

Math 355: Linear Algebra Spring 2018

Linear algebra doesn't sound like it ought to be complicated, but there's a surprising amount of depth to it. It is much more than solving linear equations; in this course, you will learn about the geometry of Euclidean n -space, matrices and determinants, abstract vector spaces and linear transformations, eigenvalues and eigenvectors, and, not least, why all of this stuff is useful! Mastering this subject requires being able to visualize the geometry, internalize the concepts, and manipulate the algebra; we will try to emphasize all three aspects throughout the course. Along the way, you'll get more than a taste of how mathematics is really done - with precise definitions, clear language, and logical reasoning.

Instructor: Stephen Wang (sswang@rice.edu)

Classroom and Course Times: Herzstein Amphitheater, MWF 1-1:50.

Office and Office Hours: Herman Brown Hall 410, tentatively Mondays 7-9, and Fridays 2-3, or by appointment. Monday evening office hours are likely to be held in Herman Brown 447. Feel free to just drop by as well, though I can't promise I'll always be available.

Textbook: Our official text is Lay's *Linear Algebra and its Applications*, 5th edition. It is useful as a reference, and around 30% of the homework will be assigned from it. We will roughly cover chapters 1-7.

Grades: Your course grade will be based 20% on each midterm, 30% on the final exam, and 25% on the homework. The remaining 5% will be based on your participation in, and preparation for, class, including performance on quizzes.

Exams: This course will have two midterms and a final exam. The midterms will likely be at 7pm on ~~Thursday February 15~~ Friday February 16, and Thursday March 29. If you have conflicts with those dates please let me know as soon as possible.

The final exam will be scheduled. The date for the final exam is set by the Registrar's office and is not available at this time. It is the policy of the Mathematics Department that no final may be given early to accommodate student travel plans. If you make travel plans that later turn out to conflict with the scheduled exam, then it is your responsibility to either reschedule your travel plans or take a zero on the final.

Homework: Homework will be in two flavors. Occasional online homework will be posted on WebWork. Notices of those assignments, along with instructions for logging in, will be on Canvas. Written homework will be due weekly, usually at the beginning of class on Wednesdays. No late homework will be accepted, barring a serious emergency. However, the lowest-scoring homework assignment of each type will be dropped.

You should work individually on the problems at first. Collaboration and discussion with others is encouraged, but only after you have given the problems a good amount of independent thought. Similarly, I am more than happy to talk with you about the homework, but only provided that you've worked on it before coming to me.

Please note the names of any collaborators on each problem. Furthermore, the final write-up of the problems should be done by yourself, alone. You should understand what you are writing well enough that you need not refer to any writing or notes produced during your collaboration. A good habit to get into is to use colored paper when working with others, and white paper when working alone. Under no circumstances are you to seek help from books (other than the course textbook) or internet sites without express permission, nor are you to consult (directly or indirectly) material from past versions of Math 355.

There will come a time during the semester when computational tools such as Mathematica/Matlab, an advanced calculator (e.g., a TI-89), or simply Wolfram Alpha, will be useful. Until then, however, you should not use software (including web applications, or calculator functions that go beyond normal arithmetic) unless otherwise specified. You should show the steps you took in order to arrive at your answer, and explain your reasoning and justification in complete sentences. If you used a technological aid to do one of the steps, you should note that as part of your write-up (e.g., "I used Mathematica to row reduce this matrix.").

Following these instructions is part of your duty under the Rice Honor Code.

Disability Support: Students who think they may need accommodations in this course because of the impact of a disability should give me a written letter from Disability Support Services within the first two weeks of the course.