Applied Linear Algebra

MA 631-22, Fall 1998

Class meets Tuesdays and Thursdays 10:25-12:30 in Room 128 CB

Instructor: Dr. Nikolai Chernov

Text: Class notes (written by G. Stolz and modified by N. Chernov, for the theoretical part of the course) and D. Watkins *Fundamentals of Matrix Computations* (for the numerical component of the course, mainly for MA 632, in MA 631 only for gaussian elimination).

Syllabus: Vector spaces, linear transformations, determinants, Gaussian elimination, diagonalization, generalized eigenvectors, Jordan decomposition, minimal polynomials, Cayley-Hamilton theorem, norms and inner products.

Grading policy:

Weekly homework assignments	20~%
Programming assignment	10~%
Midterm exam (Oct. 22)	30~%
Final exam (Nov. 24, 9-12)	40 %

Assignments and tests: Homework will be assigned weekly on Tuesdays, unless announced otherwise. HW will be due the next Tuesday after assignment. One programming assignment will be given in October, and will be due one week before the final exam. You may program in Fortran or C or Pascal or Basic. If you wish to use a computer language other than above, you will need the instructor's permission.

Necessary background: Basics of systems of linear equations: elementary row transformations, row equivalent matrices, row echelon matrices, Gaussian elimination, the determinant, invertible matrices. Also: the very basics of sets, real and complex numbers, the definition of groups and fields. Lastly, the familiarity with at least one computer language (Fortran, C, Pascal or Basic). A guide in Fortant is available.