

BASIC COMPUTATIONS LAB

Course Code: 13ES11BC

L	T	P	C
0	0	3	2

Course Educational Objectives:

The objective of the laboratory is to enable the student to learn the basics of MATLAB Toolbox and to solve general mathematical problems.

Course Outcomes :

- ❖ Student will able to solve mathematical problems numerically.
- ❖ The student able to solve ODE-IVP, ODE-BVP, Regression using MATLAB.

LIST OF EXERCISES:

1. Basic MATLAB commands like representing arrays, matrices, reading elements of a matrix, row and columns of matrices, random numbers.
2. Floor, ceil, and fix commands.
3. Eigen values and Eigen vectors of a matrix.
4. Plotting tools for 2 dimensional and 3 dimensional plots, putting legends, texts, using subplot tool for multiple plots.
5. Linear Regression, interpolation and polynomial regression.
6. Non linear regression.
7. Solving non linear algebraic equations.
8. ODE IVP problems using Runge - Kutta method.
9. ODE BVP problems using shooting method.
10. Using quadrature to evaluate integrals (1, 2 and 3 dimensional cases).
11. Symbolic manipulation to evaluate Laplace and Fourier transforms.
12. Finding the minimum of an unconstrained function.

