BCA3C05- Computer Oriented Numerical & Statistical Methods Course

Number: 17

Contact Hours per Week: 5

Number of Credits: 3

Number of Contact Hours: 80 Hrs.

Course Evaluation: Internal – 15 Marks + External – 60 Marks

Objective

 To learn the floating point arithmetic  Learning to solve linear equations.  To learn numerical differentiation and integration.  To learn the basics of statistics and probability theory

Prerequisites

Background of the basic Mathematics

Course Outline

UNIT I (8T)

Floating Point Arithmetic - Errors, Significant digits and Numerical Instability, Roots of Algebraic Equations - Bisection Method - Method of False Position - Newton Raphson Method.

UNIT II (12T)

Interpolation and Approximation–Lagrange & Newton; Interpolations- Finite Difference Operators, Interpolating; Polynomials using finite differences, Simpson‟s 1/3rd rule ,Trapezoidal method.

UNIT III (20T)

Basics statistics: Measures of central tendencies - Mean, Median, Mode, Geometric mean and Harmonic mean. Measures of dispersion - Range, quartile deviation, Lorenz curve. Mean deviation and standard deviation.

UNIT IV (20T)

Curve fitting- Principles of least squares, fitting of straight lines. Correlation (Bivariate case only) Pearson‟s coefficient of correlation. Rank correlation and Regression analysis. Probability theory: Random experiment. Sample point, sample space, events, union, intersection and compliment of events.

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BCA (Academic Year 201 9 - 20 Onwards )

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UNIT V (20T)

Random variables and probability distribution, Discrete and continuous random variablesdensity function- distribution- density function.

Reference books

1. Numerical Methods in Engineering, Salvadori & Baron,PHI

2. Numerical Methods for Scientific and Engineering Computation, M.K. Jain, SRK, Iyengar, R.K. Jain, New Age International 3. Introduction to Mathematical Statistics, Hogg R V Craig A T, Macmillan

4. Mathematical Statistics, Freund J E, Waple R E, Prentice Hall of India.

5. Probability and Statistics for Engineers, Miller I Freund J E, Prentice Hall of India.