

MATH 568

INTRODUCTORY LINEAR ALGEBRA I

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Office hours: Wednesday 1:30 pm – 3:00 pm (and by appointment)

Textbook: Linear Algebra: A Modern Introduction (second edition), D. Poole

Exams: There will be two exams and a final. The final exam is cumulative.

- Exam I – Friday, April 17 (subject to change)
- Exam II – Wednesday, May 20 (subject to change)

Policy: Make-up exams will only be given in the case of documented extraordinary circumstances. No calculators are allowed during the exams.

Announcements: There will be weekly homework; the assignments will be posted on my homepage. Any change in the schedule will be posted on my homepage.

Grading:

- Homework – 20 %
- Each exam – 20 %
- Final – 40 %

SYLLABUS

Chapter 1–Vectors

- 1.1 Geometry and algebra of vectors
- 1.2 Dot product
- 1.3 Lines and planes

Chapter 2–Systems of linear equations

- 2.1 Systems of linear equations
- 2.2 Solving linear systems
- 2.3 Spanning sets and linear independence

Chapter 3–Matrices

- 3.1 Matrix operations
- 3.2 Matrix algebra
- 3.3 Matrix inverse
- 3.5 Subspaces
- 3.6 Linear transformations

Chapter 4–Eigenvalues and eigenvectors

- 4.1 Introduction to eigenvalues and eigenvectors
- 4.2 Determinants
- 4.3 Eigenvalues and eigenvectors of an $n \times n$ matrix
- 4.4 Similarity and diagonalization

Chapter 5–Orthogonality

- 5.1 Orthogonality in \mathbb{R}^n
- 5.2 Complements and projections
- 5.3 The Gram-Schmidt process
- 5.4 Symmetric matrices
- 7.3 Least square approximation
- 7.4 Singular value decomposition