Instructor: Nathan Pflueger (pronounced "fleeger")
email: npflueger@amherst.edu
office: SMUD 401

Office hours (**tentative**):
Tuesday 1:45-3:15
Wednesday 1:45-3:15
Friday 1:30-2:30
(or by appointment)

Math Fellow: Sam Rothberg **Office hours:** TBA

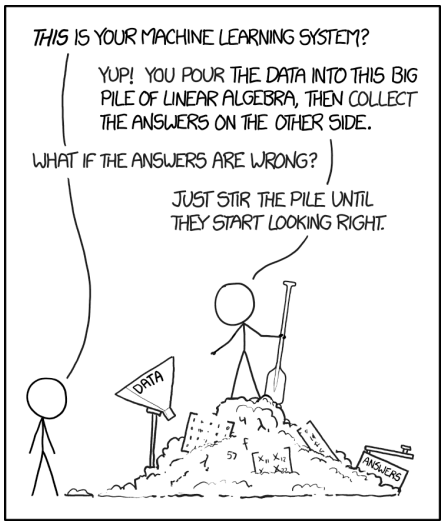
Course webpage: `http://npflueger.people.amherst.edu/272/`

Times and locations:
MWF 10:00-10:50 SMUD 014
Tuesday 10:00-10:50 SMUD 205

Come to office hours! I am happy to answer your questions and also talk about the course in general. Even if you don't have specific questions, you can come to review material, listen to other students' questions, or just to chat.

email policy: The best way to reach me with course questions (besides office hours) is by email. I generally reply to email within 24 hours. However, I often do not reply to email on weekends. I will also reply less quickly on Thursdays, which is the day I devote primarily to research.

Goals and topics: Linear algebra is a ubiquitous subject in pure and applied mathematics. At its core, it is the manipulation of vectors and matrices; the true miracle of linear algebra is just how many things can be viewed as vectors and matrices. Topics will include systems of linear equations, dimension and change of basis, vector spaces and linear transformations, eigenvalues and eigenvectors, and inner product spaces. We will illustrate these topics with various applications, such as to computer graphics, data compression, and least squares approximations.



Textbook: *An Introduction to Linear Algebra with Applications*, by DeFranza and Gagliardi (any edition). We will cover chapters 1 through 4, and parts of chapters 5 and 6.

Prerequisites: First-year calculus (e.g. up to Math 121), or consent of the instructor.

Mathematica labs: Approximately once every two weeks, the class will be devoted to a lab using a program called Mathematica. Mathematica labs will be completed in pairs.

Proofs and applications: Although this course emphasizes more applications than Math 271 does, it also serves as a prerequisite for courses assuming background in proofs. Therefore **students will be expected to write proofs on exams**, and we will spend some time studying proofs in class. However, **the increased emphasis on applications means that the time spent working on proofs in class will be comparatively brief**. Students who need more help developing proof-writing skills may want to consider Math 271, or should plan to spend time working on proofs outside of class and at office hours.

Tips:

- **Come to office hours!** I am happy to answer your questions and also talk about the course in general. Even if you don't have specific questions, you can come to review material, listen to other students' questions, or just to chat.
- **Review early and often.** You should constantly be looking over your notes and keeping the big picture in mind. Arrive each day in class with a sense for where we are.
- **Keep a positive attitude.** Learning is a long process, and you will struggle often. Remember that struggle and difficulty is how you grow. Don't be afraid to talk to me about whatever difficulty you're facing. I want all of my students to be successful and deepen their mathematical skill and appreciation.
- **Practice, practice, practice.** Start early on homework, and let hard problems simmer in your head. Try unassigned problems in addition to homework. Read the book, and *read actively*, always questioning, summarizing, and interpreting what's on the page.

Structure of the course: There will be weekly homework assignments, two midterm exams, and a final exam. The dates of all exams, and their share of your final grade, are listed below. Roughly every other week, we will have lab sessions using Mathematica. There is no set curve or grading cutoffs, but most likely the median grade will be around a B.

Homework	15%	
Labs	5%	
Midterm 1	20%	Wednesday 3/6
Midterm 2	20%	Wednesday 4/17
Final exam	30%	Date/time TBA
Your best exam	10%	(added to its original weight)

Late homework: Homework will be **due at 10pm**, every Wednesday except exam days, via an online system called Gradescope. To allow for technical difficulties or other last-minute issues, Gradescope will allow you submit homework after the deadline, however your score will be reduced by 2% per hour after the deadline (scaled continuously, e.g. being fifteen minutes late results in a 0.5% deduction). Please try to turn in your work by 10pm (I don't want to be responsible for lost sleep!), but don't worry about short delays.

I do not grant extensions for any reason. However, to compensate for illness and other emergencies, your **lowest two homework scores will be dropped**. If you cannot make a due date due to an emergency, my advice is to simply skip the assignment, study and understand the posted solutions to catch up, and focus on keeping up with the new material in the course. You do not need to apologize or provide any reasons for skipping an assignment or turning it in unfinished; please choose what is best for your time, health, and well-being.

Missed exams: if you are ill or an emergency arises near an exam, notify me as soon as possible. If you have a time conflict with an exam, notify me as soon as possible, and **at least one week in advance** (exam dates are listed above).

Accommodations: I strive to make this course welcoming to all students. If you would like to discuss your learning needs with me, please schedule a meeting so that we can work together to support your academic success. Anyone who may require an accommodation based on the impact of a disability should contact me to make arrangements. I rely on Accessibility Services for assistance

in verifying the need for accommodations and developing accommodation strategies, so I encourage you to contact them at `accessibility@amherst.edu` or 413-542-2337.

Intellectual responsibility:

- **Homework:** Mathematics is a collaborative subject; open and generous communication is one of its core values. Therefore you are strongly encouraged to work with other students, ask many questions, and learn from as many people as possible. However, you must write up the solution yourself. **All your submitted work must be your work, written in your own words,** with the exception of Mathematica labs, which are written in small groups. Copying solutions from other students, solutions manuals, or online databases is plagiarism; such copying will result in a 0 on the assignment and will be reported to Community Standards. You are also expected to **list each person your worked with** on the front of your homework assignment.
- **Exams:** You will be allowed **one page of notes (front and back)** for each exam. No calculators or other aids are permitted. Cell phones should be stowed out of sight during exams. Use of cell phones or other devices during the exams (except in emergencies) will be grounds to receive a 0 on the exam. You are bound by the college's honor code, and all work must be entirely your own on exams.