

Baruch College
Department of Mathematics
MTH 4100

Spring 2023

Text: Elementary Linear Algebra by Howard Anton, Chris Rorres and Anton Kaul, 12th Edition, John Wiley.
(Note that earlier editions have most of the content, the exercise sets may differ a bit.)

Section	Topic
1.1, 1.2	Linear Systems and Gaussian Elimination
1.3, 1.4	Matrix Algebra, Inverse
1.5, 1.6, 1.7, 9.1	Elementary Matrices, Linear Systems, Special Matrices, LU Factorization
1.8, 1.9	Intro. To Linear Transformations
2.1, 2.2, 2.3	Determinants and their Applications
3.1	Vectors in \mathbb{R}^n
Exam I	
3.2	Norm, Inner Product, and distance in \mathbb{R}^n
3.3, 3.4	Orthogonality, Lines and Planes
4.1, 4.2	Vector Spaces and Subspaces
4.3, 4.4	Spanning Sets and Linear Independence
4.5, 4.6	Bases and Dimension
4.7	Change of Bases
4.8, 4.9	Null, Row and Column Spaces
5.1, 5.2	Eigenvalues, Vectors and Diagonalization
Exam II	
6.1, 6.2	Inner Product, Norm, Orthogonality
6.3	Gram—Schmidt
6.4	Best Approximation
7.1, 7.2	Orthogonal Matrices and Diagonalization
7.3, 7.4	Quadratic Forms and Optimization
Exam III	
Time permitting – Complex Vector Spaces, Hermitian, Unitary and Normal Matrices, and generalization of Linear Transformations.	
All Exams are in-person, the Date and time of the Final Exam is assigned by the Registrar.	