Marshall University

College of Science

Mathematics Department

MTH 442: Numerical Linear Algebra

Course catalog description

Direct and iterative methods for numerical solution of linear systems of equations. Eigenvalues and eigenvectors. Error Analysis and norms. Related topics.

Credit hours

3 hours

Prerequisites

A grade of C or higher in MTH331

List of topics

- Orthogonal matrices
- Householder transformations
- QR factorization
- least squares problems
- the singular value decomposition (SVD)
- symmetric positive definite matrix factorizations
- regularization techniques for ill-conditioned problems
- eigenvalues algorithms and pseudo spectra
- iterative methods for sparse linear systems
- Gaussian quadrature

Suggested textbooks

- *Numerical Linear Algebra* by Trefethen and Bau, ISBN 0-898-71487-7
- *Numerical Linear Algebra and Applications* by Datta, ISBN 0-898-71685-3

Last updated

December 2016