CLUSTER UNIVERSITY SRINAGAR
(SYLLABUS)

Course Code	*BCA-CR6101*
Course Title	*Computational Techniques*
Semester	*BCA 6th Semester*
Course Type & Credits	*Core Paper - 04 Credits (L) + 02 Credits (P) = 06 credits*

UNIT-I

Introduction, Requirements for computer oriented solutions to numerical problems. Approximations & Errors Types of Programming Errors, Computer & Arithmetic Errors, Accuracy and Precision, Round off and Truncation Errors. Use of C Programming language for computer based numerical problem solving.

Unit-II

Algorithms to Compute Roots of Equation Methods of Tabulation or Brute Force Method, Method of Bisection, The Secant Method, Newton Raphson Method, Method of False Position. Programmatic Implementations of these methods.

UNIT-III

Algorithms to Solve Linear Algebraic Equations: Gauss Elimination, Gauss Jordan, Gauss Seidel, L.U. Decomposition. Algorithms for Curve Fitting: Least Square Approximation, Lagrange Interpolated Polynomial, Newton Divided Differences Interpolating Polynomial. Programmatic Implementations.

UNIT- IV

Algorithms to solve Ordinary Differential Equations – Euler Method and Modification.The trapezoidal Rule, Simpson's Rule.R K Method.Programmatic Implementations

Recommended Readings:

1. Computer Oriented Numerical Methods, V. Rajaramman – PHI
2. Numerical Methods for Engineering ,R P Canol, Tata Mc Graw Hill
3. Computer Oriented Numerical Methods, R.S. Salaria – Khanna Publishing Company
4. Elements of Computational Techniques – Ronald A. Thisted – Chapman & Hall/ CRC

L = Lecture, P = Practical, T = Tutorial