

Linear Algebra
MATH 240-01

Spring 2011
Syllabus

Time: 12:30-1:20 MWF

Classroom: Alter 321

Instructor: Dr. Dena Morton

Office: Hinkle 108

Phone: x3674 (*Note: I do not check my voice mail very often.*)

Office Hours: By appointment (including some phone appointments at night and on Tuesdays/Thursdays – really, I mean it! ☺) and

- Monday 11:30-12:30, Wednesday 11:30-12:30, 1:30-2:30, Friday 11:30-12:30, 1:30-2:00

e-mail: morton@xavier.edu

Note: this is the best way to reach me – I check my e-mail on a regular basis.

Web Page: <http://cerebro.xu.edu/~morton/aclases.html>

*Note: I update my webpage every day – **all homework assignments** are always posted online. Also, check out the beautiful mathematical pictures!*

Prerequisites: MATH 225 or equivalent.

Purpose and Content: Linear algebra is the study of abstract “vector spaces” and of functions called “linear transformations” which connect vector spaces. Elements of linear algebra have broad applications in virtually every area of mathematics (both pure and applied) and in computer science, physics, engineering, the natural sciences, and the social sciences. This semester, we will study linear equations, matrix algebra, determinants, vector spaces, eigenvalues and eigenvectors, and if we have time, orthogonality (this corresponds to about the first six chapters of our textbook). We will be writing proofs as well as doing certain computations. (Sounds like fun, eh?)

It is essential that you be conscientious about completing both the reading and the homework assignments on time, and at least attempt every assigned problem. Questions are welcome at any time during class. I encourage you to participate actively in class by asking questions and by answering questions posed by either myself or by other students.

Textbook: *Linear Algebra and its Applications*, third edition, by David C. Lay. Please bring your text with you for each class session.

Class Activities: Classes will consist of small group activities, discussion, individual activities, and lectures. In general, I will give you one handout for each section covered in the book – please make sure to bring the handout with you to class until we have finished that section.

Homework: Homework will be assigned weekly but should be completed daily. Doing homework for this course is the best way for you to pinpoint difficulties. It is also a wonderful learning tool. These problems are designed to help you master the skills and concepts of the section. The problems will be collected, and I **urge** you to attempt each problem since they are similar to quiz/exam problems and also since one cannot learn linear algebra without **doing** linear algebra –i.e., doing the work! If you are struggling with the homework please come see me during office hours. Please check the website often to make sure that there haven't been any changes.

Quizzes: Short weekly quizzes on linear algebra definitions and examples will be given on Wednesdays. The lowest quiz score will be dropped, so makeup quizzes will not be given. Quizzes will not be given during exam weeks. Some quiz problems will involve statements of definitions, since if you don't know the definitions, you cannot possibly expect to do the mathematics.

Exams: There will be four exams given throughout the semester, each consuming an entire class period. There will also be a comprehensive final exam. If you must miss an exam for religious or academic reasons, or in cases of illness or emergency, you must submit a written excuse (before the exam except in extreme conditions). A makeup may be scheduled -- this will be decided on a case-by-case basis.

Grading: Weekly quiz performance and class participation: 8%
 Four exams: 13% each
 Weekly graded problem sets: 20%
 Final exam (cumulative): 20%

Each exam, the homework total, and the quiz total will each be curved separately and assigned a number grade between 0.0 (the lowest possible F) and 5.0 (the highest possible A). I will announce the cutoffs when returning the exam. If, for example, the cutoff for an A is 87 and the cutoff for a B is 71 and you get an 83, then the number grade corresponding to your 83 would be a 3.75 (B corresponds to 3.0 and you are $12/16 = .75$ of the way to the next cutoff). The homework and quizzes will be treated similarly. The total course grade may be curved further (that is, a 3.9 might result in an A or A- in the course), but the resulting curve will never lower your grade (that is, a 4.1 would always result in at least an A- in the course. I reserve the right to assign a grade of "F" to any student who earns less than 50% on the final exam.

Important Dates (Exams are Tentatively Scheduled):

Monday, Jan. 10	First day of class
Monday, Jan. 17	MLK Holiday (no classes)
Friday, Feb. 4	Exam I
Monday, Feb. 28	Exam II
Monday, Mar. 7 – Friday, Mar. 11	Spring Break (no classes)
Wednesday, March 30	Exam III
Monday, April 11	Last day to withdraw
Monday, Apr. 18 (or maybe Wednesday, Apr. 20)	Exam IV
Friday, Apr. 22 – Monday, Apr. 25	Easter Break (no classes)
Friday, Apr. 29	Last day of classes
Monday, May 2	Study Day (no classes – we will have a review session)
1:00-2:50 Wednesday, May 4	Final Exam

Attendance: Class attendance is crucial. Lectures include the introduction and explanation of new topics, explorations of proofs, and solutions of discrete mathematics problems. Class notes are to be used in conjunction with the text, in order to elicit a fuller understanding of discrete mathematics. Since class participation counts towards your grade, I will note that if you aren't in class you aren't participating.

Please be courteous and come to class on time!

University policies on attendance are stated in the undergraduate catalog.

Missed Classes: If you must miss a class due to illness or an emergency, you must first get a copy of the notes from one of your classmates. (If you do not know anyone in the class, I will help you contact someone to get notes.) Review the missed notes along with the chapter in the textbook, and write detailed questions as you are reading them. I will be happy to answer all of your questions (as many as you would like to ask!), but I cannot re-lecture for you. As noted above, quizzes cannot be made up.

Group Work: Working in a group can be beneficial for everyone involved, provided that you do not abuse the privilege. Make sure that everyone in your group is making a contribution. Do not copy answers from one another, as this will only backfire against you come test-time. Instead, let concepts gel after group discussion, and then write up the solutions by yourself.

Academic Honesty: You are expected to conduct yourself with integrity in this course. Cheating will be dealt with as harshly as University regulations permit; measures will be taken during exams to prevent cheating. Students are directed to the undergraduate bulletin for further information. Note: talking during an exam (to anyone other than me) or using cell phones during exams are grounds for a failing grade on the exam.

Calculators: A TI-83 or TI-84 is suggested for this course. **Cell phone calculators are not allowed.** You may not have **any** programs on your calculator. If you have old programs, they must be deleted or transferred.

Cell phones: **Please turn all cell phones off during class (no texting either, please).** Cell phones must be away during exams.

How to Do Well in this Course: Come to class! Come visit me during office hours! Read the books and articles! Try the problems! Smile! Study hard! Read your class notes! Make sure you keep up with the material in class! Review your class notes! Don't Panic! *Enjoy!* Most important of all, if you feel that you are falling behind, or that you do not understand a certain topic, or if you would just like to discuss a mathematical idea (or anything else), come to visit me in my office. That's why I am here!☺