

Subject Code: 2SC1040302	Subject Title: Numerical Analysis
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Course Objective:

This course is designed to enable students to acquire the understanding of numerical analysis.

Teaching scheme (hours) per week		credit		Theory Marks		Practical Marks		Total
Theory	Practical	Theory	Practical	University Assessment	Cont. Assessment	University Assessment	Cont. Assessment	
3	--	3	--	70	30	--	--	100

Subject Contents			
Unit No.	Topic	Total Hours	Weight (%)
1	Finite Differences table and theory of Interpolation: Introduction to Numerical Methods, Approximations and Errors in Computation. Interpolation, Extrapolation, Ascending and Descending differences, Symbolic operators, Difference polynomials, Gregory- Newton's Forward and backward interpolation formula.	12	25
2	Divided Differences: Newton's divided difference interpolation formula, Lagrange's interpolation formula for equal and unequal intervals.	12	25
3	Solution to Numerical, Algebraic and Transcendental Equations: Bisection Method, Method of False Position, Newton's Iteration, Newton's Raphson Method and Ramanujan's Method.	12	25
4	Numerical Differentiation and Integration: Numerical differentiation using Newton's forward and backward method, Trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8th rule.	12	25

Course Outcome:

After successfully completion of the course, the student will be able to ...

- Understand the concept of interpolation and extrapolation.
- Understand the concept of numerical differential and apply to various problems.
- Understand the concept of solution to numerical, algebraic and transcendental Equations and its applications.

List of References:

- 1) Numerical Methods in Engineering and Science, Dr B.S Grewal, Khanna Publication.
- 2) Numerical Analysis and Computational Procedures, S.A Mollah, New Central Book Agency, Calcutta.
- 3) Numerical Analysis, Kunz, McGraw Hill
- 4) Methods in Numerical Analysis, K.W Nelson , Mac Millan.
- 5) Numerical Methods, Dr. N.Ch., S.N. Iyenger, Dr V.N. Vedomurthy, Vikas Publishing House Pvt. Ltd