**Math 683L: Topics in Linear Algebra**
**Monday, Wednesday, Friday: 8:30am - 9:18am in JR 0221 (Journalism Building)**
**Instructor: Steven Miller: 530 Math Tower (614-292-5912, sjmiller@math.ohio-state.edu)**

**Office Hours**: Before and after class

**Class webpage:** http://www.math.ohio-state.edu/~sjmiller/683L

Linear algebra is a rich subject with numerous applications. One of its most useful features are its efficient algorithms to solve many problems. In this class, we will prove the standard theorems describing which matrices can be diagonalized, and for those that cannot, what the closest analogue is (Jordan Canonical Form). There are immense applications of these results to difference and differential equations, Markov processes, .... We will generalize these theorems to cover the case of Modules.

As time permits, we will cover results from Difference / Differential equations, Linear Programming, Random Matrix Theory, and suggestions from the class.

**First day of class: Monday, June 21st, 2004; Last day: August 23rd, 2004.**
**Last day of first summer quarter is July 21st, first day of second is July 26th.**

**Tentative Schedule: First Summer Quarter**
Week 1: June 21st – June 25th: Review, Spectral Theorems for Normal Operators
Week 2: June 28th – July 2nd: Group Theory Review
Week 3: July 5th – July 9th: Jordan Canonical Form (I)
Week 4: July 12th – July 16th: Jordan Canonical Form (II)
Week 5: July 19th – July 21st: Difference and Differential Equations, Review

**Tentative Schedule: Second Summer Quarter**
Week 1: July 26th – July 30th: Linear Programming
Week 2: August 2nd – August 6th: Efficient Algorithms
Week 3: August 9th – August 13th: Perron-Frobenius Theorem
Week 4: August 16th – August 20th: To be determined
Week 5: August 23rd – August 23rd: Random Matrix Theory

## Grading Policy (tentative):

20% homework and class participation
40% quizzes and midterms
40% final