Class meets: Tuesdays & Thursdays 14:00–15:15, HB–234  
Instructor: Dr. Nándor Simányi  
Office: CH 490B, phone: 934-2154, E-mail: simanyi@uab.edu  
Web page: http://people.cas.uab.edu/~simanyi/  
Office hours: Tuesday & Thursday, 12:00–1:00, or by appointment

Course Description. Elements of advanced linear algebra

Textbooks. I will be regularly distributing my printed lecture notes

Prerequisite. Admission to the graduate program or by my permission

Assessment Procedures. Student achievement will be assessed by any or all of several measures: weekly assigned homework problems, two midterm tests, and a comprehensive final examination. A numerical score is given on each of them.

Grading Policy. Student achievement on the items assessed will be used to determine the final grade. The percentage of the final numerical grade assigned to each item is as follows: final exam: 40%; midterm tests: 20% each; homework 20%. At the end I will “reasonably” curve the overall numerical scores.

Draft Syllabus

Basic notions (vector space, linear combination, subspace, span, dimension, linear independence, basis, coordinates, direct sums)

Linear transformations (invariant subspaces, internal direct sums, fundamental theorem of linear algebra)

Eigenvalues and eigenvectors (geometric and algebraic multiplicities, nilpotent transformations)

Finite dimensional vector spaces (canonical basis, matrix notation, systems of linear equations, gaussian elimination, the structure theorem, Jordan canonical form, characteristic polynomial, the Cayley-Hamilton Theorem)

Multilinear algebra in finite dimensional vector spaces (antisymmetric tensors, determinant forms, determinants)

Norms and inner products (orthogonality, dual spaces, adjoints, normal and self-adjoint transformations)