade
Quizzes	*There will be twelve quizzes, one associated to each module. There will also be three exam preps, one before each exam. These are done on Canvas. The quizzes are timed, and you have 2 attempts per quiz. For the exam prep, you have unlimited attempts before it is due. Only your best 12 of 15 scores will count.*	*Communication, Content, Critical Thinking*	**20%**
Xronos Homework	*Homework will be completed through the online platform Xronos. This program should only be accessed through an assignment link in Canvas. There will be twelve homework assignments, one associated to each module. You have unlimited attempts on the homework before it is due.*	*Communication, Content, Critical Thinking*	**20%**
Three Exams	*The exams will be done on Canvas and proctored with Honorlock. The exam dates and modules covered are listed in the weekly schedule below. Each exam opens at 12am and closes at 11:59pm on exam day. Once you start an exam, you have 90 minutes or until 11:59pm (whichever is sooner) to finish it. You are **NOT** allowed to use calculators or unauthorized notes on exams.*	*Communication, Content, Critical Thinking*	**60% (20% per exam)**

Grading Scale

Your final grade will be given using the following grading scale. For information on how UF assigns grade points, visit:
https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

A	89.50-100%		C	69.50-73.49%
A-	86.50-89.49%		C-	66.50-69.49%
B+	83.50-86.49%		D+	63.50-66.49%
B	79.50-83.49%		D	59.50-63.49%
B-	76.50-79.49%		D-	56.50-59.49%
C+	73.50-76.49%		E	0-56.49%

A minimum grade of C is required for General Education credit. Courses intended to satisfy General Education requirements cannot be taken S-U.

Participation

Class participation is strongly recommended. Students who watch lecture videos, participate in discussions, and work through practice problems are more likely to do well in the course.

III. Annotated Weekly Schedule

The schedule below is tentative; any changes will be announced on Canvas. All assignments are due at 11:59pm (Gainesville, FL time) on the indicated due date.

Week	Topics/Modules	Summary	Assigned Work Due
Week 1	Module 0: Orientation **This must be completed before accessing the rest of the course material.	We will go over general information to help get started with the course. We will also review some basic concepts in functions and algebra.	Orientation Quiz, Needs Assessment (Your scores on the Orientation assignments will not count towards the final grade.)

Week 1	Module 1: Angles and Circles Module 2: Trigonometric Functions	M1: We will discuss how to draw angles in standard position, convert between degrees and radians, find coterminal angles, find the length of a circular arc, and use linear and angular speed to describe motion on a circular path. M2: We will evaluate the trigonometric functions sine, cosine, secant, cosecant, tangent, and cotangent at special angles, and identify the domain and range of trigonometric functions. We will also analyze properties of even and odd trigonometric functions, and how to recognize and use these properties.	Xronos 1, Quiz 1 Xronos 2, Quiz 2 Due. July 11 (should be done by July 5)
Week 2	Module 3: Right Triangles and Reference Angles Module 4: Graphs of Sine and Cosine Functions	M3: We will calculate trigonometric values of internal angles of a right triangle using side lengths and cofunction properties of complementary angles. We will determine the reference angle of arbitrary angles, and calculate trigonometric values of angles using principle trigonometric identities and reference angles. M4: We will analyze the graphs of variations of the sine and cosine function, including shifts and stretches of sine and cosine curves. We will find the amplitude, period and frequency of these graphs.	Xronos 3, Quiz 3 Xronos 4, Quiz 4 Exam 1 Prep Due. July 11

Week 2	**Exam 1** covers Modules 1-4		**Exam 1** on July 12
Week 3	Module 5: Graphs of Cosecant, Secant, Tangent and Cotangent Functions Module 6: Inverse Trigonometric Functions	M5: We will analyze the graphs of the secant, cosecant, tangent, and cotangent trigonometric functions, and of their variations (shifts and stretches). M6: We will analyze the inverse sine, cosine, and tangent functions, find the exact value of expressions involving the inverse sine, cosine, and tangent functions, and find exact values of composite functions with inverse trigonometric functions.	Xronos 5, Quiz 5 Xronos 6, Quiz 6 Due. July 25 (should be done by July 19)

Week 4	Module 7: Inverse Trigonometric Functions - Applications and Models Module 8: Trigonometric Equations and Identities	M7: We will use inverse trigonometric functions to solve for unknown angles in right triangles, and solve for unknown distances using bearings. M8: We will use the principle trigonometric identities to simplify trigonometric expressions and to verify other identities.	Xronos 7, Quiz 7 Xronos 8, Quiz 8 Exam 2 Prep Due. July 25
Week 4	**Exam 2** covers Modules 5-8		**Exam 2** on July 26
Week 5	Module 9: Solving Trigonometric Conditional Equations Module 10: Sum and Difference Formulas - Product to Sum Formulas	M9: We will apply trigonometric identities and the unit circle to solve trigonometric equations of a linear type, of a quadratic type, and of multiples of angles. M10: We will apply the sum and difference formulas to calculate exact values of the sine, cosine, and tangent functions, and apply product to sum formulas to simplify and calculate exact values of trigonometric expressions.	Xronos 9, Quiz 9 Xronos 10, Quiz 10 Due. August 8 (should be done by August 2)
Week 6	Module 11: Double Angle, Power Reducing, and Half Angle Formulas Module 12: Law of Sines and Law of Cosines	M11: We will apply double-angle, power reducing, and half-angle identities to solve trigonometric equations, and apply half-angle identities to calculate exact values of trigonometric functions on angles. M12: We will use the law of sines and law of cosines to solve for unknown lengths of sides and measures of angles of non-right (oblique) triangles.	Xronos 11, Quiz 11 Xronos 12, Quiz 12 Exam 3 Prep Due. August 8
Week 6	**Exam 3** covers Modules 9-12		**Exam 3** on August 9

IV. Student Learning Outcomes (SLOs)

At the end of this course, students will be expected to have achieved the General Education learning outcomes as follows:

- **Content:** Students demonstrate competence in the terminology, concepts, theories, and methodologies used within the discipline. After completing this course students will be able to employ strategies in solving problems involving trigonometric functions and their inverse functions, trigonometric equations, right triangle trigonometry, and various trigonometric formulas (e.g., laws of sine and cosine, sum difference, multiple angles, product-to-sum), and verifying trigonometric identities. (Content for Gen Ed Math, assessed through homework, quizzes, and exams)

- **Communication**: Students communicate knowledge, ideas, and reasoning clearly and effectively in written and oral forms appropriate to the discipline. Throughout this course students will formulate and solve mathematical models using trigonometric functions and their inverses, right triangle trigonometry, trigonometric equations, and trigonometric formulas (laws of sine and cosine, sum difference, multiple angles, product-to-sum) and will communicate mathematical solutions clearly and effectively. (Communication for Gen Ed Math, assessed through homework, quizzes, and exams)

- **Critical Thinking**: Students analyze information carefully and logically from multiple perspectives, using discipline-specific methods, and develop reasoned solutions to problems. In this course, students will reason in abstract mathematical systems, and they will develop solutions to mathematical models using trigonometric functions and their inverse functions, right triangle trigonometry, the laws of sine and cosine, and various other trigonometric formulas (sum difference, multiple angles, product-to-sum) to solve problems. They will also develop and solve mathematical models of real-world word problems involving trigonometric functions. (Critical Thinking for Gen Ed Math, assessed through homework, quizzes, and exams).

V. Policies

Make-up Policies

Requirements for make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: https://catalog.ufl.edu/UGRD/academicregulations/attendance-policies/

The above policies include a list of acceptable reasons for failing to engage in class; generally, an acceptable reason is something that is beyond your control. Non-emergency travel and personal schedule conflicts are **NOT** acceptable reasons to miss an assignment. Technical difficulties are generally **not** an acceptable reason to miss an assessment; students should have contingency plans in case any such issues arise (see below).

The specific make-up policies for this class are as follows:

- **Exams:** If you are unable to take an exam on the assigned date for an acceptable reason (see above), email the instructors as soon as possible. You must provide documentation verifying the situation before taking the make-up exam. For make-up Exams 1 or 2 taken within a week of the exam date, no documentation results in a 15% penalty on the make-up. Otherwise, no documentation results in a zero on the exam.

- **Homework and Quizzes:** An extension will only be considered if you have an acceptable reason (see above) for not completing the assignment on time, and it is requested before the due date or as soon as conditions permit. No homework or quizzes will be accepted after August 8.

Students Requiring Accommodation

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

UF Evaluations Process

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens and can complete evaluations through the email, they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code
specifies several behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructors in this class.

Honor Code

All students are required to abide by the Academic Honesty Guidelines which have been accepted by the University. The academic community of students and faculty at the University of Florida strives to develop, sustain and protect an environment of honesty, trust and respect.
Students are expected to pursue knowledge with integrity.

Violations of the Academic Honesty Guidelines shall result in judicial action and a student being subject to the sanctions in paragraph XIV of the Student Code of Conduct. The conduct set forth hereinafter constitutes a violation of the Academic Honesty Guidelines (University of Florida Rule 6C1-4.017). You may find the Student Honor Code and read more about student rights and responsibilities concerning academic honesty at the link https://sccr.dso.ufl.edu

Counseling and Wellness Center

Contact information for the Counseling and Wellness Center: http://www.counseling.ufl.edu/ , 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Free Help Resources

For all concerns with this course, please talk to your instructor! Office hours will be posted and are regular times when they are available to answer questions, discuss grades, advise students on future classes, or help students in any available way. You do not need an appointment to visit during office hours. If you need to meet outside of office hours, please contact your instructor for an appointment. There is also a 'Course Questions Forum' on the Canvas course page, where you can post questions you have. The instructors will monitor this forum and respond to student questions. If you have a question, you should check the forum to see if it has already been answered.

In addition to visiting the office hours of your instructor for help and posting on the 'Course Questions Forum', the **Little Hall Math Lab** located in Little Hall 215 offers **free drop-in assistance** with math homework Monday through Friday, and other resources. It is staffed by mathematics graduate students and undergraduate tutors. Please note that this space is not designed for intense one-on-one tutoring, but rather as a resource for quick questions and explanations. You should not expect the staff to help you if you have not at least begun your homework and have specific questions. Moreover, they absolutely will not assist you with quizzes or any other such work.

More details are available here: https://oas.aa.ufl.edu/students/tutoring/

Incomplete Policy

A student who has completed a major portion of the course with a passing grade but is unable to complete the final exam or other course requirements due to illness or emergency may be granted an incomplete, indicated by a grade of I. This allows the student to complete the missed assignments (typically the final exam) during the following semester. You must contact the instructor before the final exam (or as soon as conditions allow you in case of an emergency) to sign an incomplete grade contract, and you must provide documentation of the extenuating circumstances preventing you from completing the final course assignments. The grade of I does not allow a student to redo work already graded or to retake the course. See the official policy at http://www.math.ufl.edu/department/incomplete-grades/.

Technical Difficulties

For technical difficulties with Canvas, please contact the UF Help Desk at:

Website: https://helpdesk.ufl.edu
Phone: (352) 392-HELP (4357)
Walk-in: HUB 132

Note: Any requests for extensions due to technical issues MUST be accompanied by the ticket number received from the Help Desk when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request an extension.

Class Demeanor and Netiquette

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats.

In-Class Recordings

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Changes

We reserve the right to make changes as necessary. Any such changes will be announced on Canvas.