

MATH 420

Advanced Linear Algebra

Contact information.

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- MWF 10:00-11:00, East Hall 1084.
- Office hours: Tu 11-12 AM, Thu 1-2 PM, Fri 3-4 PM.
- Textbook: Sheldon Axler, Linear Algebra done right, Second Edition.

The grade will be based on the final exam (40%), two mid-terms (20% each), homework (10%) and quizzes (10%). In each class I will assign a couple of “informal homework problems” that I encourage you to do before the following class. These will not be graded. In addition, there will be 8 Homework assignments that will be graded and which will count towards the grade. Late homework will not be accepted, but the lowest two scores will be dropped. There will be six quizzes; there will be no make-up quizzes, but only the top four scores will count.

Exam schedule. The two midterms will be taken during class.

Midterm I: Friday, October 11.

Midterm II: Friday, November 15.

Final: Wednesday, December 18, 4 PM–6 PM.

The goal of the course is to give an introduction to the basic concepts of algebra. Emphasis will be put on proofs, examples, and applications. Prerequisites: familiarity with proofs and abstract reasoning. A first course in linear algebra would be helpful, but not absolutely necessary.

Rough plan of the course.

1. Vector spaces: definition, examples, and basic constructions.
2. Bases in finite-dimensional vector spaces.
3. Linear maps: definition, related notions, properties, and examples.
4. Review of polynomials with real and complex coefficients and their roots.
5. Eigenvalues and eigenvectors for linear maps.
6. Inner-product spaces.
7. Operators and eigenvalues on inner-product spaces.
8. Linear maps and eigenvalues on complex vector spaces.

9. Determinants.

If you think you need an accommodation for a disability, please let me know as soon as possible. In particular, a Verified Individualized Services and Accommodations (VISA) form must be provided to me at least two weeks prior to the need for a test/quiz accommodation. The Services for Students with Disabilities (SSD) Office (G664 Haven Hall; <http://ssd.umich.edu/>) issues VISA forms.