

APMA 2821F – Computational Linear Algebra

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Textbook: No specific textbook will be used for this class. Some general references include:

1. Matrix Computations, Golub & van Loan, 3rd edition, The John Hopkins University Press, 1996.
2. Numerical Methods for Large Eigenvalue Problems, Y. Saad, Halsted Press, 1992
3. Domain Decomposition Methods, Toselli & Widlund, Springer, 2005
4. Parallel Scientific Computing in C++ and MPI, Karniadakis & Kirby, CUP, 2003

Contents:

1. Basic Definitions and Concepts
2. Orthogonalization Techniques
3. Direct Solvers for Linear Systems
4. Basic Iterative Methods
5. Multigrid Method
6. Krylov Subspace Methods
7. Domain Decomposition Methods
8. Singular Value Decomposition