

Textbook.

Linear Algebra and its Applications by G. Strang, 4th ed.

Class information.

Class times: MWTh, 9:15–10:20AM, YMCA 206.

Instructor: V. Toledano Laredo.

Office: 528 Nightingale Hall.

Office Hours: W 11:30-1:30.

Phone: (617) 373 55 26.

Email: V.ToledanoLaredo@neu.edu

Webpage: www.math.neu.edu/toledano

Supplementary instruction.

Free tutoring will be available from Jan. 19 at the Math/Writing Center, 540B NI, tel. 617 373 2438, at the following times: Mon–Wed 10–9PM, Thu 10–6PM, Fri 10–1. No appointment is necessary.

Homework.

Homework are an essential component of the course. They will be assigned at the end of every class and **will be collected weekly**. I will go over the solution of some, but not all of these at the beginning of the next class. If you have a lot of questions on the homework, it is therefore essential that you go to tutoring or come to my office hours.

Homework assigned on Monday of any given week, and Wednesday and Thursday of the previous week, will be collected on Thursday of the given week. **Late homework will not be accepted**. I will grade 4 exercises and give each a grade from 0 to 2. 0–2 extra points will be given for completeness.

Students may work jointly on the homework but the **write-ups** of these **must be done separately**.

Grading policy.

There will be **no curving** of grades.

HOMEWORK. The homework make up 30% of the course grade. The lowest homework score will be dropped. This policy applies even if a student has a perfectly justifiable excuse not to hand in a homework. Should that be the case, that homework will be one to be dropped.

1 HOUR EXAMS. There will be two one-hour exams on Thursday, February 11 and Thursday, March 25. Each will count as 15 % of the course grade.

FINAL EXAM. The two hour, final exam will count as 40% of the course grade. It will be held on Wednesday, Apr. 28, from 10:30 to 12:30, 201 Forsyth (FR). All students without legitimate conflicts (approved by the instructor) must take the exam at the scheduled time. Do not make travel plans that conflict with it.

MATERIAL ALLOWED DURING EXAMS. No course material, notes or summary cards will be allowed during the hour-long and final exams. The use of a calculator will **not** be allowed during the hour-long and final exam.

Course grades.

The course letter grades will be obtained from the numerical grades as follows:

	B₊ =87-89	C₊ =77-79	D₊ =67-69		
A =93 and over	B =83-86	C =73-76	D =63-66	F =below 60	
A₋ =90-92	B₋ =80-82	C₋ =70-72	D₋ =60-62		

0.5 and more will be rounded up to 1, 0 to 0.49 to 0.

Concerns and Conflicts.

In case of concerns about the course, or the instructor that cannot be resolved by speaking with the instructor, contact the Undergraduate Director:

Professor D. King
437 LA
phone: (617) 373-5679
email: d.king@neu.edu

It is the University policy that no grade, including an incomplete, can be changed after one year. Exceptions may be authorised by the Academic Standing Committee.

This syllabus.

The instructor reserves the right to alter this syllabus according to the needs which may arise during the semester. It is each student's responsibility to be aware of any such changes which are announced in class, whether or not that student is present at the time of the announcement.

Course schedule (exercises in **color** have been added after the beginning of term)

Week	Topic	Section	Homework assignment
1.	Jan 11: Organisational meeting		
Jan. 11–17	The geometry of Linear Equations	1.2	1–4,13–15
	An Example of Gaussian Elimination	1.3	1,2,10,11,12,20,24
2.	JAN. 18: MLK DAY, NO CLASSES		
Jan. 18–24	Matrix notation and matrix multiplication I,II	1.4	1,2,6,10,17,22,30,33,42
3.	Matrix notation and matrix multiplication III	1.4	1,2,6,10,17,22,30,33,42
	LU factorization	1.5	1,4,5,7,9,10,11,15,18
	LDU factorizations and permutation matrices	1.5	1,4,5,7,9,10,11,15,18
Jan. 25–31	<i>Jan. 29: last day to drop a class without a W grade</i>		
4.	Inverses	1.6	1,6,10,11,38,40
	Transposes and Symmetric matrices	1.6	50, 56,59,60
	Vector Spaces and Subspaces	2.1	2–10,21,22,24,25
5.	Solving $Ax = 0$ and $Ax = b$	2.2	2–6,12,33,34, 39,44,45
Feb. 8–14	Feb. 10: 1st midterm review		
	Feb. 11: 1 hour exam		
6.	FEB. 15: PRESIDENT'S DAY, NO CLASSES		
Feb. 15–21	Linear Independence, Basis and Dimension, I	2.3	1,2, 3,4,6,9,11–13,16,19
	Linear Independence, Basis and Dimension, II	2.3	20,22, 23,25,26,37,39,42
7.	The Four Fundamental Subspaces	2.4	1,2,3,6, 7,8,10,11,22,27
	Linear Transformations, I	2.6	1,2,6,7, 8,14,15
Mar. 1–7	SPRING BREAK		
8.	Linear Transformations, II, III	2.6	18,22,23,25,36,39,46,49
	Orthogonal Vectors and Subspaces	3.1	1,2,4,5,6,7,12, 14,15,18,19,21,22,26,27,45,46
9.	Cosines and Projection onto Lines	3.2	1,3, 4,5,8,9,10,12,14,16
	Projections and Least Squares	3.3	1–6,8, 15,17,24,25,27
	Orthogonal Bases and Gram–Schmidt, I	3.4	6,8,9,11,13–17
10.	Orthogonal Bases and Gram–Schmidt, II	3.4	6,8,9,11,13–17
Mar. 22–28	Mar. 24: 2nd midterm review		
	Mar. 25: 1 hour exam		
11.	Properties of the Determinant	4.2	1,2,4,5,7,10,14,15,16,22,23,24
	Formulas for the Determinant	4.3	2,7,8, 13,14,24,28
	Applications of Determinants	4.4	1,2,3,6,13,14,18,27,28,29
Mar. 29–Apr. 4	<i>Apr. 2: last day to drop a class with a W grade</i>		
12.	Introduction to Eigenvalues and Eigenvectors	5.1	1,3,5, 7,12,14,18,23,24,25,26
	Diagonalization of a Matrix	5.2	1–5,7,8,10,11, 12,16,19,20,25,23,24,28,32
	Difference Equations and Powers A^k	5.3	2,4,5,8,11,12,14,20,24
13.	Minima, Maxima and Saddle points	6.1	2,4,14,15,16
	Tests for Positive Definiteness	6.2	2,4, 5,19,23
14.	APR. 19: PATRIOT'S DAY, NO CLASSES		
	Apr. 21: final review		
	APR. 22: READING DAY, NO CLASSES		
Apr. 26–May 2	Wed. Apr. 28: Final exam 10:30–12:30 Forsyth 201		