# Math 271 – Linear Algebra – Syllabus

#### Spring 2025

- Instructor: Chris Elliott (pronouns: he/him) You can reach me by e-mail at celliott@amherst.edu. Please feel free to call me Chris.
- My Office Hours: Mondays 11:00 12:00, Wednesdays 11:00 to 12:40 and Fridays 12:30 to 13:30 in Chapin Hall room 018. I can also meet by appointment if none of those times work for your schedule.
- Math Fellows:
  - Dominic Li
  - Megan Li
  - Paul Grajzl

Office hour details to be announced during the first week of classes.

• Math Associate (QCenter): Leandro Arcos Roman (larcosroman24@amherst.edu)

Office Hours: Monday-Friday 2:30 - 4:30 pm in the SCCE QCenter Library Space

You can schedule an individual QCenter appointment at https://www.amherst.edu/academiclife/support/moss\_quantitative\_center.

# What We'll Cover

In this course we'll be learning the theory of *linear spaces* and *linear functions*. You have probably seen some linear spaces before, even if you don't know the name, one of the most basic examples is the 2d plane  $\mathbb{R}^2$ . Linear algebra is ubiquitous in mathematics, as well as in physics, computer science and engineering. Topics we will cover include:

- The concept of a vector space.
- Basis vectors and dimension.
- Linear maps, matrices, and how they are related.
- The structure of linear maps: eigenvalues and eigenvectors.
- Standard matrix forms for linear maps.

The course will involve proofs! You don't need to have prior experience with writing proofs in order to succeed in this class. In fact, learning how to write a proof will be an important part of the course. You will see lots of examples during class time, and have lots of practice as part of your homework.

# Schedule

We will meet three times a week for classes:

Monday, Wednesday and Friday at 10am in Science Center room A013.

There will be two midterm exams and a final. The exams will be held on the following days.

- Midterm 1: Friday February 28th during class
- Midterm 2: Friday April 4th during class
- Final: TBD (During the period May 9th to May 15th)

The exams will be in person, and will be closed book. Calculators will not be allowed.

#### **Makeup Exams**

If you cannot make one of the exam times, please let me know as long as possible in advance and **at least two weeks beforehand**. I can arrange make-up exams for legitimate conflicts (e.g. for academic commitments, religious observances) but two weeks advance notice is necessary.

# Textbook

We will use the textbook *A Course in Linear Algebra* by Damiano and Little (ISBN 0-15-5151347). We'll aim to cover most of the material in chapters 1 to 4, and a little from chapters 5 and 6.

### Homework

Homework will be assigned each week and due on **Fridays at 5pm**. There will not be homework due during weeks with a midterm exam. The first homework will be due on Friday February 7th.

Homeworks will consist of 5-10 problems on the material we learned in the past week. Some problems that are particularly challenging will be marked with a (\*). These problems are **optional**; you can earn 100% on the homework without attempting these, but good solutions will be worth extra credit!

You are encouraged to work on the homework in groups; this is often one of the best ways of learning. However, your final solution **must** be your own work; you should write up your answers on your own, without anyone else's work present (in other words, do not copy!). On the first page of your homework submission, please list the people that you worked with.

You will submit your homework online through **Gradescope** (https://www.gradescope.com). You should sign up for a free account using your Amherst College email address. Once you've created an account you should join the section using the following course code:

Gradescope course code: 2BZ5BW.

#### **Homework Extensions**

I know that sometimes things come up that make it difficult to complete homework on time. As such, I will grant up to two homework extensions per person during the semester (you don't need to give a reason, just ask). If you want an extension on one of the homeworks, please e-mail me no later than the **day before** the homework is due.

### **Assessment Structure**

Your grade will be calculated as follows.

- Homeworks: 35% (lowest score dropped)
- Midterm exams:
  - Higher midterm score: 20 %
  - Lower midterm score: 15 %
- Final exam: 30%

# Accessibility

As the instructor of this course, I endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, let's connect to discuss ways to best support your access. If you have disability-related circumstances and are seeking academic accommodations (e.g. extra-time testing, reduced distraction test area, short breaks as needed, note taking assistance, etc.), Accessibility Services is eager to assist with identifying reasonable accommodations for the course. They can be contacted at accessibility@amherst.edu.

# Honor Code

The Amherst College honor code applies to this course. All the work you submit, both for the exams and the homework, must be entirely your own. In particular, although discussing the homework in groups is encouraged, when you write down your solutions you should not be looking at anyone else's work. Copying somebody else's work is a violation of the honor code.

If you feel stuck or lost in the course, please get in touch with me or one of the Math Fellows assigned to Math 271 either by e-mail or in office hours as early as possible. We will be happy to help you!