

# Syllabus and Problems

## Mathematics 250, Introduction to Linear Algebra, Section 09

### Fall Semester 2009

**Text:** *Elementary Linear Algebra: A Matrix Approach*, Spence, Insel, & Friedberg, 2<sup>nd</sup> Edition, Prentice-Hall (ISBN # 0-13-716722-9).

Lecture	Date	Reading	Topics
1	9/2	1.1, 1.2	Matrices and Vectors
2	9/8	1.3	Systems of Linear Equations
3	9/9	1.4	Gaussian Elimination
4	9/14	1.6	Span of a Set of Vectors
5	9/16	1.7	Linear Dependence and Linear Independence
6	9/21	2.1	Matrix Multiplication
7	9/23	2.2	Applications of Matrix Multiplication
8	9/28	2.3	Invertibility and Elementary Matrices
9	9/30	2.4	Inverse of a Matrix
10	10/5	2.5	LU Decomposition of a Matrix
11	10/7	Exam 1	1.1-1.7, 2.1-2.4
12	10/12	3.1	Determinants; Cofactor Expansions
13	10/14	3.2	Properties of Determinants
14	10/19	4.1	Subspaces
15	10/21	4.2	Basis and Dimension
16	10/26	4.3	Column Space and Null Space of a Matrix
17	10/28	5.1	Eigenvalues and Eigenvectors
18	11/2	5.2	Characteristic Polynomial
19	11/4	5.3	Diagonalization of Matrices
20	11/9	5.5	Applications of Eigenvalues
21	11/11	Exam 2	2.5, 3.1-3.2, 4.1-4.3, 5.1-5.3
22	11/16	6.1	Geometry of Vectors
23	11/18	6.2	Orthogonal Vectors; Gram-Schmidt Process
24	11/23	6.2	Orthogonal Projection
25	11/30	6.3	Least-Squares
26	12/2	6.4	Orthogonal Matrices
27	12/7	6.5	Symmetric Matrices and Quadratic Forms
28	12/9	Review	

Note: This is an approximate syllabus only and because of differences in weekly schedules, some variations are to be expected.

**Final Examination:** Monday, December 16, 8-11 PM

## Suggested Homework Problems

### Mathematics 250

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