

Math 417: Matrix Algebra

Syllabus

Sections	Professor
<p>Section 2</p> <p>Mon, Wed, Fri: 11-12 1060 East Hall</p>	<p>Kenneth Harris</p> <p>email: kaharris@umich.edu office: 1842 East Hall tel 734.763.4703</p> <p>office hours</p> <p>Mon, Wed, Fri: 2-3 (and by appointment)</p>
<p>Section 3</p> <p>Mon, Wed, Fri: 12-1 1060 East Hall</p> <p>Section 4</p> <p>Mon, Wed, Fri: 1-2 1372 East Hall</p>	<p>Farkhod Eshmatov</p> <p>email: eshmatov@umich.edu office: 1846 East Hall tel 734.936.4824</p> <p>office hours</p> <p>Mon: 2-3 Fri: 2-4 (and by appointment)</p>

Synopsis

Many problems in science, engineering, and mathematics are best formulated in terms of matrices. This course is an introduction to the properties of and operations on matrices with a wide variety of applications. The main emphasis is on concepts and problem-solving, but some of the underlying theory will also be introduced.

Topics include matrix operations, echelon form, general solutions of systems of linear equations, vector spaces and subspaces, linear independence and bases, linear transformations, determinants, orthogonality, characteristic polynomials, Eigenvalues and Eigenvectors, and similarity theory. Applications include linear networks, least squares method (regression), discrete Markov processes, linear programming, and differential equations.

Requirements

Three mathematics courses beyond Math 110. This course is not intended for mathematics concentrators, who should elect Math 217 or 513 (honors).

Text

Otto Bretscher, *Linear Algebra with Applications* (3rd ed.), 2003.

We will cover most of Chapters 1-8, except for Chapter 4. You are expected to have read the relevant sections of the book before coming to class.

Homework and Exams

Homework will be assigned weekly, due Monday of the following week. Homework must be turned-in by the beginning of class on the date it is due. No late homework will be accepted. Collaboration on homework is acceptable, but each person is responsible for writing up their own solutions.

There will be two midterm exams held in class. No notes or calculators will be allowed on exams. No makeups will be given.

Midterm 1	February 6 (Wed)
Midterm 2	March 12 (Wed)
Final Exam	section 2: April 22 (Tues), 1.30-3.30 section 3: April 18 (Fri), 1.30-3.30 section 4: April 22 (Tues), 4-6

Grading

Grades will be determined by the following components:

- Homework (20%)
- Two Midterm exams (25% each)
- Final exam (30%)