

<b>Branch: BCA</b>	<b>Semester-III</b>
<b>Subject Code: 3102</b>	<b>Lecture: 04</b> <b>Credit: 04</b>
<b>Subject Title</b>	<b>NUMERICAL METHODS AND ALGORITHMS</b>

<b>Modules</b>	<b>Sr. No.</b>	<b>Topic and Details</b>	<b>No of Lectures Assigned</b>	<b>Marks Weight age %</b>
UNIT-I	1	<b>Roots of non-linear equations:</b> Bisection Method, Regula-falsi Method, Newton-Raphson Method, Ramanujan's Methods	6	12
	2	<b>Direct solution of linear equation:</b> Matrix Inversion, Gauss-Elimination Method	4	8
UNIT-II	3	<b>Interpolation:</b> Finite Differences, Newton-Gregory Forward and Backward Formula, Lagrange's Interpolation Formula for In equal Intervals, Newton divided difference formula for unequal intervals	8	16
UNIT-III	4	<b>Numerical Integration:</b> Trapezoidal Rule, Simpson's 1/3 Rule, Simpson's 3/8 Rule, Error estimation for all three methods	6	12
	5	<b>Numerical Differentiation:</b> Differentiating Newton's Forward and Backward formula	6	12
UNIT-IV	6	<b>Numerical solution of Differential equation:</b> Taylor's Series, Euler's Method, Runge-Kutta Method	7	14
	7	<b>Numerical solution of Partial Differential equation:</b> Jacobi's Method, Gauss-Seidel Method, Successive Over-Relaxation	7	14
	8	<b>Curve Fitting, B-Splines:</b> Least Squares Curve Fitting Procedures, B-Splines	6	12
		Total	50	100

**Text and Reference Books:**

1. Numerical Methods: V. Rajaraman "Computer oriented numerical methods (third edition) 1993
2. S.S. Shastri "Introductory methods of numerical analysis" Vol-2, PHI, SECOND edition, 1994