

1. Introduction

Credits: 2

2. Course Outline

UNIT - I: Transcendental and Polynomial equations

Practical problems:

- (i) Bisection Method
- (ii) Newton's Method
- (iii) Iteration Methods

UNIT – II: System of Linear Algebraic equations and eigenvalue problems

Practical problems:

- (iv) L U decomposition
- (v) Gauss Elimination Method
- (vi) Computation of eigenvalues and eigenvectors

UNIT - III: Interpolation and Approximation

Practical problems:

- (vii) Lagrange Interpolation
- (viii) Hermite Interpolation
- (ix) Least Square Approximation
- (x) Rational Approximation

UNIT - IV: Differentiation and Integration

Practical problems:

- (xi) Numerical Integration based on Interpolation
- (xii) Romberg Integration
- (xiii) Quadrature method

UNIT – V: Ordinary differential equations

Practical problems:

- (xiv) Single step and multiple step method
- (xv) Predictor-Corrector Methods