

Lesson Plan

Computational methods

Semester-IV

Paper Code-AIML-212

Unit-1

Contents	No. of Lectures
Linear Algebraic and Transcendental equation with Algorithm	1
Computer Implementation and Efficiency	1
Bracketing Method	1
Graphical Method	1
Bisection Method	1
False Position	1
Simple Fixed-Point Iteration	1
Newton-Raphson Method	1
Secant Method	1
Brent Method	1

Unit-2

Contents	No. of Lectures
Gauss Elimination	1
Tridiagonal System	1
LU Factorization and Gauss Elimination as LU Factorization	1
Cholesky Factorization	1
Matrix Inverse with Condition	1
Error Analysis and system condition	1
Gauss-Seidel Method	1
Nonlinear System	1
The Power Method	1
Interpolation	1
Splines	2

Unit-3

Contents	No. of Lectures
High Accuracy Differentiation	1
Richardson Extrapolation	1
Derivatives of unequally spaced data	1
Partial Derivatives	1
Newton-Cotes	1
Higher order Newton- Cotes	1
Trapezoidal Rule and Simpson's Rule	1
Integration with unequal segment	1
Romberg Integration	1
Gauss Quadrature, Adaptive Quadrature	1

Unit-4

Contents	No. of Lectures
Euler's Method	1
Runge Kutta Method	1
Adaptive Method	1
Finite Difference Method	1
Initial Value Problem	1
Boundary Value Problem	1
Partial Differential Equations	2