

MT603: NUMERICAL ANALYSIS-I

Syllabus: Iterative methods : Theory of iteration method; Acceleration of the convergence. Newton-Raphson method for simultaneous equations. Convergence of iteration process in the case of several unknowns; Chebyshev method; Muler's method; Merhods for multiple and complex roots; Solution of polynomial equations : Polynomial equation, Real and complex roots. Synthetic division; the Birge-Vieta, Bairstow and Graefe's root squaring method; System of simultaneous equations (Linear)-Direct method. Method of determinant. Gauss-Jordan; LU-Factorization-Doolittle's; Crout's and Cholesky's. Partiton method; Method of successive approximate-conjugate gradient and relaxation methods; Eigen-value problems-Basic properties of eigen-values and eigen-vector; Power methods; Method for finding all eigen-values of a matrix. Jacobi Givens and Rutishauser method; Complex eigen-values.

UNIT SCHEDULE

- Unit 1** Iterative methods
- Unit 2** Chebyshev method; Muler's method; Merhods for multiple and complex roots
- Unit 3** Solution of polynomial equations
- Unit 4** Solution of Simultaneous equations
- Unit 5** Eigen-value problems –I
- Unit 6** Eigen-value problems-II