revised 5/19/14

640:250 Introduction to Linear Algebra

Text: Spence, Insel & Friedberg *Elementary Linear Algebra: A Matrix Approach, 2nd Edition*
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Syllabus

Lecture	Reading	Topics
1	1.1, 1.2	Matrices, Vectors, and Linear Combinations
2	1.3	Systems of Linear Equations
3	1.4	Gaussian Elimination
4	1.6, 1.7	Span of a Set of Vectors, Linear Dependence and Linear Independence
5	1.7, 2.1	Homogeneous Systems, Matrix Multiplication
6	2.3, App. E, 2.4	Invertibility and Elementary Matrices, Inverse of a Matrix
7	2.5,2.6	Partitioned Matrices and Block Multiplication, *LU* Decomposition of a Matrix
8	**First Midterm Exam**	
9	2.7, 2.8	Linear Transformations, Invertibility of Transformations
10	4.1,4.2	Subspaces, Bases and Dimension
11	4.3	Column Space and Null Space of a Matrix
12	3.1, 3.2	Determinants; Cofactor Expansions, Properties of Determinants
13	5.1	Eigenvalues and Eigenvectors
14	5.2,5.3	Charactersitic Polynomial, Diagonalization of a Matrix
15	5.5	Applications of Eigenvalues
16	**Second Midterm Exam**	
17	6.1	Geometry of Vectors, Projection onto a Line
18	6.2,6.3	Orthogonal Vectors, Gram-Schmidt, Orthogonal Projection, Orthogonal Complements
19	6.4, 6.5	Least Squares; Normal Equations, Orthogonal Matrices
20	6.6	Diagonalization of Symmetric Matrices
21	7.1, 7.2	Vector Spaces and Linear Transformations
22		Catch up and Review
23	**Final Exam**	