Math 577 – Computational Mathematics I

Course Description from Bulletin: Fundamentals of matrix theory; least squares problems; computer arithmetic, conditioning and stability; direct and iterative methods for linear systems; and eigenvalue problems. Credit may not be granted for both MATH 577 and MATH 477. (3-0-3)

Enrollment:

    e. Least squares problems
4. Conditioning and Stability 5
    a. Conditioning and condition numbers
    b. Stability
5. Systems of Equations 5
    a. Gaussian elimination
    b. Cholesky factorization
6. Eigenvalues 8
    a. Overview of eigenvalue algorithms
    b. Reduction to Hessenberg or tridiagonal form
    c. Rayleigh quotient, inverse iteration
    d. QR Algorithm without and with shifts
    e. Computing the SVD
7.

b.