

## **FMCC 301 NUMERICAL METHODS (3-1-0)**

### **MODULE-I(14 Hours)**

Errors ,Algorithms and Convergence,Transcendental and polynomial equations: Introduction, Bisection method, Regula-falsi method, Secant method, Fixed Point iteration, Newton-Raphson method, Rate of convergence .Error Analysis for iterative methods,

System of Linear Algebraic Equations:Pivoting Strategies, Matrix inversion, LU-Decomposition , Gauss Jacobi, Gauss –Seidel Method , Relaxation Techniques.

### **MODULE-II(14 Hours)**

Interpolation and Approximations: Introduction ,Langrages and Newton Interpolation, Least Square Approximation, Uniform Approximation.Differentiation .

### **MODULE-III(12 Hours)**

Numerical Integration : Newton Cotes Algorithm, Trapezoidal rule, Simpson's rule, Gauss – Legendre Integration Method, Ordinary Differential Equations: Euler's Method ,Euler Modified Method, Runge -kutta Method.

#### **Text Book :**

1. Numerical Mathematics and Computing : by W. Cheney, David Kincaid, Cengage.
2. Numerical Methods by B.P. Acharya & R.N. Das.

#### **Reference Books:**

- 1.Numerical Methods for Scientific and Engineering Computation; M.K. Jain,S.R.K. Iyengar, R.K. Jain.
2. A Introduction to Numerical AnalysisbyK.Aitkinson ,Wiley