

MATH 270
CLASS SYLLABUS Fall 2013

Course: Linear Algebra
Section Number 3251
MW: 3:30 - 4:55 p.m., CMS 022

Instructor: Dr. R. L. Smazenka
Office Hours: Monday 1:00 – 2:30 and Wednesday 12:00 – 2:00
Or by appointment
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Text: **Elementary Linear Algebra, 6th Ed.**
Larson and Falvo, authors

Important Dates: Last day to drop without a “W”: Sunday, September 8 (online)
Last day to drop with a “W”: Sunday, November 17 (online)
Date of Final: Monday, December 9, 5:30 – 7:30 PM

Course Outline

We will cover the first seven chapters of the textbook. After a review of systems of linear equations we will define and study the algebra of Matrices over the reals. We next develop the usual properties of determinants, complementing this with a brief introduction to Eigenvalues. This constitutes the first part of the course, much of which the student may perceive as a review. The heart of the course lies in the next four chapters of the text. Vector spaces are treated in depth including subspaces, linear independence, basis and dimension. This general discussion is then tied back to our earlier work with systems of equations through discussion of rank and null space of square matrices. Building on our work with general vector spaces, we focus on inner product spaces. The geometric aspects of these spaces are identified and we use the Gram-Schmidt Process to find orthonormal bases. Having developed our discussion of matrices from the algebraic point of view we now consider the topic from the point of view of linear transformations. The kernel and range of a linear transformation are developed as well as the matrices of these transformations. Similarity is also discussed. As our last topic we treat the Eigenvalue and introduce symmetric matrices and orthogonal diagonalization. Various application are introduced during the course and are selected to best complement the interests of the students.

Homework and Exams

Homework will be assigned and discussed in class. Since the exams and quizzes will closely resemble homework exercises, **success in this course strongly depends on doing all the homework in a timely fashion.** I cannot stress this last point enough! We will have four exams and a comprehensive final. No make-up exams will be given. I will replace your lowest score with your percentage correct on the final if higher. Successful students should plan to spend at least 5 hours of study outside of class for each hour of discussion. This translates into a minimum of 15 additional hours per week.

Quizzes

We will have six quizzes during the semester. These will be closely aligned with the homework problems. No make ups will be given but I will drop your lowest quiz score.

Special Note: The textbook is extremely good. The author provides a high level of mathematical rigor and many exercises are quite intriguing and reveling. It is rare to find a text for an introductory course that I enjoy reading, but this book is one of those. I strongly encourage you to read the text carefully. The lectures are designed as a supplement to and not an alternative for the textbook.

Class comportment

All students are expected to arrive on time. Late arrivals are disruptive to both the lecturer and students. We will have a short break about midway through the class period. Once you are seated, do not leave the room until the break. Such comings and goings are also disruptive. Students must turn off all pagers and cell phones while in class. Students are encouraged to ask questions and make comments on the lecture material. This should be done in a courteous manner by raising one's hand and being recognized. Side conversations between students that disrupt the flow of the lecture will not be tolerated. It is the student's responsibility to manage his or her academic workload. Should a student decide to stop attending class it is their responsibility to drop the class.

All students appearing on the grade roster will receive a grade regardless of whether they are attending classes or not.

Grading

Your final grade is based on the homework and exams with percentage contribution to your that grade as follows.

Quizzes (Best 5 of 6)	10 %
Exams	65 %
Final	25 %

Math 270 Course Schedule		
Week	Monday	Wednesday
26-Aug	1.1, 1.2	Intro 1.2, 1.3
2-Sep	Labor Day (no class)	2.1,2.2 Quiz 1
9-Sep	2.2,2.3	2.4,2.5
16-Sep	3.1,3.2 Quiz 2	3.2,3.3,3.5 (examples 5 and 6)
23-Sep	4.1,4.2	Exam I, Chapters 1-3
30-Sep	4.2,4.3 Quiz 3	4.3,4.4
7-Oct	4.4,4.5	4.5,4.6
14-Oct	4.7,4.8 (Conic sections)	5.1,5.2 Quiz 4
21-Oct	Exam 3, Chapter 4	5.2,5.3
28-Oct	5.3,5.5 (cross product)	6.1, Quiz 5
4-Nov	Exam 3, Chapter 5	Exam 3, Chapter 5
11-Nov	Veterans Day (no class)	6.1,6.2
18-Nov	6.3,6.4	6.4 Quiz 6
25-Nov	7.1,7.2	7.2, Review
2-Dec	Exam 4, Chapter 6 and 7	Final Review
9-Dec	Final Exam 5:30 – 7:30 pm	

Student Learning Outcomes

1. Solve a system of linear equations using matrix methods.
2. Apply results from solutions of systems to questions of basis, dimension, and linear independence in vector spaces.