MATH 240: INTRODUCTION TO LINEAR ALGEBRA

FALL 2017

Instructor:	Dr. Joseph W. Iverson		
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Lecture:	MWF 1pm–1:50pm, ARM 0126	**Office hrs:**	MW 2–2:50pm, and by appointment

Description. This is a first course on finite-dimensional linear algebra, covering: linear systems of equations, matrix algebra, linear transformations, determinants, vector spaces, eigenvalues and eigenvectors, inner products, least-squares approximation, the spectral theorem, quadratic forms, and (time permitting) the singular value decomposition. We go through most of the first seven chapters of Lay's *Linear Algebra*.

Prerequisite. A C– or better in either MTH 131 or MTH 141 is required. This class doesn't have much to do with calculus, though; the main prerequisite is a careful attention to detail.

Textbook. ***Linear Algebra and its Applications, 5th Ed.***, by David C. Lay, Steven R. Lay, and Judi J. McDonald. The content has been pretty stable for the last few editions, but the homework problems will not match if you have an older version.

How to contact me. Please address me as "Joey", or if you prefer, "Dr. Iverson". Email me (and CC your TA) or come to office hours for all administrative stuff. For math questions, it's best to go to office hours. I might not answer emailed math questions promptly, or with very much detail, and I might just forward it to your TA. If you do send an email, please include two things:

(1) A copy of the problem. This can be an attached picture from your phone.
(2) At least one sentence about what you have tried and where you got stuck.

How I will contact you. Course announcements will be made in class, via email, and/or on our Canvas page. Assignments and grades will be posted on Canvas.

Attendance. Attendance is expected, but not required, at all lectures and discussion sections. You are responsible for all announcements made in class, even if you are absent, even if you have a really good reason. Please **do not use your phone or laptop during lecture**. I think it is extremely rude. Talk to me ahead of time if you want an exception to record the lecture.

Reading. You should **read the textbook before lecture**. Students who do well in my classes often tell me they do this. The lecture will move quickly. You can get more out of it if you've already thought about the basics.

Homework. Homework will be posted on Canvas. The TAs and I will write quizzes and exams with these problems in mind. You can find answers in the back of the book. The student study manual has full solutions to some problems. You should **ask questions about the homework** in discussion sections and office hours. However, you should not turn in anything except the four MATLAB projects (see below). That is just because the TAs are so outnumbered! I think you will find that doing the homework with an eye toward understanding it takes you a long way in this class.

Quizzes. You will usually have a quiz on Thursday. Its purpose is to make sure that you completed and understood the homework. In general, there will be **no makeup quizzes**. Instead, I will drop your two lowest quiz scores. Contact your TA (and CC me) if you have more than two documented, university-recognized reasons to miss a quiz.

MATLAB Projects. You will complete four projects to familiarize yourself with MATLAB, a software system for linear algebra. They will be posted on Canvas, and you will turn them in for a grade. All UMD students can get MATLAB for free at

`https://terpware.umd.edu`.

Look under "Analysis & Modeling". MATLAB tutoring is available through the math department:

`https://www-math.umd.edu/matlab-tutoring-schedule.html`.

Midterms. We will have three midterms:

- Monday, October 2;
- Wednesday, October 25; and
- Wednesday, November 29.

If any of these dates changes, I will notify you in lecture and via email. Contact me **well in advance** if you must miss an exam for a university-recognized reason (e.g. religion).

Final. The final exam for this course is on

Wednesday, December 13th, 1:30–3:30pm.

The location will be announced later in the term. If you have another final at the same time, you are supposed to take an alternate final in the lower-numbered course. Since $240 < 241 < 246$, many of you will have to take our exam at the alternate time. You can also choose to take the alternate final if you have two other exams on the normal day. The rest of you have to take the final at the scheduled time. Exam grades will be posted on Canvas. Final exams will not be returned, but you can request a copy of your test through the Math Department's Undergraduate Office approximately two weeks after finals end.

Grades. Grades are weighted as follows:

MATLAB projects:	10%
Quizzes:	20%
Three midterms:	35%
Final exam:	35%.

If your weighted average is $x\%$, then your course grade will be as in the following chart:

A+	$x \geq 100$	C+	$78 \leq x < 80$	F	$x < 60$;
A	$92 \leq x < 100$	C	$72 \leq x < 78$		
A–	$90 \leq x < 92$	C–	$70 \leq x < 72$		
B+	$88 \leq x < 90$	D+	$68 \leq x < 70$		
B	$82 \leq x < 88$	D	$62 \leq x < 68$		
B–	$80 \leq x < 82$	D–	$60 \leq x < 62$	P	$x \geq 60$.

Borderline grades will be determined by actual values, **not by rounding**. Thus, an 89.99% is a B+, but a 90.01% is an A–.

Schedule. Here is the rough plan. It might change:

Monday		Wednesday		Friday	
8/28	1.1	8/30	1.2	9/1	1.3
9/4	—	9/6	1.4	9/8	1.5
9/11	1.6	9/13	1.7	9/15	1.8
9/18	1.9	9/20	2.1	9/22	2.2
9/25	2.3,2.4	9/27	3.1	9/29	Review
10/2	Exam 1	10/4	3.2	10/6	4.1
10/9	4.2	10/11	4.3	10/13	4.4
10/16	4.5	10/18	4.6	10/20	4.7
10/23	Review	10/25	Exam 2	10/27	5.1
10/30	5.2	11/1	5.3	11/3	5.4
11/6	6.1	11/8	6.2	11/10	6.3
11/13	6.4, 6.5	11/15	6.5, 6.6	11/17	6.7
11/20	7.1	11/22	—	11/24	—
11/27	Review	11/29	Exam 3	12/1	7.2
12/4	7.3	12/6	7.4	12/8	Catch up
12/11	Review	12/13	Final		

Academic honesty. Academic dishonesty is a serious offense that can lead to expulsion from the university. In this course, you are authorized to work with other students on the homework, and to *find* solutions to the MATLAB projects. However, you must *present* those solutions in your own words. You may not collaborate on quizzes or exams.

Disability Support Services. See me in person if you have a DSS request that affects lecture and/or exams. Contact your TA (and CC me) for discussion sections and/or quizzes.

Broader university policies. It is up to you to understand your rights and responsibilities under university policy. More information is available at

`http://ugst.umd.edu/courserelatedpolicies.html`.

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