

**STATISTICS AND NUMERICAL ANALYSIS**

Course Code: BEB607

Credit: 04 (L-3, T-1, P-0)

Contact Hours: 60

MM: 100

**Course Objectives:**

- The students will know about the Analysis of variance.
- To provide the concept of backward and forward difference table.
- To make able to understand the hypothesis.
- To make them clear about General quadrature formula.

**Course Outline:**

**Unit I**

- **STATISTICS:** Mean, Median and Mode, Range, Quartile, Semi-inter Quartile Deviation, Standard Deviation, Coefficient of variance.

**Unit II**

- Correlation and Regression, Analysis of variance (ANOVA), f-test, t-test, z-test, hypothesis, discrete distributions.

**Unit III**

- **Numerical Analysis:** Shift operator, Forward and backward difference operators and their relationships, Fundamental theorem of difference calculus, Interpolation, Newton-Gregory's forward and backward interpolation formulae, Divided differences, Newton's divided difference formula, Lagrange's interpolation formula,

**Unit IV**

- Numerical differentiation, Numerical integration, General quadrature formula, Trapezoidal and Simpson's rules, Numerical solution of first order differential equations: Euler's method, Picard's method, Runge-Kutta method, Solution of transcendental and polynomial equations by iteration, bisection, Regula-Falsi and Newton-Raphson methods.


**Course Outcomes:**

After completing the course, students will be able to:


1. Understand various methods of numerical differentiation.
2. Analyze Gauss, Stirling's, Bessel's and Evert's interpolation formula.
3. Identify the difference between Correlation and Regression.
4. Understand about the hypothesis.
5. Evaluate Newton's divided difference formula.
6. Analyze & Solve the Newton-Raphson methods.

**Suggested Books:**

- Francis Scheid, Numerical Analysis, TMH New Delhi.
- Tata McGraw- Hill, Reprint 2007
- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 2005
- E. Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 2005.

  
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