

**SES's L.S. RAHEJA COLLEGE OF ARTS AND COMMERCE
(AUTONOMOUS)**



BOARD OF STUDIES: Information Technology and Data Science

Programme: B.Sc. (Artificial Intelligence & Data Science)

Semester: II

Nomenclature of the Course: Statistical Analysis for Data Science

NEP Vertical: Major

Credit: 02

Total Marks: 50

Academic Year: 2026–27

(As per Choice Based Credit System under NEP 2020)



Unit-wise Detailed Syllabus

Unit	Detailed Contents	Andragogy	Hours
I	Descriptive Statistics & Probability Fundamentals 1. Introduction to Statistics in Data Science 2. Types of Data (Qualitative, Quantitative) 3. Measures of Central Tendency – Mean, Median, Mode 4. Measures of Dispersion – Range, Variance, Standard Deviation 5. Probability Concepts – Basic Terminology 6. Conditional Probability and Bayes’ Theorem (Basic Concept) 7. Random Variables – Discrete and Continuous (Introduction)	Concept explanation with real datasets, Numerical problem solving, Case-based examples (marks/sales data), Basic spreadsheet-based calculation demonstration	15
II	Inferential Statistics & Data Relationships 1. Correlation – Pearson’s Correlation Coefficient 2. Simple Linear Regression (Conceptual and Numerical) 3. Sampling Techniques – Random, Stratified, Systematic 4. Hypothesis Testing – Null & Alternative Hypothesis 5. z-test (Concept and Basic Calculation) 6. Confidence Interval (Conceptual Understanding) 7. Applications in Data Science – Decision Making Based on Data	Step-by-step numerical derivations, Interpretation-based discussion, Analytical reasoning exercises, Spreadsheet/Python-based demonstration of correlation and regression	15

Learning Objectives

1. To understand descriptive statistical measures.
2. To apply probability concepts in data analysis.
3. To analyze relationships between variables using correlation and regression.
4. To understand hypothesis testing for decision-making.
5. To interpret statistical results in Data Science applications.

Course Outcomes (CO)

CO No.	Course Outcome	Bloom's Level	PSO Mapped
CO1	Compute and interpret measures of central tendency and dispersion	Apply (L3)	PSO2
CO2	Apply basic probability rules in problem solving	Apply (L3)	PSO2
CO3	Analyze relationships using correlation and regression	Analyze (L4)	PSO3
CO4	Interpret hypothesis testing results for decision making	Analyze (L4)	PSO3
CO5	Apply statistical reasoning in Data Science contexts	Apply (L3)	PSO2, PSO3

Suggested Readings

Sr. No.	Title	Author / Source
1	Statistics for Data Science	James D. Miller
2	Business Statistics	S.C. Gupta & V.K. Kapoor
3	Statistics for Engineers and Scientists	William Navidi
4	Practical Statistics for Data Scientists	Peter Bruce & Andrew Bruce

QUESTION PAPER PATTERN

(C) FOR CONTINUOUS EVALUATION

Particulars	Marks
Class Test	10
Assignment / Programming Task	10
Total	20

B) FOR SEMESTER END EXAMINATION

Maximum Marks: 30

Duration: 1 Hour

Question No.	Description	Total Marks
Q1	Attempt Unit I	
	A – Remembering	15
	B – Applying(Numerical)	
	C – Analysing	
OR		
	P – Remembering	15
	Q – Applying	
	R – Analysing	
Q2	Attempt Unit II	
	A – Understanding	15
	B – Applying(Numerical)	
	C – Evaluating/Analysing	
OR		
	P – Remembering	15
	Q – Understanding	
	R – Evaluating/Analysing	