Curriculum Plan: B. A. (Prog.), Semester VI, 2022: Paper VI Numerical Analysis

Ms. Anju Rattan
Department of Mathematics
Kalindi College, University of Delhi, Delhi- 110008
Mobile: +91- 9811071222
E- mail: anjurattan@mail.com

Marks Distribution	**Theory**	**75 Marks**
	Internal Assessment	Assignments 10 Marks Class- Test 10 Marks Presentation 5 Marks
Classes Assigned	**Lectures**	5 per week

Reference	**[1]**	**Laurence V. Fausett, Applied Numerical Analysis, Using MATLAB, Pearson, 2/e (2012)**
	[2]	**M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International Publisher, 6/e (2012)**
	[3]	**Steven C Chapra, Applied Numerical Methods with MATLAB for Engineers and Scientists, Tata McGraw Hill, 2/e (2010)**
Section	**Week**	**Topics**
Section 1	**Beginning day /1st week** January 1- 8, 2022	Significant digits, Error, Order of a method.
	2nd week January 10-15, 2022	Convergence and terminal conditions, Efficient computations.
	3rd week January 17-22, 2022	Bisection method, Secant method,
	4th week January 24-29, 2022	RegulaFalsi method, Newton Raphson method.
	5th week January 31- February 5, 2022	Newton's method for solving nonlinear systems.
Section 2	**6th week** February 7-12, 2022	Gauss elimination method (with row pivoting) and Gauss Jordan method, Gauss Thomas method for tridiagonal systems.
	7th week February 14-19, 2022	Iterative methods: Jacobi and Gauss-Seidel iterative methods.
	8th week February 21-26,2022	Interpolation: Lagrange's form and Newton's form Finite difference operators, Gregory Newton forward and backward differences Interpolation.
	9th week February 28- March 5, 2022	Interpolation: Lagrange's form and Newton's form Finite difference operators, Gregory Newton forward and backward differences Interpolation.
	10th week March 7-12, 2022	Numerical differentiation: First derivatives and second order derivatives, Numerical integration: Trapezoidrule, Simpson's rule (only method).
Section 3	**11th week** March 21- 26, 2022	Numerical differentiation: First derivatives and second order derivatives, Numerical integration: Trapezoidrule, Simpson's rule (only method).
	12th week March 28- April 2, 2022	Mid-point method and Ralston's method Classical 4th order Runge-Kutta method, Finite difference method for linear ODE
	13th week April 4-9, 2022	Newton Cotes open formulas, Extrapolation methods: Romberg integration.
	14th week April 11-16, 2022	Gaussian quadrature, Ordinary differential equation: Euler's method Modified Euler's methods.
	15th week/ with 3 days April 18-27, 2022	Heun method and Mid-point method, Runge-Kutta second methods. Heun method without iteration.