ELL800: Numerical Linear Algebra

January 16, 2017

1 Syllabus

1. Review of Linear Algebra (3)
2. Vector and Matrix Norms (2)
3. System of Linear Equations (5)
    - Review
    - LDU Decomposition
    - Sensitivity to Coefficients
    - Condition Number
4. Orthogonal Matrices, Housholder Reflection, Givens Rotation (3)
5. Gram Schmidt Orthogonalization, QR decomposition (3)
6. Singular Value Decomposition (4)
7. Eigenvalue and Eigenvector Computation (8)
    - Review
    - Eigenspaces and Invariant Spaces
    - Schur Triangulation
    - Power Method
    - Subspace Iteration
    - QR-Algorithm
8. Lanczos Methods (4)
9. Iterative Methods for System of Linear Equations (3)