MA833 ADVANCED LINEAR ALGEBRA 4-0-0-4

Vector Spaces, Norms, Inner products, Orthogonality, Matrix Multiplication Problems, Matrix Analysis, Linear Systems, Orthogonalization and Least squares, Parallel Matrix Computations ,The unsymmetric Eigenvalue problem, Symmetric eigen value problem, Iterative methods for linear systems, Lanczos methods, Singular value decomposition, LU, QR, Cholesky and URV factorizations, Discrete Fourier transform, Core-nilpotent decomposition, Nilpotent matrices and Jordan structure, Diagonalization by similarity transformations, Jordan form, Minimum Polynomials and Krylov nethods, Numerical stability.

The programming language Julia (http://julialang.org/) will be used for the implementations of algorithms.

TEXTBOOKS/ REFERENCES:

1. Golub and Loan, "Matrix Computations", Third Edition, John Hopkins University Press, 1996

2. Carl. D. Meyer, "Matrix Analysis and Applied Linear Algebra", SIAM., 2000

3. Leslie Hobgen (Editor), "Handbook of Linear Algebra (Discrete Mathematics and Its Applications)".