

Math 110

Linear Algebra

Lectures MWF 13:10-14:00, 2050 Valley LSB

Office hours Tu 18:00-20:00, SLC, and by appt.

[Piazza page](#)

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Topics covered

08/26: Logistics of the course. Number systems. Fields.

08/28: Vector spaces.

08/31: Subspaces.

09/02: Spanning. Linear dependence/independence.

09/04: Bases.

09/07: Labor Day. No class.

09/09: Dimension.

09/11: Linear maps.

09/14: Null spaces and ranges.

09/16: Matrix representations.

09/18: Invertibility.

09/21: Midterm #1.

09/23: Isomorphism.

09/25: Products of vector spaces.

09/28: Quotients of vector spaces.

09/30: Duality I.

10/02: Duality II.

10/05: Polynomials.

10/07: Invariant subspaces.

10/09: Eigenvalues and eigenvectors.

10/12: Eigenvectors and upper-triangular matrices.

10/14: Eigenspaces and diagonal matrices.

10/16: Inner products and norms.

10/19: Orthonormal bases.

10/21: Orthogonal complements.

10/23: Minimization problems.

10/26: Midterm #2.
10/28: Self-adjoint operators.
10/30: Normal operators.
11/02: The real and complex spectral theorems.
11/04: Positive operators and isometries.
11/06: Polar decomposition.
11/09: Singular value decomposition.
11/11: Veterans' Day. No class.
11/13: Generalized eigenvectors and nilpotent operators.
11/16: Decomposition of an operator.
11/18: The Cayley-Hamilton Theorem.
11/20: The minimal polynomial.
11/23: Jordan Form.
11/25: No class - pre-Thanksgiving Day.
11/30: Operators on real inner product spaces.
12/02: Trace.
12/04: Determinant.

Resources

Textbook: S. Axler [Linear Algebra Done Right](#), 3rd Ed.

Academic honesty

The instructor welcomes cooperation among students and the use of books and online information. However, handing in homework that makes use of other people's work (be it from a fellow student, a book or paper, online source or whatever) **without** explicit acknowledgement is considered academic misconduct.

Assignments

All assignments for this class are posted on its Piazza page.

Solutions

All solutions are also posted on the class Piazza page.

Exams

First midterm 09/21/15. Second midterm 10/26/15. Final 12/16/15.

Demos, m-files, etc.

Last modified: Nov 29, 2015