

Spring 2010 Course Announcement

Math 496–896 Linear Algebra

Instructor: David Pitts, 213 Avery Hall

Class Time: M-W-F 12:30-1:20

Room: To be determined

Linear algebra is fundamental in most areas of modern mathematics. This course is designed as a second course in linear algebra, and will be a concept based course suitable for students who have had an introductory course in matrix theory (e.g. Math 314) and who have also had experience in writing proofs (similar to what is found in Math 310 or Math 325).

In a first course (e.g. Math 314) on linear algebra, the focus is on matrices, computation, and relatively concrete vector spaces. In our course, we will deal with conceptual properties of linear transformations on finite dimensional real or complex vector spaces. (Much of what we do will also apply for other fields too.) While there will be overlap in subject matter with a first course, our approach will be geared to mathematics and mathematics students.

We'll study invariant subspaces, kernel, range, and work our way to an understanding of the Jordan canonical form for a linear transformation. We'll also study inner product spaces and examine the spectral theorem for linear transformations on finite dimensional complex inner product spaces.

Prerequisites: Math 314 and experience with writing proofs, such as that found in Math 310 or Math 325.

Text: *Linear Algebra Done Right, 2nd Ed.* by Sheldon Axler; published by Springer-Verlag. We'll use this text mostly as a source of problems. I will base some of my lectures on *Finite Dimensional Vector Spaces* by Paul R. Halmos; also published by Springer-Verlag.

Please see me if you'd like further information about the course.