

B.C.A– 2023-2024

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
	Statistical Methods & its Applications- I	Elective	4	-	-	-	3	4	25	75	100
Learning Objective											
LO1	Tell how descriptive and inferential statistics are used in the modern world										
LO2	Show an understanding of Measures of location										
LO3	Show an understanding of Measures of dispersion.										
LO4	Show an understanding of Measures of Skewness.										
LO5	Knowledge about Correlation.										
UNIT	Contents									No. of Hours	
I	Introduction - scope and limitations of statistical methods - classification of data -Tabulation of data- Diagrammatic and Graphical representation of data - Graphical determination of Quartiles ,Deciles and Percentiles.									12	
II	Measures of location: Arithmetic mean, median, mode, geometric mean and Harmonic mean and their properties.									12	
III	Measures of dispersion: Range, Quartile deviation, mean deviation, Standard deviation, combined Standard deviation and their relative measures.									12	
IV	Measures of Skewness: Karl Pearson's, Bowley's, and Kelly's and coefficient of Skewness and kurtosis based on moments.									12	
V	Correlation - Karl Pearson – Spearman's Rank correlation - concurrent deviation methods. Regression Analysis: Simple Regression Equations.									12	

	Note: The proportion between theory and problems shall be 20:80	
	Total	60
Course Outcomes		Programme Outcome
CO	Upon completion of the course the students would be Able to:	
1	Knows the basic concept of statistical method.	PO1
2	Understand the Measures of location	PO1, PO2
3	Understand the Measures of dispersion	PO3, PO5
4	Understand the Measures of Skewness	PO5
5	Understand the correlation, concurrent deviation methods.	PO3, PO6
Text Book		
Fundamental of Mathematical Statistics-S.C.Gupta&V.K.Kapoor-SultanChand		
Reference Books		
Statistical Methods-Dr.S.P.Gupta-Sultan Chand & Sons		
Elements of Statistics -Mode. E.B.-Prentice Hall		
Web Resources		
https://nptel.ac.in/courses/111107105		

Mapping with Programme Outcomes:

CO/PSO	PSO1	PSO 2	PSO3	PSO4	PSO 5	PSO6
CO 1	3	3	3	3	3	3
CO 2	3	3	2	3	3	3
CO 3	3	2	2	3	2	3
CO 4	3	3	3	2	2	3
CO 5	3	2	3	2	3	2
Weight age of course contributed to each PSO	15	13	13	13	13	14

S-Strong-3 M-Medium-2L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
	NUMERICAL METHODS	Elective	4	-	-	-	3	4	25	75	100
Learning Objective											
LO1	To solve practical technical problems using various numerical method formulas										
LO2	To derive appropriate numerical methods to solve algebraic, transcendental equations.										
LO3	To know the numerical methods of solving simultaneous linear equations.										
LO4	To acquire knowledge about forward differences and Backward differences and their relationship.										
LO5	Knowledge about central difference operators and problems based on various central differences formulae.										
UNIT	Contents										No. of Hours
I	Curve Fitting- Principle of Least square Fitting of straight line $Y = ax + b$, parabola $Y = ax^2 + bx + c$, exponential curves of forms $Y = ax^b$, $Y = ae^{bx}$, and $Y = ab^x$.										12
II	The solution of numerical algebraic and transcendental Equations: Bisection method – Iteration Method – Regula Falsi Method – Newton – Raphson method										12
III	Solution of simultaneous linear algebraic equations: Gauss elimination method – Gauss Jordan method – Method of Triangularization – Gauss Jacobi method – Gauss Seidel method										12
IV	Finite differences Operators Δ, ∇ and E - relation between them — factorial polynomials. Interpolation with equal intervals: Gregory-Newton forward and backward interpolation formulas.										12

V	Central differences formulae Operators μ , δ and relation with the other operators. Gauss forward and backward formulae, Stirling's formula and Bessel's formula	12
	Total	60
Course Outcomes		Programme Outcome
CO	Upon completion of the course the students would be Able to:	
1	Solve the problems of fitting of straight lines, parabolas and the different form of exponential curves	PO1
2	Solve algebraic equations using various methods like Bisection method, Iteration method, Regula Falsi method and Newton – Raphson method	PO1, PO2
3	Estimate the solution of simultaneous linear equations using different numerical methods	PO3, PO5
4	Define basic concept of operators Δ , ∇ and E , Solving interpolation with equal intervals problems using Gregory Newton's forward formula and Newton's backward formula	PO5
5	Estimate the solution of central difference formula using the methods Gauss's forward, backward formula, Stirling's formula and Bessel's formula	PO3, PO6
Text Book		
Kandasamy. P, Thilagavathi. K and Gunavathi. K "Numerical methods" – S. Chand and Company Ltd, New Delhi – Revised Edition 2007. (Chapters: 1,3,4,5,6, and 7).		
Reference Books		
Venkataraman M. K., "Numerical Methods in Science and Engineering" National Publishing company V Edition 1999.		
Sankara Rao K., "Numerical Methods for Scientists and Engineers" 2 nd Edition Prentice Hall India 2004		
Web Resources		
https://nptel.ac.in/courses/111107105		

Mapping with Programme Outcomes:

CO/PSO	PSO1	PSO 2	PSO3	PSO4	PSO 5	PSO6
CO 1	3	3	3	3	3	3
CO 2	3	3	2	3	3	3
CO 3	3	2	2	3	2	3
CO 4	3	3	3	2	2	3
CO 5	3	2	3	2	3	2
Weight age of course contributed to each PSO	15	13	13	13	13	14

S-Strong-3 M-Medium-2L-Low-1