Course Name Numerical Methods and Computer Programming Lab

Course Code CS(EE)391

Course Credit 2

Contact Hour 3L

Prerequisite Concept of Numerical Methods, C Programming Language

Course Objective

The objectives of this course are

1. To provide suitable and effective methods called Numerical Methods, for obtaining approximate representative numerical results of the problems.
2. To solve problems in the field of Applied Mathematics, Theoretical Physics and Engineering which requires computing of numerical results using certain raw data.
3. To solve complex mathematical problems using only simple arithmetic operations. The approach involves formulation of mathematical models of physical situations that can be solved with arithmetic operations.
4. To deal with various topics like finding roots of equations, solving systems of linear algebraic equations, interpolation and regression analysis, numerical integration & differentiation, solution of differential equation, boundary value problems, and solution of matrix problems.
5. To facilitate numerical computing.

Course Outcome

On completion of the course students will be able to

1. Interpolation techniques
2. Numerical solution to algebraic equations
3. Numerical integration
4. Numerical solution of a system of linear equations
5. Ordinary differential equation

CO Mapping with departmental POs

H: High, M: Medium, L: Low

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	H			M					L			M
CO 2	H			L								M
CO 3	H	L		L					M			M
CO 4	H				L							M
CO 5	H			M					L			M
CO 6	H							L				M

Course Content

1. Assignments on Newton forward /backward, Lagrange's interpolation.
2. Assignments on numerical integration using Trapezoidal rule, Simpson's 1/3 rule, Weddle's rule.
3. Assignments on numerical solution of a system of linear equations using Gauss elimination and Gauss-Seidel iterations.
4. Assignments on numerical solution of Algebraic Equation by Regular-falsi and Newton Raphson methods.

5. Assignments on ordinary differential equation: Euler's and Runga-Kutta methods.
6. Introduction to Software Packages: Matlab / Scilab / Labview / Mathematica.

Text Books

C.Xavier: C Language and Numerical Methods.

Reference Books

1. Balagurusamy: Numerical Methods, Scitech.