SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Electronics & Communication)
Semester: II
Syllabus with Effect from: June - 2011

Paper Code: PS02EELC01	**Total Credit: 4**
Title Of Paper: Computational Technique Using C	

Unit	Description in Detail	Weightage (%)
I	Introduction to Solution of Non Linear Equations, error, accuracy, properties of polynomial equations, transcendental equations, approximate value of roots, evaluations of polynomial, solutions of quadratic equations. Bisection method; Method of False position; Newton-Raphson method; Secant method.	20%
II	Newton-Gregory formula; Lagrange interpolation formula; Interpolation through central differences; Formulation of polynomials; Cubic spline interpolation; Interpolation in two or more dimensions. Periodic functions, trigonometric series, Fourier series, even and odd functions, half range expansions, Fourier integrals, Fourier cosine and sine transform, Fourier transforms.	20%
III	Classical integration formula for equally spaced abscissa; Trapezoidal formula a single interval; Solution of linear systems; Numerical derivatives.	20%
IV	Gauss-Jordan Elimination; Row v/s Column Elimination Strategies; LU decomposition; Matrix inversion; Determinant of a matrix; Complex system of equations; Singular value decomposition; Vander Monde matrices and Toeplitz matrices; Eigenvalue and eigenvectors; Applications in problem of Electrical Network Theory.	20%
V	Taylor's series, Picard's method, Runge Kutta method for ordinary differential equations, initial value and boundary value problems, Gauss-Siedel and Jacobi's method for partial differential equation.	20%

Basic Text & Reference Books:-

- Introductory Methods of Numerical Analysis: Sastry S. S., Prentice-Hall India, Edition 1994.
- Advanced Engineering Mathematics: Erwin Kreyszing, John Wiley & Sons.
- Programming with C: Gottfried, Tata McGraw-Hill.