Elementary Functions Syllabus

Math 112, Winter 2023

CRN: 25339

Instructor: Emily Autumn Windes
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Required Course Materials:

- **Textbook:** *Functions, Trigonometry, and Their Applications*, version 3.0, by Dan Raies.

- **Calculator:** You are allowed to use any handheld calculator on exams. You may not use a cell phone or online calculators during exams.

- **Scanning:** You will be required to submit PDF files to Canvas for discussions. Therefore you must have access to a campus scanner, scanning app or other mobile scanning software, or have the ability to write directly on the PDF (i.e. by using a tablet).

Class Meetings: Mondays, Tuesdays, Wednesdays and Fridays from 2:00pm to 2:50pm in Gerlinger Hall, room 301.

Office Hours: I will hold office hours in my office after class for approximately one hour. Specifically, office hours are between 3:00pm and 4:00pm on Mondays, Tuesdays, Wednesdays, and Fridays. My office is in University Hall room 103. You may email me to schedule alternative office hours if needed.

Modality:

- **Lectures:** Lectures will be held in-person on Mondays, Tuesdays, and most of Wednesdays. They will not be recorded and lecture notes will *not* be available online due to the fact that I plan to give chalkboard lectures.

- **Discussions:** Fridays will be reserved for discussion, where we will work on a worksheet in groups.

Instructor Communication: Our class will communicate through our Canvas site using announcements. If you want announcements to show up in your UO email, check and adjust your settings under Account > Notifications.

Workload: A prepared student can expect to spend an average of 12 hours per week on this course. A student with weak pre-requisit skills should anticipate needing additional time to master the course material.

Attendance:

- **Lectures (Monday, Tuesday and Wednesday):** Attendance is *not required* however, it is ***very strongly encouraged***. The exams will be much easier for those who attend lectures. Furthermore, keep in mind that since this is an in-person class, you cannot simply watch the lectures later or even review the notes since I will give traditional chalkboard lectures. To further encourage lecture attendance, I will drop an additional lowest webwork grade if you attend more than 80% of the lectures. That is, if you attend at least 24 lectures throughout the semester.

- **Discussions (Friday):** Attendance on Friday is mandatory insofar as it is a small part of your worksheet grade.

Grading: Your course grade will be a weighted average of your scores on the course work as follows:

Category	Percentage of grade
Discussion Worksheets	10%
WebWork	10%
Midterm Exam 1	20%
Midterm Exam 2	20%
Final Exam	40%

Grading Scale: Your final percentage will be rounded to the nearest whole number.

A+	$\geq 100\%$	B+	$88\% - 89\%$	C+	$78\% - 79\%$	D+	$68\% - 69\%$	F	$0\% - 59\%$
A	$92\% - 99\%$	B	$82\% - 87\%$	C	$72\% - 77\%$	D	$62\% - 67\%$		
A-	$90\% - 91\%$	B-	$80\% - 81\%$	C-	$70\% - 71\%$	D-	$60\% - 61\%$		

Letter grades will be assigned in accordance with the grading standards for applied courses, published on the Mathematics Department webpage: Math Grading Standards.

Discussion Worksheets (10% of your grade): Every week during Friday discussion you will begin a discussion worksheet, covering recent material discussed in lecture. During discussion, students will work in groups and ask one another questions before seeking help from me (your instructur).

Physical copies of the homework packet will be provided in discussion, but if you prefer to work on a PDF using a tablet you will be able to download the assignment from Canvas.

The completed discussion worksheet must be uploaded to Canvas by the following Wednesday at 11:59pm to be graded for accuracy (see the rubric on Canvas for grading details). You can use a physical scanner on campus or a scanning app like GeniusScan, Adobe Scan, TurboScan or built-in iPhone software to scan your work and create a single PDF file to upload to Canvas. Following the submission instructions will be part of the grade for these homework assignments. You must show all of your work in order to earn full credit. The lowest discussion worksheet grade will be dropped.

Late submissions: Discussion worksheets will remain available for submission on Canvas for 5 days past the due date. Canvas is set to deduct 4% per day (or partial day) for late submissions. For a 25 point assignment, that is a 1 point deduction from the earned score per day. Once the 5 day late submission window ends, no additional late assignments will be accepted.

WebWork (10% of your grade): Homework will typically be collected through Webwork two times per week: Mondays and Thursdays at 11:59pm. Late WebWork assignments can be completed for 60% credit. Each "reduced scoring period" will last until 1 or 2 days prior to the next chapter/final exam. WebWork deadlines will not be extended. More details regarding WebWork strategies and access later in the syllabus.

Midterms (40% of your grade): There will be two, in-person, proctored midterm exams in this course. These will be timed, 50-minute exams that will be administered during our Friday class time. You will be allowed to use a handheld calculator and a half-sheet of handwritten notes (8.5 x 5.5in, two-sided).

The two midterm exams will cover several sections of material and will be administered as follows:

1. Midterm Exam 1: Friday Week 5 (February 3$^{\text{rd}}$)

2. Midterm Exam 2: Friday Week 8 (February 24$^{\text{th}}$)

Attendance on exam day is required. If you are unable to attend an exam, there will be two pre-scheduled make-up exam times the following week: Tuesday from 3-4pm and Wednesday from 2-3pm. If you will be missing an exam, you must email me at ewindes@uoregon.edu on or prior to the regularly scheduled exam date. You must also communicate which make-up exam time you will attend. The location for the make-up exams will be determined at a later date.

If you miss an exam and do not attend either of the make-up exam options, then your final exam score will replace the score for the exam that you did not take. Mathematically, this weights the final exam as 50% of the overall grade instead of 30%. Note: This policy can only be applied to one of the two midterm exams.

Final Exam (40% of your grade): The final exam is on: Monday, march 20$^{\text{th}}$ at 2:45 pm.

This exam will be a timed, in-person, proctored, cumulative exam. You will have 120 minutes for the exam. You will be allowed to use a handheld calculator and a single sheet of handwritten notes (8.5 x 11in, two-sided). The final exam date is not negotiable and cannot be rescheduled. Early exams will not be offered.

Learning Outcomes: A successful student can. . .

- identify, by formula, verbal description, or graph the vertical and horizontal transformations that take a parent function to an indicated function

- identify a function as periodic from its definition

- describe characteristics of periodic functions such as period, as well as amplitude and midline where applicable

- describe the sine, cosine, and tangent functions from both unit circle and right triangle perspectives

- describe the characteristics of the sine, cosine, and tangent as functions

- calculate all angles and side lengths of both right and oblique triangles, given appropriate information

- compute using both degrees and radians as measures of angles

- use identities relating to the period of sine, cosine, tangent as well as identities relating to negative angles and the Pythagorean Identity

- construct functional models from trigonometric, exponential, polynomial and rational expressions

- describe vectors in a mathematical and physical science context

- add, subtract, and perform scalar multiplication on vectors

- find and interpret the dot product of two vectors as a measure of agreement between vectors

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Tentative Schedule:

Week	Sections to Cover	Notes
1	1.1 (0.5 hrs), 1.2 (1.5 hrs), 1.3 (1.5 hrs)	
2	1.4 (2 hrs), 1.5 (1 hr)	In 1.4, combinations of horizontal transformations are tricky and often non-intuitive for students; Section 1.5 could be taught anywhere in Chapter 1 (e.g. between 1.3 and 1.4)
3	1.6 (2 hrs), 2.1 (1 hr)	
4	2.2 (1.5 hrs), 2.3 (1 hr), 2.4 (1.5 hrs)	Section 2.2 introduces sine and cosine from the unit circle definition, but addresses right triangles too; Section 2.4 is graphs of the form $A\sin(\theta) + k$ and $A\cos(\theta) + k$
5	2.5 (1 hr), 2.6 (2 hrs)	
6	3.1 (1.5 hrs), 3.2 (2.5 hrs)	Section 3.1 is essentially a treatment of Chapter 2 but revisiting with radians
7	3.3 (2 hrs) , 3.4 (2.5 hrs)	Section 3.4 is a full treatment of transformations on $\sin(\theta)$ and $\cos(\theta)$.
8	3.5 (0-3 hrs), 4.1 (2 hrs), 4.2 (2 hrs)	Section 3.5 contains optional topics; vectors are defined by direction and magnitude (no components yet).
9	4.3 (2 hrs), 4.4 (0-2 hrs)	This text uses $x\vec{i} + y\vec{j}$ instead of (x, y) in Section 4.2.
10	4.5 (0-1 hour), Catch-up, Review	Sections 4.4 and 4.5 are optional but can be covered if time allows
11	Final Exam	Finals exam week; No classes; Final exam at scheduled time: https://registrar.uoregon.edu/calendars/examinations

Student Conduct: I plan to treat every student with respect and, as such, expect my students to show respect for me and for the class as a whole. Violations of the student conduct code results in the incident being included on your student conduct record as well as academic sanctions such as a failing grade on any coursework related to the violation or simply a failing grade in the course. The University of Oregon requires all instances of cheating be reported, no matter how small. Cheating includes, but is not limited to:

- Copying the work of another person (student, tutor, internet resource or otherwise) and submitting it as your own

- Using any materials except those explicitly approved during a test-taking situation

- Resubmitting graded work that was altered after being returned

- Cooperating on work for the course (including exams) without being explicitly allowed to do so

- Making solutions to homework, quizzes, exams, and other assignments available to anyone else. This includes solutions written by your instructor.

Learning Environment: The University of Oregon is working to create inclusive learning environments. Please notify your instructor if there are aspects of the instruction or design of this course that result in disability-related barriers to your participation. You are also encouraged to contact the Accessible Education Center at 541-346-1155 or uoaec@uoregon.edu. For those of you who are currently registered with Accessible Education Center for a documented disability, please present your paperwork to instructor early in the term so that we can design a plan for you.

Academic Disruption due to Campus Emergency: In the event of a campus emergency that disrupts academic activities, course requirements, deadlines, and grading percentages are subject to change. Information about changes in this course will be communicated as soon as possible by an announcement on Canvas. If we are not able to meet face-to-face, students should immediately log onto Canvas and read any announcements and/or access alternative assignments. Students are also expected to continue coursework as outlined in this syllabus or other instructions on Canvas. In the event that the instructor of this course has to quarantine, this course may be taught online during that time.

Accomodation for Religious Observances: The university makes reasonable accommodations, upon request, for students who are unable to attend a class for religious obligations or observance reasons, in accordance with the university discrimination policy which says "Any student who, because of religious beliefs, is unable to attend classes on a particular day shall be excused from attendance requirements and from any examination or other assignment on that day. The student shall make up the examination or other assignment missed because of the absence." To request accommodations for this course for religious observance, visit the Office of the Registrar's website: Religious Observances and complete and submit to the instructor the "Student Religious Accommodation Request" form prior to the end of the second week of the term.

Basic Needs: Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live and believes this may affect their performance in the course is urged to contact the Dean of Students Office (346-3216, 164 Oregon Hall) for support. This UO webpage includes resources for food, housing, healthcare, childcare, transportation, technology, finances, and legal support: Basic Needs.

Inclement Weather: It is generally expected that class will meet unless the University is officially closed for inclement weather. If it becomes necessary to cancel class while the University remains open, this will be announced on Canvas and by email.

Mental Health and Wellness: Life at college can be very complicated. Students often feel overwhelmed or stressed, experience anxiety or depression, struggle with relationships, or just need help navigating challenges in their life. If you're facing such challenges, you don't need to handle them on your own–there's help and support on campus.

As your instructor if I believe you may need additional support, I will express my concerns, the reasons for them, and refer you to resources that might be helpful. It is not my intention to know the details of what might be bothering you, but simply to let you know I care and that help is available. Getting help is a courageous thing to do—for yourself and those you care about.

University Health Services help students cope with difficult emotions and life stressors. If you need general resources on coping with stress or want to talk with another student who has been in the same place as you, visit the Duck Nest (located in the EMU on the ground floor) and get help from one of the specially trained Peer Wellness Advocates. Find out more at health.uoregon.edu/ducknest.

University Counseling Services (UCS) has a team of dedicated staff members to support you with your concerns, many of whom can provide identity-based support. All clinical services are free and confidential. Find out more at counseling.uoregon.edu or by calling 541-346-3227 (anytime UCS is closed, the After-Hours Support and Crisis Line is available by calling this same number).

Reporting Obligations: I am an assisting employee. For information about my reporting obligations as an employee, please see Employee Reporting Obligations on the Office of Investigations and Civil Rights Compliance (OICRC) website. Students experiencing sex or gender-based discrimination, harassment or violence should call the 24-7 hotline 541-346-SAFE [7244] or visit safe.uoregon.edu for help. Students experiencing all forms of prohibited discrimination or harassment may contact the Dean of Students Office at 5411-346-3216 or the non-confidential Title IX Coordinator/OICRC at 541-346-3123.