

COMPUTATION LAB

(Skill Oriented Lab Elective - I)

Course Code: 22CE11S4

L T P C

0 1 2 2

Pre-requisites: Problem solving using C, Mathematics.

Course Outcomes:

At the end of the course, the student will be able to (using MATLAB programming Language):

CO1: Perform matrix operations. (L2)

CO2: Plot two dimensional, three dimensional graphs and draw inferences (L2)

CO3: Perform linear and non-linear regression analysis for the given data (L2)

CO4: Determine steady state, unsteady state solutions of Ordinary differential equations (L2)

CO5: Compute two & three dimensional integrals and apply Conditional statements and Loops (L3)

(Any 12 out of 14 experiments)

LIST OF EXPERIMENTS:

1. Apply basic MATLAB commands like representing arrays, matrices, reading elements of a matrix, row and columns of matrices, random numbers.
2. Use Round, Floor, ceil, and fix commands.
3. Eigen values and Eigen vectors of a matrix.
4. Plot two dimensional and three dimensional plots, putting legends, texts, using subplot tool for multiple plots.
5. Perform Polynomial Regression, Curve Fitting, and Interpolation commands.
6. Perform Non-linear regression.
7. Solve non-linear algebraic equations.
8. Solve ODE IVP problems using Runge - Kutta method.
9. Solve ODE BVP problems using shooting method.
10. Use quadrature to evaluate integrals (1, 2 and 3 dimensional cases).
11. Evaluate Laplace and Fourier transforms.
12. Use Relational and Logical Operators.
13. Use Script files and Managing data.
14. Apply Conditional statements and Loops.

References:

1. Amos Gilat, MATLAB - An Introduction with Applications, 4th Edition, John Wiley & Sons, Inc, 2011.
2. Attaway, S. MATLAB - A Practical Introduction to Programming and Problem Solving, 2nd Edition, Elsevier Butterworth-Heinemann, 2012.