Syllabus

MA 442, spring 2026

Course title

MA 442, section A1 and A2. Honors Level Linear algebra.

Instructor

Brian R. Williams. Office: CDS 411. email: `bwill22@bu.edu`.

- Office hours: TBA.
- Website: `https://brianrwilliams.github.io/`

Time and location

There are two 75 minute lectures per week and one 50 minute discussion per week.

- Lectures (MA 442, A1). T/Th 9:30am – 10:45am in CAS B27.
- Discussion (MA 442, A2). W 10:10am – 11:00am in COM 215.

Course summary

Linear algebra is used in every scientific field, not just in mathematics. This class gives a careful and rigorous treatment of the principal topics of linear algebra, while also illustrating the power of the subject through a variety of applications. Topics include, but are not limited to:

- Vector spaces, subspaces, linear (in)dependence, bases.
- Linear transformations (maps), matrices, null space, range, isomorphisms, change of coordinates.
- Solving linear equations, elementary matrix operations.
- Determinants, eigenvalues, eigenvectors, diagonalization.
- Inner product spaces, self-adjointness.
- Applications.

Textbook

Linear algebra by Friedberg, Insel, and Spence. I will be assigning homework problems from the fifth edition.

Prerequisites

Single variable calculus (MA 121, 123, 129 or consent of instructor). We rely on *rigorous mathematical proof* in this class, so a high level of mathematical reasoning is also recommended.

Assessment

- **Quizzes**. Weekly quizzes held during discussion section. The quizzes will range from 20-30 minutes in length. There are **NO MAKEUP QUIZZES**, but your lowest quiz score will not count towards your final grade (see the breakdown below).
- **Midterm exams**. Two 75-minute in-class midterm exams (take place during lecture). The exams will start promptly at the beginning of class, so please make sure you arrive a few minutes early to set up. **If you miss a midterm exam you WILL NOT be able to take it at a later point. Additionally, there is no rescheduling for midterm exams, so please make sure you will be present for class on these days.** The schedule for the in-class midterm exams is:
  - Midterm exam 1: **February 26**.
  - Midterm exam 2: **April 9**.
- **Final exam**. A two-hour final exam held during finals week. *The time and date will be announced about halfway through the semester.*

Grade breakdown

There are **three** possible mechanisms which we will use to determine each student's individual final grade. These are summarized by the following three tables.

"Quiz Guru"	
First midterm	15%
Second midterm	15%
Quizzes (low drop)	50%
Final exam	20%
Total	100%

"Balanced Boss"	
First midterm	20%
Second midterm	20%
Quizzes (low drop)	30%
Final exam	30%
Total	100%

"Finals Master"	
First midterm	15%
Second midterm	15%
Quizzes (low drop)	20%
Final exam	50%
Total	100%

For example, suppose Student A scored poorly on the midterm exams, but did well consistently well on quizzes. The best mechanism for Student A would likely be the "Quiz Guru". If, on the other hand, Student B performed below average on the midterm exams and quizzes, but did really well on the final exam then Student B would use the "Finals Master" mechanism to calculate their final score. I will automatically determine which mechanism results in the highest grade at the end of the semester—the student will not need to decide.

How to suceed in this class

- This is a rigorous course in mathematics, and attendance in class is necessary. If you are struggling, even if it is in the beginning of the semester, please reach out to me by email or attend my office hours.
- For additional help please visit the math department tutoring room, located in CDS 261. This room is staffed by graduate students during the day (precise hours are posted here: https://bu.edu/math/tutoringroom/.
- The Educational Resource Center (https://www.bu.edu/erc/) organizes peer tutoring and provides other academic support options.

This syllabus is subject to minor changes. If there is a change to the syllabus made after the first day of class there will be an announcement and it will be updated here.