

MATH 21

Linear Algebra

Winter 2007

Description: Systems of linear equations, matrices, determinants. Introduction to abstract vector spaces, linear transformation, inner products, geometry of Euclidean space, and eigenvalues. One quarter of college mathematics is recommended as preparation.

Time and Place: MWF 9:30 – 10:40 Social Sciences 1 110

Class Webpage: <http://ic.ucsc.edu/~ptantalo/math21/>

Instructor: Patrick Tantalo (<http://www.soe.ucsc.edu/~ptantalo/>)

Office: E2 257

Office Hours: MW 12:00 – 3:00, and by appointment

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Teaching Assistant: Paul Tokorcheck <tokorcheck@count.ucsc.edu>

Discussion Sections:

MW 2:00 - 3:45 pm JBE 301B

TTh 6:00 - 7:45 pm JBE 301A

Required Text: *Linear Algebra with Applications*, third edition, by Otto Bretscher. Pearson Prentice Hall, 2005. The following reading schedule is a rough guide to what we will discuss and when. Several sections listed below (5.5, 7.6, 8.1, and 8.2) are considered optional, and will be covered lightly, or may be skipped. The remaining sections will be covered in full detail.

<i>Week</i>	<i>Sections</i>	<i>Topics</i>
1	1.1-1.3	Solutions of Systems of Linear Equations
2	2.1-2.4	Matrices and Linear Transformations
3	3.1-3.4	Linear Independence, Bases
4	4.1-4.3	Vector Spaces
5	5.1, 5.5	Inner Product Spaces
6	6.1-6.3	Determinants
7	7.1-7.2	Eigenvalues of a Matrix
8	7.3-7.4	Eigenvectors of a Matrix, Diagonalization
9	7.5-7.6	Complex Eigenvalues, Stability of Dynamical Systems
10	8.1-8.2	Symmetric Matrices, Quadratic Forms

Coursework and Evaluation:

Homework will consist of written assignments taken from the exercises at the end of each section. The **first Midterm Exam** will be held **Friday February 2**, and the **second Midterm Exam** will be held **Friday March 2**. The **Final Exam** will be held on **Thursday March 22**, from **8:00 to 11:00 am**. Please make arrangements to be available at the appropriate times. Coursework will be weighted as follows:

Homework	15%
Midterm Exam 1	20%
Midterm Exam 2	20%
Final Exam	45%

The grading scale for the class will be approximately: A+::97%-100%, A::93%-96%, A-::90%-92%, B+::87%-89%, B::83%-86%, B-::80%-82%, C+::76%-79%, C::70%-75%, D::60%-69%, F::0%-59%. Letter grade boundaries may be lowered at my discretion in order to eliminate some borderline cases.