

640:250 Introduction to Linear Algebra

Section 02, Fall 2017, Monday + Thursday 10:20-11:40 AM in Tillet Hall 258

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Course web site: http://sites.math.rutgers.edu/~asbuch/linalg_f17/

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

Syllabus

Lecture	Reading	Topics
1	1.1, 1.2	Matrices, Vectors, and Linear Combinations
2	1.3	Systems of Linear Equations; Reduced Row Echelon Form
3	1.4	Gaussian Elimination; Rank and Nullity of a Matrix
4	1.6	Span of a Set of Vectors
5	1.7	Linear Dependence and Linear Independence
6	1.7, 2.1	Homogeneous Systems; Matrix Multiplication
7	2.1	Matrix Algebra
8	Midterm Exam #1 (Thursday, October 2, in class)	
9	2.3	Invertibility and Elementary Matrices; Column Correspondence Property
	App. E	Uniqueness of Reduced Row Echelon Form
10	2.4	Inverse of a Matrix
	2.5	Partitioned Matrices and Block Multiplication
11	2.6	LU Decomposition of a Matrix
12	3.1	Determinants; Cofactor Expansions
13	3.2	Properties of Determinants
14	4.1	Subspaces
15	4.2	Basis and Dimension
16	4.3	Column Space, Null Space and Row Space of a Matrix
17	5.1	Eigenvalues and Eigenvectors
21	Midterm Exam # 2 (Monday, November 6, in class)	
18	5.2	Characteristic Polynomial
19	5.3	Diagonalization of a Matrix
20	5.5	Examples of Diagonalization
22	6.1	Geometry of Vectors; Projection onto a Line
23	6.2	Orthogonal Sets of Vectors; Gram-Schmidt Process; QR factorization
24	6.3	Orthogonal Projection; Orthogonal Complements Projection onto Column Space; Closest Vector Property
25	6.4	Least Squares Method; Normal Equations; Solving Inconsistent Systems
26	6.5, 6.6	Orthogonal Matrices; Diagonalization of Symmetric Matrices
27	6.6	Diagonalization of Quadratic Forms Spectral Decomposition for Symmetric Matrices
28		Catch up and review
	Final Exam (Tuesday, December 19, 12:00–3:00 PM)	