

MATH240 SYLLABUS

[illegible]

Instructor: Eoin Mackall **Email:** emackall@umd.edu
Office Hours: MF 1:00 pm - 2:00 pm & by **Office:** Zoom
 appointment

Section Numbers	Teaching Assistant	Office Hours
0111 + 0121	Daly	TR 3:30 - 4:30 pm
0112 + 0122	Suarez	M 4:00 - 6:00 pm
0131 + 0141	Yan	TR 4:00 - 5:00 pm
0132	Bekkerman	T 1:00 - 2:00 pm
0142	Erickson	MW 12:00 - 1:30 pm

Students are welcome to attend the office hours of any TA (teaching assistant) listed above (you are not limited to the office hours of the TA that runs your discussion section).

Course Content

All course content will appear on the ELMS/Canvas website. Some assignments will be available for viewing and submitting on Gradescope.

Textbook and Course Materials

Linear Algebra and its Applications 6th edition by D. Lay, S. Lay, and J. McDonald
Matlab (<https://terpware.umd.edu/Windows/Title/1849>)

Course Description

Linear algebra is the subfield of mathematics that studies linear equations, their solutions, and their applications. In this course we'll study these topics from both an algebraic and a geometric point of view. We'll ask questions like “what are the possible intersections of four planes in three dimensions?” and we'll construct mathematical tools that help us answer them.

Course Objective

After successfully completing this course you will be able to:

- (1) give meaningful examples of systems of linear equations and of linear transformations,
- (2) perform matrix algebra in both concrete and abstract cases,
- (3) translate between (linear) algebraic operations and geometric ones,
- (4) make convincing arguments using the tools developed throughout the course.

Course Structure

This course is online. There are two components to the course: a lecture component and a discussion component. The lecture component will be led by the course instructor (which is myself, Eoin Mackall) and the discussion component will be with your respective TA.

Lecture

This component will consist of offline work and online lectures. Online lectures will be

held via Zoom during the time slot allotted to the course (11:00 am - 11:50 am Maryland time every MWF). Offline work has three parts: there will be weekly reading, there will be a weekly quiz (completed on the ELMS/Canvas website) covering material from the weekly reading, and there will be periodic midterm assignments (completed on paper, and submitted to Gradescope; these will be our substitutes for ordinary midterm exams).

Discussion

This component consists of online work only. In the discussion sessions students will meet with their TAs who will lead students through daily objectives. Typically this will consist of working through either online Matlab assignments or through various other problems. Matlab assignments should be completed and submitted to Gradescope on the due date.

Grading

The grades will be determined by the following weights:

- (1) 15% – 15 weekly quizzes
- (2) 60% – 5 midterm assignments
- (3) 10% – 4 Matlab assignments
- (4) 15% – 1 cumulative final exam.

Percent total at the end of the semester corresponds to the following letter grades:

A+	A	A-	B+	B	B-	
≥ 97	$[94 - 97)$	$[90 - 94)$	$[87 - 90)$	$[84 - 87)$	$[80 - 84)$	
C+	C	C-	D+	D	D-	F
$[77 - 80)$	$[74 - 77)$	$[70 - 74)$	$[67 - 70)$	$[64 - 67)$	$[60 - 64)$	< 60

Meaning that an A+ is given to a student who obtains greater than or equal 97%, an A is given to a student who obtains between 94% and 97% but not including 97%, and so on.

Weekly Quizzes

Weekly quizzes will be conducted through the ELMS/Canvas website. Quizzes open at 12:01 am on Monday and close at 11:59 pm on the following Sunday. The goal for these quizzes is to help students master material from the weekly readings. This means that some quizzes will be designed to clarify concepts (e.g. the derivative is the slope of the tangent line) while others will be designed to facilitate computations (e.g. what's the derivative of $\cos(\sin(x))$ using the chain rule). Students have unlimited quiz attempts. Quiz solutions can be viewed after the quiz closes. There will be 14 mathematical quizzes; in the first week, there will be an additional quiz regarding syllabus material.

Midterm Assignments

Midterm assignments are assignments that students will be required to write-up (e.g. on a piece of paper or typed online) and upload as a .pdf to the Gradescope website. Each midterm assignment will be due one week after the lecture section finishes covering the corresponding course material. Midterm assignments will consist of only a few questions. Typically these questions will be more difficult than the questions in the weekly quizzes. The midterm assignments are designed to test a student's mastery of the course material. It's important that the write-up for the midterm assignments isn't a first draft (i.e. there is a risk that solutions which are difficult to understand, whether that be because the work is not well-developed or because it is visually a mess, will receive no marks).

Students are allowed to use Matlab, or another calculator or computational software, for the midterm assignments to help them with computations. Students are allowed to communicate with each other to discuss the assignment, but each student must write their solutions in their own words. Students with identical, or nearly-identical, responses

will be confronted and possibly reported to the university for cheating. Using homework-help websites (e.g. math.stackexchange or Chegg) is not allowed. Students suspected of using these websites will be confronted and possibly reported for cheating. Students will be asked to write out the honor pledge for the University of Maryland and to sign their name on each assignment.

Matlab Assignments

Matlab assignments are to be completed in the discussion section. These assignments will be posted periodically throughout the semester but, no later than the Monday of the week that they are due. Matlab assignments will be designed to introduce Matlab commands to students; this will require using these commands to solve problems relevant to the current course material. Students will submit Matlab assignments to Gradescope during the discussion section that they are due.

Final Exam

The final exam is a cumulative exam structured similarly to the midterm assignments. This means that the exam could have questions on any of the covered course material. The primary difference between a midterm assignment and the final is that students will be required to complete the final exam in only two hours; the exam will be designed so that this is possible.

Students will be required to join Zoom for the duration of the exam. Students will not need a microphone nor will they be required to have their video turned on. The use of Zoom is only so that students have immediate access to the instructor so that they can ask questions. This exam will be submitted on Gradescope as a .pdf file. Communication between students will not be allowed; use of external resources (e.g. calculators, Matlab, homework-help websites) will not be allowed.

Course Schedule

Here's a schedule for the coming semester. Note that these dates are only tentative and can (but hopefully will not) be changed throughout the semester.

Week	Required Reading	Midterm Assignments	Matlab
Aug. 31 - Sep. 6	1.1, 1.2		
Sep. 7 - Sep. 13	1.3-5, 1.7		
Sep. 14 - Sep. 20	1.7-9		Matlab 1: Sep. 17
Sep. 21 - Sep. 27	2.8,2.9	Midterm 1: due Sep. 27	
Sep. 28 - Oct. 4	2.1-3		
Oct. 5 - Oct. 11	3.1-3	Midterm 2: due Oct. 11	
Oct. 12 - Oct. 18	4.1-4		Matlab 2: Oct. 15
Oct. 19 - Oct. 25	4.5,4.6		
Oct. 26 - Nov. 1	5.1, 5.2	Midterm 3: due Nov. 1	
Nov. 2 - Nov. 8	5.3, 5.4		Matlab 3: Nov. 5
Nov. 9 - Nov. 15	5.5		
Nov. 16 - Nov. 22	6.1-3	Midterm 4: due Nov. 15	
Nov. 23 - Nov. 29	Thanksgiving Break Nov. 25-29		
Nov. 30 - Dec. 6	6.4,6.5,6.7		
Dec. 7 - Dec. 13	7.1,7.2	Midterm 5: due Dec. 13	Matlab 4: Dec. 10
Dec. 14	Review		

Final Exam: December 16th, 1:30 pm - 3:30 pm

Using Zoom

The lecture section for this course will meet regularly on Zoom. During the lecture, students are not required to turn on their camera; they also don't need to turn on their microphone. Preferably, students will keep their microphone muted for most of the meeting so that they don't disrupt others. When asking a question, students should feel free to either unmute their microphone and ask their question (verbally) or students can ask their question using the chat feature.

There may be some technical errors on my end. If there appears to be a technical error during the lecture, please interrupt me and let me know as soon as possible so that we can resolve the problem immediately.

Grading Error

Students should consult varying people in regards to a grading error. Weekly quizzes are automatically graded; in the event of a grading error occurring in a weekly quiz, please contact the course instructor. Midterm assignments and Matlab assignments, on the other hand, are manually graded by your TA; in the event of an error occurring in one of these assignments, please contact your TA. Lastly, in the event of an error occurring in the grading of your final exam, please contact the course instructor.

Late/Missing Work

There will be a chance to submit late work depending on the assignment type. There will be no possibility of completing a quiz once the deadline has passed. Similarly, Matlab assignments will not be accepted passed their deadlines.

Midterm assignments will be accepted late with a penalty. The assignment will lose 20% of its total value for each day that the assignment is late. For example, if a student submits the Midterm assignment at 12:05 am Monday after the deadline of the assignment, then the maximum possible percent a student can achieve on the assignment is 80%. This means that if the student had achieved a grade of 90% without penalty, then they would be awarded a 72% on this assignment. No points can be awarded after 5 days passed the due date for the assignment.

It won't be possible to take the final exam if it's been missed. If there is a conflict in a student's final exam schedule (meaning that the final for this course occurs at the same time as a final for another course), then accommodations can be made.

Exceptions for all of these policies can be made in cases of true emergency (e.g. hospitalization). In this case, missed work may be replaced by an oral evaluation.

Things to keep in mind

Since this class is based online, students have to be proactive about keeping up with regularly scheduled learning. In this class the two largest indicators for student success are: keeping up with the assigned reading, and completing all of the weekly quizzes. Any student who does both of these things should have little difficulty with the matlab assignments, the midterm assignments, and the final exam.

Campus Policies

It is our shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like: Academic integrity, Student and instructor conduct, Accessibility and accommodations, Attendance and excused absences, Grades and appeals, Copyright and intellectual property. Please visit www.ugst.umd.edu/courserelatedpolicies.html for the Office of Undergraduate Studies' full list of campus-wide policies and follow up with me if you have questions