SARDAR PATEL UNIVERSITY
Programme: Bachelor of Vocation (Software Development)
Semester: III
Syllabus with effect from: June 2015

Paper Code: US03FBVS03	Total Credits: 4
Title Of Paper: Computer Based Numerical and Statistical Methods	

Unit	Description in detail	Weightage (%)
1	**Computer Arithmetic & Iterative Methods** Absolute, Relative and Percentage error The method of successive bisection, algorithm and examples The method of false position, algorithm and examples The method of iterative (Newton-Raphson), algorithm and examples Secant method, illustration and algorithm	**25 %**
2	**Interpolation with Equal Intervals and Unequal Intervals** Interpolation with equal intervals - finite difference table The Gregory- Newton formula for forward and backward interpolation corresponding algorithms and examples Interpolation for unequal intervals using Newton's formula for divided differences Lagrange interpolation	**25 %**
3	**Differentiation and Solution of Simultaneous Linear Equations** Definition and examples of differentiation Higher order derivative of standard functions up to second order for Newton's forward and backward difference formula. The Gauss-Seidel iterative method Comparison of direct and iterative methods	**25 %**
4	**Time Series analysis** Utility of Time Series Analysis Components of Time Series : Secular trend, Seasonal variation, Cyclical variation and Irregular variation (Only introduction) Moving average method, Simple average method	**25 %**

Basic Text & Reference Books:

- Sastry S. S.: Introductory Methods of Numerical Analysis, Prentice Hall of India Pvt. Ltd., 1986(2)
- Salaria R S : Computer Oriented Numerical Methods, Khanna Book Publishing Co. Ltd., 2000(3)
- Fundamentals of statistics by S.C. Gupta, Himalaya Publishing House.(6)

Additional Text & Reference Books:

- Rajaraman V. : Computer Oriented Numerical Methods, Prentice Hall of India Pvt. Ltd., 1983
- Murray R Spiegel : Theory and Problem of Statistics, McGraw-Hill Schaum's Outline Series,1981.
- A text book of Calculus with an introduction to differential Equation by Dr. Dinesh J. karia, Mahendra L. Patel, Roopal Prakhashan Vallabh Vidyanagar.