

MA 351 - ELEMENTARY LINEAR ALGEBRA

Fall 2011

MWF 10:30-11:20, University Hall 119

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Office Hours: Monday 2:00-4:00, Wednesday 3:00-4:00

Text: *Linear Algebra* (4th Edition), by Otto Bretscher.

Course website: The course website will be on Blackboard Vista.

<http://blackboard.purdue.edu/webct/logon/8056011>

I will post homework assignments, grades, announcements, and other course documents on this website.

Course content: This course is an introduction to linear algebra. Linear algebra is the study of doing algebra with “vectors” instead of real numbers. In this class, we will focus mainly on algebra with the vectors in $\mathbb{R}^n$ that you probably used in multivariable calculus. However, we will also spend some time on more abstract notions of vectors and vector spaces (mainly in chapter 4).

The concepts learned in this course are extremely useful, and impact all of our lives almost every day. The most prominent example of this is the Google pagerank algorithm used by the popular search engine. Although the linear algebra is often hidden inside some computer program/algorithm, applications of linear algebra are found throughout the sciences and engineering fields. Linear algebra also may be the last undergraduate level course that is commonly used in almost every area of advance mathematics.

The main topics we will cover in this course are

1. Solving linear systems of equations (Chapter 1)
2. Linear transformations and their applications in geometry (Chapters 2,3)
3. Vector spaces - both concrete ($\mathbb{R}^n$) and more abstract notions. (Chapters 3,4)
4. Determinants (Chapter 6)
5. Eigenvalues and eigenvectors (Chapter 7)

Grading and Assignments:

Homework (25%)

Weekly homework assignments will be due every Wednesday, and will cover the lectures through the previous Friday. The lowest two homework scores will be dropped at the end of the semester. Collaboration on homework assignments is allowed and in fact encouraged, but each student is expected to write up his/her own solution.

Quizzes (5%)

There will be about 5 quizzes during the semester - each about 10-15 minutes long. No quiz scores will be dropped.

Tests (40%)

There will be two tests during the semester, each accounting for 20% of the final grade for the course. The exams will take place during the normal class periods on September 30 and November 11. The tests will cover lectures through the previous Friday.

Final Exam (30%)

The final exam will be cover the entire course. The date for the final exam is not yet determined.

Homework instructions: The homework problems are graded mainly on your reasoning. Part of doing good mathematics is showing your work in a way that is easy to understand. It is not the graders job to work hard to follow your work. *It is **your** responsibility to make your work easy to understand and follow.*

In addition, please follow these rules when handing in homework:

- Be neat. Recopy problems if necessary.
- Put in problems in the correct order.
- Staple your pages together, and don't use paper torn out of a notebook.

Frequently Asked Questions:

- **Can we work together on the homework?** Working together on homework problems is encouraged, but each student must write up his/her own solution. Copying another students homework is not acceptable.
- **Can I use a calculator?** Calculators will not be allowed on quizzes and tests. Calculators (or computers) may be used on homework, but I suggest that you only use them to check your work (especially since you'll need to show your work anyway).

Disclaimers:

- Cheating/plagiarization will not be tolerated. Instances of academic misconduct will lead to disciplinary action.
- No late homework will be accepted, and no make-up quizzes will be offered.
- If you have a conflict with the test date, please let me know early enough so that I can schedule a make-up test or change the date of the test to a date that works for the class.