

MATH 254: INTRODUCTION TO LINEAR ALGEBRA

Textbook: Elementary Linear Algebra: Special Edition for San Diego Mesa College
(4th Edition) by Larson and Edwards. (Houghton Mifflin, 2000)

My titles differ from the book's. The book's table is more complete.

CHAPTER 1: SYSTEMS OF LINEAR EQUATIONS

- 1.1 Intro
- 1.2 Matrix Methods for Solving Systems
- 1.3 Applications

CHAPTER 2: MATRICES

- 2.1 Matrix Operations
- 2.2 Algebra of Matrices
- 2.3 Matrix Inverses
- 2.4 Elementary Matrices
- 2.5 Least Squares Regression Analysis (Statistics)

CHAPTER 3: DETERMINANTS

- 3.1 Intro
- 3.2 Using EROs/ECOs (Elementary Row/Column Operations)
- 3.3 Properties of Determinants
- 3.4 Applications

CHAPTER 4: VECTOR SPACES

- 4.1 Vectors in R^n
- 4.2 Vector Spaces
- 4.3 Vector Subspaces
- 4.4 Spanning Sets and Linear Independence
- 4.5 Basis and Dimension
- 4.6 Rank and Systems
- 4.7 Coordinates (will be covered in Section 6.4)

CHAPTER 5: INNER PRODUCT SPACES

- 5.1 Length and Dot Product in R^n
- 5.2 (Orthogonal Projections in R^n) –
Your instructor may do more with Inner Product Spaces.
- 5.3 Orthonormal Bases in R^n ; Gram-Schmidt Process

CHAPTER 6: LINEAR TRANSFORMATIONS

- 6.1 Intro
- 6.2 Kernel and Range
- 6.3 Matrices for Linear Transformations
- 6.4 Transition Matrices and Similarity

CHAPTER 7: EIGENVALUES AND EIGENVECTORS

- 7.1 Intro
- 7.2 Diagonalization
- 7.3 Orthogonally Diagonalizing Symmetric Matrices

CHAPTER 8: COMPLEX VECTOR SPACES

- 8.1 Complex Numbers
- 8.2 Conjugates and Division
- 8.3 Roots and DeMoivre's Theorem
- 8.4 Complex Vector Spaces
- 8.5 Diagonalizing Complex Matrices