

Curriculum Plan: B.A.(Prog)(SEM-7) (NUMERICAL ANALYSIS) (2025-26)

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Marks Distribution	Theory	90 Marks
	Internal Assessment	30 Marks
Classes Assigned	Lectures	3 per week

Teaching Plan: B.A. (Prog.) with Mathematics, Semester-7 DSC-7: Numerical Methods

Weeks I to 2: Errors: Roundoff error. Local truncation error, Global truncation error; Order of a method, Convergence and terminal conditions. [2]: Chapter I (Sections 1.3.1 and 1.3.2).

[3]: Chapter I (Section 1.3).

Week3 and 4: Bisection method. Secant method, Regula-Falsi method, Newton-Raphson method. [2]: Chapter 2 (Sections 2.1 to 2.3).

[3]: Chapter 2 (Sections 2.2. and 2.3).

Weeks 5 to 7: Gaussian elimination method (with row pivoting); Iterative methods: Jacobi method, Gauss-Seidel method.

[2]: Chapter J (Section 3.1). Chapter 6 (Sections 6.1. and 6.2), Chapter 8 (Section 8.1).

[3]: Chapter 3 (Sections 3.2, and 3.4).

Weeks 8 to 10: Interpolation: Lagrange form, and Newton form. Finite difference operators.

[3]: Chapter 4 (Sections 4.2. and 4.3).

Weeks 11 and 12: Numerical differentiation: First and second order derivatives.

[2]: Chapter 11 (Sections 11.1 [11.1.1 and 11.1.2]).

Weeks 13 to 15: Numerical integration: Trapezoidal rule. Simpson's rule; Ordinary differential equations: Euler's method.

[2]: Chapter 11 (Section 11.2 [11.2.1, and 11.2.2]).

[1]: Chapter 22 (Sections 22.1. and 22.2).

Essential Readings

1. Chapra, Steven C. (2018). Applied Numerical Methods with MATLAB for Engineers and Scientists (4th ed.). McGraw-Hill Education.
2. Fausen, Laurene V. (2009). Applied Numerical Analysis Using MATLAB. Pearson. India.
3. Jain. M. K., Iyengar, S. R. K. & Jain R. K. (2012). Numerical Methods for Scientific and Engineering Computation (6th ed.). New Age International Publishers. Delhi.