

MA242 Linear Algebra

Summer 1 2022

Lectures: MTWTh 11:00am-1:00pm in PSY B51.

Instructor: Jacksyn Bakeberg

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Office: MCS B25-B

Office Hours: Tuesday 10:00-11:00am and Thursday 2:00-3:00pm.

Course Website: <http://math.bu.edu/people/bakeberg/Teaching/ma242.html>

Textbook: *Understanding Linear Algebra* by David Austin (free online).

Material

Linear algebra is the study of vector spaces and linear transformations. It is a field with profound applications elsewhere in mathematics as well as in computer science, physics, economics, etc. In this course we will learn how to solve linear systems of equations using matrices. We will learn what are vector spaces, linear transformations, eigenvalues, eigenvectors, etc. We will explore applications depending on your interests. Examples include image compression, Google's PageRank algorithm, dynamical systems, and more.

We will both emphasize being able to solve these problems by hand with a pencil and paper, as well as highlight the computational nature of the subject using the computer algebra software called Sage.

Lectures

If you have one, please bring a laptop to the lectures. Throughout the course we will break into groups to bring the material to life using computer algebra software.

It is very important that you attend the lectures, as these group activities form a core part of the course.

Problem Sets

There will be weekly problem sets, due by the end of every Saturday. I highly recommend getting a head start and working on the problems through the week as opposed to all at once. You will upload your solutions to Gradescope and your work will be corrected by a grader. Once you receive the feedback on your work, you will have the opportunity to respond to the feedback and correct your errors.

These problem sets are the main component of this course, and the time you spend struggling with them is when you will really learn the material. I encourage you to **work together** on the problem sets outside of class. Please submit your own solutions and at the top of your submission acknowledge who you worked with.

The pace of this course is very fast and late submissions can quickly get all of us behind. Please be respectful of everyone's time and submit your problem sets on the assigned date. I understand that things might come up and get in the way of homework. The problem sets are crucial to understanding the material and you should still do all of them even if you miss the deadline. If it is not submitted on time, however, I cannot guarantee that we will be able to give you the feedback you need to make progress in the course.

Assessment

There will be **no numerical grades** in this course. You will select the grade you think you deserve. During week 3 and week 6, each of you will schedule a one-on-one conference with me in which you

assess your progress and explain your self-evaluated grade. At that time you will show me your corrected homework solutions. If we disagree about your evaluation, we will discuss and see if we can reach an understanding. If you aren't satisfied with your week 3 midterm self-evaluation, we will discuss steps to take to get your grade where you want it to be.

Here is an outline (not a strict rubric) of my expectations:

- “A” work looks like:
 - **Participation:** Attending almost every lecture. Regularly asking questions during class and in office hours. Contributing to group activities.
 - **Homework:** Submitting all the problem sets, almost always on-time. Responding to all of the feedback on homework.
- “B” work looks like:
 - **Participation:** Attending almost every lecture. Rarely asking questions during class or in office hours. Sometimes contributing to group activities.
 - **Homework:** Submitting all the problem sets, maybe a couple late. Responding to most of the feedback on homework.
- “C” work looks like:
 - **Participation:** Skipping a few lectures. Rarely asking questions during class or in office hours. Not contributing much to group activities.
 - **Homework:** Submitting most of the problem sets, maybe a few late. Responding to little of the feedback on homework.
- “D” work looks like:
 - **Participation:** Skipping lectures regularly. Never asking questions during class or in office hours. Not contributing to group activities.
 - **Homework:** Skipping a few problem sets, or turning several in chronically late. Not responding to feedback on homework.
- “F” work looks like:
 - Essentially absent.
 - Not completing midterm or final self-evaluations.

The purpose of this grading scheme is to increase intrinsic motivation to learn this material, encourage you to take risks and struggle with the problems, and to decrease anxiety about grades and exams. If at any point you find yourself worried about your performance in this course, feel free to reach out and we can chat about it.

Important Dates:

- **Classes begin:** Tuesday 24 May.
- **Memorial Day - No Class:** Monday 30 May.
- **Last day to drop without a W:** Tuesday 31 May.
- **Substitute Monday Schedule:** Friday 3 June.
- **MIDTERM SELF-EVALUATION:** Week 3, 6-10 June.

- **Last day to drop with a W:** Thursday 16 June.
- **FINAL SELF-EVALUATION:** Week 6, 27-30 June.
- **Final class:** Thursday 30 June.

Accommodations

Students with documented disabilities may be entitled to accommodations in this course. If you believe you should receive accommodations, please contact the Office of Disability & Access Services (access@bu.edu) to discuss your situation. This office can give you a letter that you can share with me outlining the accommodations you should receive.

Cheating

Boston University's policies on cheating are spelled out in the BU Academic Conduct Code, available at <http://www.bu.edu/academics/resources/academic-conduct-code/>. These policies will be followed in this class.

Last updated: 17 May 2022