

Math. 507

Linear Algebra and Matrix Theory

The goal of this course is to give a solid introduction to basic concepts and techniques of Linear Algebra. The main textbook for the course is the 4th edition of **Linear Algebra** by Stephen H. Friedberg, Arnold J. Insel, and Lawrence E. Spence. Note however that even though most of the material introduced in class can be found in this book, the presentation of the results and the order in which they are introduced in class will often be different from the approach taken in the book. The students are strongly encouraged to consult other sources related to the topics discussed in class. Among them I strongly recommend the following:

- Seymour Lipschutz, Marc Lipson, **Schaum's Outline of Linear Algebra**, 3rd edition, McGraw-Hill Trade 2000.
- Jonathan S. Golan, **The Linear Algebra a Beginning Graduate Student Ought to Know**, Kluwer Texts in the Mathematical Sciences, V. 27, Kluwer Academic Publishers 2004.
- Sheldon Axler, **Linear Algebra Done Right**, 2nd edition, Springer-Verlag 1997.

During the semester students will be expected to solve numerous homework problems. These problems will be designed to broaden the theoretical material introduced in class and to help the students to master the techniques of the topics discussed in class. It is therefore of vital importance that the students work systematically on the assigned problems. The main textbook and the books listed above contain numerous exercises, many of them of rather simple nature. In addition to the homework problems, I strongly suggest to work on as many of these exercises as possible.

The students are allowed (even encouraged) to work on the problems in small groups, but the solutions should be written by each student separately.