MCA 104 COMPUTER ORIENTED NUMERICAL METHODS

Module 1(10 Hours)
Computing Arithmetic, Significant Digits and Numerical Instability, Root finding methods-Bisection, Newton Raphson, Secant and RegulaFalsi, methods for multiple roots.

Module 2 (10 Hours)
System of Linear Algebraic Equations and Eigenvalue problems-Gauss Elimination, LU Decomposition- Jacobi-Gauss-Seidel and SOR methods, Interpolation and Approximation-spline approximation- Linear, quadratic and Cubic,

Module 3 (10 Hours)
Differentiation and Integration-Richardson's extrapolation, Gauss Quadrature methods, ordinary differential equations-Initial and Boundary Value Problems, introduction to numerical solutions of Partial Differential Equations.

Module 4 (10 Hours)
Flowchart and Algorithms and programming in C implementations.

Module 5 (06 Hours)
(as per choice of faculty)
Portion covered can be tested through Internal evaluation only not to be included in University examination)

References:

1. Numerical Methods for Scientific and Engineering Computation by M.K. Jain, SRK Iyengar and R.K.Jain
2. Numerical Methods for Engineers by S.C. Chopra and Raymond P. Canale
3. Introductory Methods of Numerical Analysis by Sastry
4. Numerical Analysis by E.W. Cheney and D.R.Kincaid