

# Syllabus for Math 2406, Abstract Vector Spaces

August 20, 2012

**Instructor:** Ernie Croot

**Office:** 103 Skiles

**Office Hours:** 1 - 2 Monday, 1 - 2 Tuesday.

**Place and Date of Classroom:** MW, 3:05-4:25 in Skiles 254.

**Email Address:** [ecroot@math.gatech.edu](mailto:ecroot@math.gatech.edu)

**Book:** Apostol's *Linear algebra: a first course, with applications to differential equations*.

**Grade:** Your grade will be based on 20% for each of two midterms, 30% homework, and 30% for the final exam. Homeworks will be collected about once every two weeks.

I will curve all exams to 75 points out of 100 if necessary (I will not curve DOWN to 75 under any circumstances), and reserve the right to change the grading policy in your favor at the end of the course.

Letter grades correspond to the following percentages: 90-100=A; 80-90 = B; 70-80 = C; 60-70 = D; and below 60 is an F.

**Material:** In this course we will spend several weeks on logic and proofs, including: symbolic logic, proof by contraposition and contradiction, set theory, proof by mathematical induction, the pigeonhole principle, and double-counting. And then we will cover some of the basics and applications of the theory of abstract vector spaces, including: definition of a vector space and subspace; dimension; independence; matrices; the determinant; the spectral theorem; characteristic polynomials; eigenvectors and eigenvalues; the Cayley-Hamilton Theorem; and, if time permits, applications to differential equations.

**Honor Code:** Please familiarize yourself with the Georgia Tech honor code.