MAC1114: Trigonometry
Section 3056, Fall 2024

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1. General Information

Instructor: Recep Celebi
Office: Little Hall 429
Office Hours: T9 (4:05-4:55), R8 (3:00-3:50) and by appointment
Email address: rcelebi@ufl.edu

Class Location: Matherly Hall 0013
Class Meeting Time: TR 7 (1:55-2:45)

Course Description and 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 sine and cosine, 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: This course accomplishes the General Education objectives of the subject area **Mathematics (M)**. A minimum grade of C is required for General Education credit. Courses intended to satisfy General Education requirements cannot be taken S-U.

Required Materials: There are no required textbooks for this course; we will be using lecture notes provided in Canvas. However, an open-resource textbook which is a good source for additional explanations and supplementary exercises is available here. Also, 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 and in class. Lastly, there are no material and supplies fees.

2. 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, lecture and discussion 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).

3. Graded Assignments

✎ **Exams:** There will be three exams, one for each unit of the course. The exams will be administered during our regular class meeting time and location. The format of each exam may vary, but it is likely that there will be few or no multiple-choice questions. Exam dates are **Thursday, September 19th, Thursday, October 17th, and Tuesday, December 3rd.**

⚠ **Cell phones and other electronic devices must be turned off and kept out of sight during exams. If any device rings, buzzes, or causes a distraction, it will be considered a breach of exam integrity, and your exam score will be reduced to 0.** No exam grades will be dropped.

✔ General Education Mathematics SLOs met: content, communication, critical thinking

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✎ **Take-home Quizzes:** A take-home quiz will be assigned during specific weeks. Each quiz will consist of several problems covering content discussed up to that point. These problems will be graded based on **your ability to justify your reasoning**, rather than simply arriving at the correct answer. You will scan your handwritten work into a PDF format and submit it via the assignments tab on Canvas. The quizzes will be available starting Tuesday at 12:00 a.m. and must be submitted by Friday at 11:59 p.m.

✔ General Education Mathematics SLOs met: content, communication, critical thinking

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💻 **Xronos Online Homework:** In this course, we will use Xronos, an online platform developed by the UF Math Department. Online homework assignments will be assigned in batches based on each unit. All assignments for a specific unit are due the day before the corresponding exam at 11:59 p.m.

⚠ You **MUST** access Xronos via the Canvas **Assignments** tab each time you work on a Xronos homework assignment. Failure to do so will result in your homework grades not syncing back to the Canvas gradebook, and you will not receive credit for your completed problems.

⚠ **Do not try to complete an assignment in one sitting; start early** instead of waiting until the due date to avoid missing the deadline. Also, be aware that some questions might require more time and effort to solve. Remember that the **Due Date** is not the **Do Date**. DO NOT wait until the last hour to complete your assignment. Internet connectivity can be unreliable, and no extensions will be granted for technical issues.

✔ General Education Mathematics SLOs met: content, communication, critical thinking

4. Grading Scheme and Policies

Your grade will be based on the following components:

- **Written Homework:** 20%
- **Xronos Homework:** 20%
- **3 Exams (20% each):** 60%

Your final grade will be rounded to the nearest hundredth (denoted by T), and a letter grade will be assigned using the following scale:

A	**if** $T \geq 90.00\%$	**C+**	**if** $T \geq 70.00\%$
A-	**if** $T \geq 87.00\%$	**C**	**if** $T \geq 67.00\%$
B+	**if** $T \geq 84.00\%$	**C-**	**if** $T \geq 60.00\%$
B	**if** $T \geq 80.00\%$	**D**	**if** $T \geq 50.00\%$
B-	**if** $T \geq 77.00\%$	**E**	**if** $T < 50.00\%$

⚠ A grade of **C-** DOES NOT give Gordon Rule or General Education credit.

⚠ **Please note that percentage cutoffs for letter grades above will be followed strictly. For example, a grade of 66.99% will be recorded as a C- and will not be rounded up to a C. This policy ensures clarity and fairness; without a fixed standard, it would be challenging to determine a fair cutoff point for rounding for all students.**

⚠ Remember, grades are not given; they are earned. Your performance determines the grade you achieve.

⚠ All grades are posted in the Canvas gradebook. You are responsible for verifying the accuracy of these grades. **You have one week after a score is posted to contact me regarding any grade concerns.** Per UF policy, all grade disputes must be communicated through Canvas messages due to security and privacy concerns, rather than via email. I will not consider any grading disputes nor make any grade adjustments at the end of the semester.

For information on how UF assigns grade points, visit the **Grades and Grading Policies page of the UF Undergraduate Catalog**.

Extra Credit: Each exam will have more than 100 points available, providing built-in opportunities for extra credit. No additional extra credit opportunities will be offered outside of these bonus points on the exams.

5. Attendance and Make-up Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. **Click here** to read attendance policies laid out in the UF Undergraduate Catalog.

- Attendance in class is mandatory.
- **General Make-up Policy:** All requests for make-up work due to planned absences must be accompanied by **supporting documentation** and submitted **at least one week in advance**. For unplanned absences due to accidents or emergency situations, please contact me as soon as possible. For absences due to religious observance, no documentation is required; however, notice must still be given at least one week in advance.
- Make-up exams will be administered at the end of the semester on **Thursday, December 9th**. The time and location will be announced later.
- Make-ups are not available for Xronos online homework and take-home quizzes.

6. Getting Help

As your instructor, I am your primary source of help. You are welcome to attend my office hours for assistance with any course-related issues, or simply to chat about life. If you cannot make it during these times, please feel free to set up a private appointment.

The Math Help Center in **LIT 215** is another excellent resource available to you. This **free** drop-in tutoring service is staffed by experienced undergraduate and graduate students in mathematics. Starting Monday, August 26th, it will be open from periods 4 to 9 (10:40 AM to 4:05 PM).

The College of Liberal Arts and Sciences (CLAS) Academic Resources, located at 1317 Turlington Hall, offers a variety of services designed to help students succeed. These services include free appointment-based tutoring, assistance with study skills and learning strategies, and exam reviews featuring review problems, recordings, and access to old exam papers. For more information, click here to visit their website.

Students with disabilities who experience learning barriers and wish to request academic accommodations should connect with the **Disability Resource Center (DRC)**. It is important for students to share their accommodation letters with me and discuss their access needs as early as possible in the semester—ideally **at least one week before the first exam**—to ensure there is adequate time to make the necessary accommodations.

7. Other Policies

Academic Honesty: 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 Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Click here to read the Conduct Code. If you have any questions or concerns, please consult with me.

In-class Recording: 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.

Evaluations: 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/.

Tentative Schedule Outline

Unit 1	Week 1: Introduction and Algebra Review	We'll review basic concepts from algebra such as the definition of a function, graphing functions, inverse functions, and exponential and logarithm rules.
	Week 2: Angles and Circles	We'll learn how to draw angles in standard position, convert from radians to degrees, find coterminal angles, and use linear and angular speed to describe circular motion.
	Week 3: Trigonometric Functions	We'll learn how to identify the domain and range of the sine and cosine functions, and we'll compute the values of sine and cosine at $\pi/6$, $\pi/4$, and $\pi/3$ radians. We'll then use reference angles to compute sine and cosine at others angles on the unit circle. These ideas are extended to define the other trigonometric functions secant cosecant, tangent, and cotangent at standard unit circle angles as well as identify their domains and ranges. We'll also learn to use fundamental identities, and how to use properties of even and odd trig functions.
	Week 4: Right Triangle Trigonometry	Here we'll extend the definition of the trigonometric functions to any acute angle using right triangles. We'll also use cofunction identities and learn how to solve applied problems.
	Week 5: Review and Exam 1	Covers all of Unit 1

Unit 2	Week 6: Graphs of Trigonometric Functions	We'll learn how to graph variations of $\sin(x)$ and $\cos(x)$. We'll also learn how to graph variations of the other trig functions: $\tan(x)$, $\sec(x)$, $\csc(x)$, and $\cot(x)$.
	Week 7: Inverse Trigonometric Functions	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.
	Week 8: Trigonometric Equations and Identities	We will verify the fundamental trigonometric identities, and simplify trigonometric expressions using algebra and identities.
	Week 9: Review and Exam 2	Covers all of Unit 2
Unit 3	Week 10: Solving Trigonometric Equations	We will learn the sum and difference formulas for the six trigonometric functions, and apply them to find the exact value of these functions for non-standard unit circle angles.
	Week 11: Sum and Difference Identities	We will learn double angle, power reduction, and half-angle formulas. We'll then see how these can be applied to compute trigonometric functions exactly, verify identities, and simplify expressions.
	Week 12: Other Trigonometric Identities	We will learn how to solve linear and quadratic trigonometric equations. We'll also learn how to solve right triangle problems.
	Week 13: Law of Sines and Cosines	We will learn how to use the Law of Sines and the Law of Cosines to solve oblique triangles, and we'll learn how to solve applied problems.
	Week 14: Review	We will spend this week reviewing Unit 3 material in preparation for Exam 3.
	Week 15: Fall Break	We will enjoy the much deserved break.
	Week 16: Exam 3	Covers all of Unit 3.