

Math 250 – Course Information

Textbook: Lay, Linear Algebra and its Applications, 6th Edition. Please refer to the Mater Textbook link for more details.

Course Description (updated spring 2025):

Systems of linear equations, Gaussian elimination, Vectors in n-space, Span and linear independence of a set of vectors, Linear Transformations, Matrix algebra, Determinants, Vector spaces, Basis and dimension, Coordinate vectors and change of coordinates, Eigenvalues and eigenvectors, Diagonalization of a matrix, Geometry of vectors, Orthogonality, Symmetric matrices.

Topics and Typical Schedule:

Day	Topic
1	1.1 Systems of Linear Equations, 1.2 Row Reduction and Echelon Forms
2	1.3 Vector Equations, 1.4 The Matrix Equation $Ax = b$
3	1.5 Solution Sets of Linear Systems
4	1.7 Linear Independence
5	1.8 Introduction to Linear Transformations
6	1.9 The Matrix of a Linear Transformation
7	2.1 Matrix Operations, 2.2 The Inverse of a Matrix
8	2.3 Characterizations of Invertible Matrices
9	3.1 Introduction to Determinants
10	3.2 Properties of Determinants
11	4.1 Vector Spaces and Subspaces (introduce complex vector spaces and examples too)
12	4.2 Null Spaces, Column Spaces, and Linear Transformations
13	4.3 Linearly Independent Sets; Bases
14	4.4 Coordinate Systems, 4.5 The Dimension of a Vector Space
15	4.5 The Dimension of a Vector Space (continued), 4.6 Change of Basis
16	5.1 Eigenvectors and Eigenvalues
17	5.2 The Characteristic Equation, 5.5 Complex Eigenvalues
18	5.3 Diagonalization
19	6.1 Inner Product (including Hermitian), Length, and Orthogonality, 6.2 Orthogonal Sets
20	6.3 Orthogonal Projections
21	6.4 The Gram–Schmidt Process
22	6.5 Least-Squares Problems
23	7.1 Diagonalization of Symmetric Matrices
24	7.2 Quadratic Forms, 7.4 The Singular Value Decomposition