

Branch Name:	BCA (Bachelor of Computer Application)
Program Code:	CS101
Course Title:	Probability and Statistics
Course Code:	22-CAM103-1C
Pre-requisite Course:	Basic Knowledge of Fundamental mathematics.

Course Objective:

1. To Understand Basic Concepts of Probability and Statistics Used in Data Analysis.
2. To Enable Students to Apply Probability Distribution in Real-World Problems.
3. To Introduce Statistical Tools for Decision Making and Prediction.
4. To Develop Understanding of Hypothesis Testing and Correlation Analysis.

Teaching and Examination Scheme:

Teaching Scheme (Hours. per week)				Evaluation Scheme (Marks)								
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory				Practical				Total
				University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
				Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	
3	-	-	3	18	50	09	25	-	-	-	-	75

Course Contents:

Sr. No	Topics	Total Hours	Weightage (%)
1	Introduction to Statistics Definition and importance of statistics, Types of data: Primary & Secondary, Measures of Central Tendency: Mean Advancers and Dis Advancers, Median Advancers and Dis Advancers, Mode Advancers and Dis Advancers, examples	12	25
2	Measures of Dispersion: Range Advancers and Dis Advancers, Variance Advancers and Dis Advancers, Standard Deviation Advancers and Dis Advancers, examples	12	25
3	Sampling Methods: Meaning of Population and sample, Difference between Population survey V/S Sample Survey, Characteristics of ideal sample, Sampling Methods: Procedure, Merits, Demerits and Calculation Simpler and om sampling, Stratified random Sampling, Multi Sampling (Theory Only), Cluster Sampling (Theory Only)	10	25
4	Probability Theory Basic Terminologies: Experiment, Sample Space, Event, Classical & Empirical Definition of Probability, Addition and Multiplication Theorem, Conditional Probability & Bayes' Theorem.	11	25

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

1. **CLO 1:** Understand and describe the types of data and statistical measures.
2. **CLO 2:** Apply probability concepts to solve real-life problems.
3. **CLO 3:** Distinguish between different probability distributions.
4. **CLO 4:** Compute and interpret expected values and variances.
5. **CLO 5:** Analyze relationships between variables using correlation and regression.

List of Textbooks:

1. Fundamentals of Statistics by S.C.Gupta.
2. Discrete mathematics by Avnika .P. Darji.

List of Reference Books:

1. Statistical Methods, S.P.Gupta, Published by New India Publishing Agency.
2. Business Statistics, R.S.Bhardwaj, Publishing Made Easy· Alexa.
3. Fundamental of Statistics, S.C.Gupta, Publisher: Himalaya Publishing.
4. Operation Research, SharmaS.D., KedarNath&Co. Meerut,1988-89.

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

1. Write a program to calculate the Arithmetic Mean of N numbers using an array.
2. Write a program to calculate Median of N numbers.
3. Write a program to find Mode of N numbers.
4. Write a program to find Standard Deviation of N numbers.
5. Write a program to calculate Range.
6. Write a program to calculate Quartile Deviation.
7. Creating a datasheet of numbers for given data.
8. Creating in voice numbers for given data.
9. Creating a bill book of numbers for given data.
10. Creating histogram, standard Error for given data etc.

Mapping of CLO, PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO1	L		M	M	L		M	M			M		L		
CLO2	L	M		H	M	M	M		M	M			L		
CLO3			L	M	M	M	L	M			L	L		M	
CLO4		M	M	L		H	M	L	M	L			M	M	
CLO5	L		M	L	M	H	M		M		L	L	M	M	
CLO6	M	L			M					M		L		L	

H: High, M: Medium, L: Low