Veer Narmad South Gujarat University

M. Sc.-II (Tech.)

(Industrial Mathematics with Computer Applications)

w.e.f. July – August 2004

IMCA – 201 Numerical Analysis

	L	P	T	
Total	**4**	**4**	**0**	**8**

- Polynomial Interpolation, Extrapolation, Splines, Spline Interpolation
- Solution of System of Linear Equations: Matrix inversion, Jordan's method, Iterative method, Escalator Method.
- LU and Cholesky factorisations
- Pivoting, Gauss Elimination method
- Jacobi's, Gauss-Seidel method
- Algebraic Eigen Value Problem, Properties of eigen values, eigen vectors, Power method, inverse power method, Given's method, Schur and Gershgorins theorem
- Least square polynomial approximation
- Numerical Solution of ODE: Runge Kutta methods, Milne Simpsons' method.
- System of non-linear equations: Newton Raphson's method..

References:

1. C. E. Froberg: Introduction to Numerical Analysis, Addison Wesley Publishing Company, Sixth Ed., 1981.

2. S. S. Sastri: Introductory Methods of Numerical Analysis, Prentice Hall of India, New Delhi, 1997.

3. Conte S. D. and Carl deboor: Elementary Numerical Analysis: an algorithmic approach, Mc Graw Hill company, Third Ed., 1981.

4. M. K. Jain: Numerical Analysis for Scientists and Engineers, New Age International Ltd. Pub., 1992.

5. E. Hairer, E. P. Norsett and G. Wanner: Solving ordinary differential equations I and II, Springer Series in Computational Mathematics, 8, Springer, Berlin, 1993.

6. S. Balachandra Rao, C. K. Shantha: Numerical Methods with Programs in C++, University Press.