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.