

Syllabus
Linear Algebra II
Spring 15

(A) Instructor: Prof. Shamgar Gurevich.

Office: VV317.

E-mail: shamgar@math.wisc.edu.

Time and Location: Tue-Thu 9:30-10:45am, Room VVB321.

Office Hours: Tue 10:45-11:45, 14:15-15:15 (or by appointment).

(B) Grader: Mr. Jeff Poskin.

Office: VV318.

E-mail: poskin@math.wisc.edu.

Office Hours: by appointment.

(C) Textbook (optional): Linear Algebra - Hoffman and Kunze, Linear Algebra and Geometry - Kostrikin and Manin, Linear Algebra - Starnng.

(D) Content: This is a second course in linear algebra. The main goal is the 'simple' description of operators on finite dimensional vector spaces. We plan to cover (part, probably not all) topics from:

- Decomposition of polynomials over fields.
- Diagonalization of matrices and linear transformations.
- Canonical forms: Primary, Jordan, Jacobson.
- Inner product spaces.
- Operators on inner Product spaces. Spectral theorem.
- Bilinear forms and Sylvester theorem.
- Quadratic forms.

Further topics (only if time permits) might include:

- Dual Space. Determinant. Quotient Space, Tensor Product, Differential Forms.
- Groups, Actions, and Symmetries of Platonic Solids.
- Definition and Basic Properties of Representations of Finite Groups.
- Applications.

(E) Grading: There will be team project, homework assignments and a quiz on it every Thursday after submission, one midterm (with possible re-do) and one final exam. The grade distribution will be computed as follows:

Project	15%
Quizzes:	25%
Midterm:	30%
Final:	30%

For grade above 93 you will get A, above 86 AB, above 79 B, etc.

(F) Attitude: In our course we will extend our knowledge of the basics of linear algebra which is one of the most important subjects of mathematics. The goal will be to help you develop your skills on how to think about linear algebra. We expect you to be an integral part of the course. i.e., to attend and participate in lectures, to do homework and be tested on them, to take exams, and do a project.

Good Luck!