MAC1114 Section: 3474
Trigonometry
Spring 25

I. General Information

Class Meetings

- This course meets Tuesday and Thursday Period 7 (1:55-2:45) in Matherly Hall 7

Instructor

- Name: Jacob Levenson (You can address me as “Jacob” in class and in email.)
- Office: Little Hall 413
- Office Hours: Monday Period 6 (12:50- 1:40) Tuesday Period 6 (12:50 – 1:40) Thursday Period 6 (12:50- 1:40) or by appointment
- Email: levenson.j@ufl.edu (per UF policy, please use the Canvas messenger to contact me)

Course Description & Objectives

Trigonometric functions and their properties and graphs, inverse trigonometric functions and their properties and graphs, trigonometric identities, conditional trigonometric equations, solutions of triangles, and applications.

In line with the General Education Student Learning Outcomes, students will learn more about multiple ideas which are foundational in mathematics (content), use abstract reasoning to find solutions to real world problems (critical thinking), and improve their ability to communicate mathematical ideas and solutions (communication).

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.

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.

Required Textbooks

We are going to be using the OpenStax Algebra and Trigonometry 2e book in this course. It is available for free at the following link:
https://openstax.org/details/books/algebra-and-trigonometry-2e

Materials and Supplies Fees: n/a

Students will need to write up their homework and do their semi-quizzes on their own paper.

II. Graded Work

Description of Graded Work

Assignment	Assignment Description	General Education Mathematics SLOs Met	% of Grade
Class Attendance	*Classroom attendance is mandatory and will count for 6 percent of your grade. Students will have three free skips.*	*Communication, Content, Critical Thinking.*	**6%**
Semi-quizzes	*Take-home semi-quizzes will be assigned regularly, consisting of 2-4 problems. These problems will be graded based on your ability to justify your reasoning, not just on your ability to calculate the correct answer. You will scan your handwritten work to a pdf format and submit it in the "Modules" link on Canvas. The semi-quizzes will be available on Wednesday 12:00am and due Friday 11:59pm. Your lowest semi-quiz score will be dropped.*	*Communication, Content, Critical Thinking.*	**20%**

Written Homework	*Homework is to be written up and turned in to me in class on Tuesdays. Your two lowest HW scores will be dropped.*	*Communication, Content, Critical Thinking.*	**14%**
Exams	*Including the final exam, this class has four exams. Your highest three exams will count for 20% each.*	*Communication, Content, Critical Thinking*	**60%**
Extra Credit	*Students will be able to earn up to 1.5% higher of a final grade by posting on the HW discussion boards.*	*Communication, Content, Critical Thinking*	**N/A**

Attendance and Class Participation: Class attendance is mandatory and will count for 6% of your grade. All students will get three free skips. If you miss class for a valid reason, let me know, and I will remove that day from your attendance grade. An example of a valid excuse is a religious holiday. Another example of a valid excuse is sickness. If you are sick, then you will need to send documentation such as a doctor's note.

Students who are egregiously late for class will not receive credit for that day's class.

Excused absences are consistent with university policies in the undergraduate catalog and require appropriate documentation:

https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Semi-Quizzes: On most weeks, students will be required to submit a "semi-quiz." Students will answer 2-4 problems and scan their work to Canvas. You are permitted to use any resource you would like for these semi-quizzes. You can also come talk to me about them. However, I recommend that you treat these like exams by first attempting to do as much as you can without additional resources. Your **lowest semi-quiz score will be dropped**. These semi-quizzes will be graded for accuracy. For full credit, you will need a correct final answer as well as sufficient work to justify your solution.

Written Homework: I will regularly assign problems from the OpenStax book for y'all to write up and submit to me in person on Tuesdays. Homework will be graded for completion. For full credit, students must show their work when necessary. Furthermore, students who write nonsense that is clearly intended just to fill up a page will lose credit. **I will drop your two lowest written homework scores.**

Exams: Including the final, each exam in this course is worth 20%. There are three "regular exams" and one final exam. **Your lowest exam score (out of the four) is dropped.** For example, if your final is lower than the three in-person exams, then the final exam will not be computed in your final grade. Each of the regular exams will be held during our normal 7th period class time in Matherly 7. The final exam will be held Saturday 26 April in Matherly Hall 7 (the same location as our class) from 7:30-9:30 AM.

Extra credit: Students will be able to earn extra credit by asking substantial questions or providing substantial responses in the homework discussion boards on Canvas. The following is not a substantial question: "How do you solve number four?" Likewise, the following is not a substantial answer: "The answer is five."

Grading Scale

A	≥90%		C	≥67%
A-	≥87%		C-	≥64%
B+	≥84%		D+	≥60%
B	≥80%		D	≥57%
B-	≥77%		D-	≥54%
C+	≥74%		E	<54%

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

Your final grade will be rounded to the nearest hundredth and a letter 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/

III. Annotated Weekly Schedule

Week	Topic	Summary	Recommended Reading	Assigned Work Due
Week 1	Angles and Circles	We will discuss how to draw angles in	Section 7.1	None

		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.		
Week 2-3	Trigonometric Functions	First, we will do some right-angle trigonometry and then we will start working with the unit circle. We will find the exact values of the trigonometric functions sine, cosine, secant, cosecant, tangent, and cotangent of arbitrary angles, identify the domain and range of the sine, cosine, secant, cosecant, tangent, and cotangent functions. We will also analyze properties of even and odd trigonometric functions and learn how to recognize and use fundamental identities.	Sections 7.2-7.4	**HW1** is due in class Tuesday 21 Jan **SQ1** is due on Canvas Friday 24 Jan at 11:59PM **HW2** is due in class Tuesday 28 Jan **SQ2** is due Friday 31 Jan on Canvas at 11:59 PM
Week 4 **Exam 1** on Tuesday 4 Feb	Graphs of Sine & Cosine Functions	We will analyze the graphs of variations of the sine and cosine functions and shifts of sine and cosine curves.	Section 8.1	**Exam 1** is in class Tuesday 4 Feb **HW 3** is due in class Tuesday 4 Feb **SQ3** is due Friday 7 Feb on Canvas at 11:59 PM

Week 5	Likely more on graphing sine and cosine and graphs of other trigonometric functions	We probably will do some more with the graphs of cosine and sine. We will analyze the graphs of the secant, cosecant, tangent, and cotangent trigonometric functions and examine variations of such graphs.	Section 8.1 - Section 8.2	**HW4** is due in class Tuesday 11 Feb **SQ4** is due Friday 14 Feb on Canvas at 11:59 PM
Week 6	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.	Section 8.3	**HW5** is due in class Tuesday 18 Feb **SQ5** is due Friday 21 Feb on Canvas at 11:59 pm
Week 7 **Exam 2** in Class Thursday 27 Feb	Exam Week	We will review for **Exam 2** on Tuesday 25 Feb and students will take **Exam 2** on Thursday 27 Feb.	N/A	**HW6** is due in class Tuesday 25 Feb
Week 8	Trigonometric Equations & Identities	We will verify the fundamental trigonometric identities and simplify trigonometric expressions using algebra and the identities.	Section 9.1	N/A
Week 9	Sum & Difference Formulas	We will use the sum and difference formulas for cosine, sine, tangent, and the cofunctions to find	Section 9.2	**HW7** is due in class Tues 11 March **SQ6** is due Friday

		exact values and verify identities.		14 March on Canvas at 11:59 PM
Week 10	Spring Break!	Spring Break!	Spring Break!	Spring Break!
Week 11	Double-Angle, Half-Angle, and Reduction Formulas	We will use double-angle, half-angle, and reduction formulas to find exact values and verify identities.	Section 9.3	**HW8** is due in class Tues 25 March **SQ7** is due Friday 28 March on Canvas at 11:59 PM
Week 12	Sum-to-Product and Product-to-Sum Formulas and Solving Trigonometric Equations	We will express products as sums and sums as products as well as learn techniques of solving trigonometric equations.	Section 9.4-9.5	**HW9** is due in class Tues 1 April **SQ8** is due on Canvas Friday 4 April at 11:59 PM
Week 13 **Exam 3** in class Thursday 10 April	Review on Tuesday, Exam on Thursday	We will review on Tuesday 8 April and take **Exam 3** Thursday 10 April	N/A	**HW10** is due in class Tuesday 8 April **Exam 3** is in class Thurs 10 April
Week 14	Law of Sines and Law of Cosines	We will use the law of sines and the law of cosines to solve oblique triangles and applied problems.	Section 10.1	N/A
Week 15 **Final Exam** on Saturday 26 April 7:30-9:30 AM	Review Week and Final Exam	On Tues 22 April, we will review for the final exam. There is no class on Thursday of this week.	N/A	**HW11** is due Tues 22 April in class **No class** Thurs 24 April The **final exam** will be Saturday 26 April 7:30-9:30 AM in our classroom

Final Exam on Saturday 26 April	Final Exam week			The **final exam** will be Saturday 26 April 7:30-9:30 AM

Important Dates

Exam Dates (all will be held in Matherly 7)
Tuesday 4 February – Exam 1
Thursday 27 February – Exam 2
Thursday 10 April – Exam 3
Saturday 26 April (7:30 – 9:30 am) - Final Exam

Other Important Dates
13-17 Jan – Drop Add
20 Jan – Martin Luther King Jr. Day
15-22 March – Spring Break
11 April – Drop Deadline (W assigned to all Spring courses)
24 – 25 April – Reading Days
26 April – 2 May – Final Exams

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, methodologies, and theories used within the subject area." 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. (Content for Gen Ed Math, assessed through homework, semi-quizzes, exams, and an extra credit discussion board)

- **Communication**: "Students clearly and effectively communicate knowledge, ideas, and reasoning in written or oral forms appropriate to the subject area." Throughout this course, students will "formulate and solve mathematical models" using trigonometric functions and their inverses, right triangle trigonometry, trigonometric equations, and trigonometric formulas (i.e. laws of sines and cosines) and will "communicate mathematical solutions clearly and effectively." (Communication for Gen Ed Math, assessed through homework, semi-quizzes, exams, and an extra credit discussion board)

- **Critical Thinking**: "Students carefully and logically analyze information from multiple perspectives and develop reasoned solutions to problems within the subject area." 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 sines and cosines, and graphing techniques. 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, semi-quizzes, exams, and an extra credit discussion board).

VI. Policies

Attendance and Make-up Policies

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Here is a link to attendance policies: https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

For all planned absences, a student in a situation that allows an excused absence or make-up exam or other assignment must inform the instructor as early as possible prior to the class. For all unplanned absences because of accidents or emergency situations, students should contact their instructor as soon as conditions permit.

In all other cases, or if you are unsure, please e-mail me as soon as feasible. **Absences are generally not excused for non-emergency travel and personal schedule conflicts.** You are required to provide appropriate documentation for absences (except for religious holidays), missed work, or inability to fully engage in class.

Technical difficulties are not generally an excuse for missing an assessment; students should have contingency plans in case any such issues arise (see below).

Students who miss an exam for an inexcusable reason will be permitted to have a make-up exam, but there will be a 15% penalty.
Students are not permitted to submit a late HW assignment or a late semi-quiz without a valid reason. I am flexible about the semi-quizzes. For example, if you submit a SQ on Saturday at 12:35pm, then that is acceptable.

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 Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. See the UF Conduct Code website for more information. If you have any questions or concerns, please consult with the instructor.

Your well-being

I understand that college can be stressful for students. Your well-being is my top priority. Feel free to reach out to me or let me know if something is interfering with your studies – I am here to help.

Free Help Resources

For all concerns with this course, please talk to me! Office hours are posted and are regular times when I am available to answer questions, discuss grades, give advice, 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.

The **Little Hall Math Lab** located in Little Hall 215 offers **free drop-in assistance** with math homework Monday through Friday from 10:30 to 4:00 as well as **test reviews** (I am not sure what they will offer for this course) before each math exam 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) within 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: **https://math.ufl.edu/wp-content/uploads/sites/124/incomplete-grade-contract.pdf** 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.

Calculator Policy

Some homework problems may require a calculator. I think that Wolfram Alpha is a great tool when doing long calculations. Here is a link to Wolfram Alpha: https://www.wolframalpha.com/
Also, Desmos is a useful tool for visualizing graphs. https://www.desmos.com/calculator

Calculators **are not allowed** during the examinations. Also, problems that require calculation by hand (i.e. long division, multiplying 513 times 24) are fair game for exams.

Class Demeanor and Etiquette

Students are expected to treat everyone with respect.

From my experience, students tend to be a bit talkative in afternoon classes. I don't have a problem when students talk with their neighbor, but students occasionally engage in full conversations which can be quite distracting for everyone else in the class.

If you are being too talkative, then I will ask you to move or give you a warning. If a student continues to talk excessively, then they will lose their attendance points for the day and be asked to leave.

Extra Credit Policy

The Homework discussion board is the only extra credit opportunity.

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.