ASU College of Liberal Arts & Sciences
ARIZONA STATE UNIVERSITY

Department of Mathematics and Statistics

COURSE ANNOUNCEMENT

FALL 2008

MAT 598 (APM 505)

Linear Algebra

Instructor: **Zdzislaw Jackiewicz**

Time: **11:50-12:40 Monday, Wednesday, Friday**

Location: **PSA 302**

Class Number: **87688**

Credits: **3**

Course Description: Fundamentals of applied and numerical linear algebra and programming with MATLAB. The topics include:

- Linear systems: permutation and triangular matrices, Gaussian elimination, LU factorization, pivoting, vector and matrix norms, error analysis and conditioning, positive definite matrices, Cholesky factorization, Matlab linear algebra tools.
- Least squares problems: curve fitting, Householder reflections and Givens rotations, QR factorization, pseudoinverse, rank deficiency, error analysis, Matlab least squares tools.
- Eigenvalues and singular values: eigenvalue and singular value decompositions, eigenvalue and singular value sensitivity and accuracy, Jordan and Schur canonical forms, the QR algorithm, principal components and approximation of matrices, applications, Matlab tools.

Textbook: C. Moler, "*Numerical Computing with Matlab*", SIAM 2004.

Supplementary Texts: G. Strang, "*Computational Science and Engineering*", Wellesley-Cambridge 2007; and J.M. Ortega, "*Matrix Theory. A Second Course*", Plenum Press 1987.