

St. Xavier's College (Autonomous), Ahmedabad

Syllabus of Semester – II of the following departments under Faculty of Computer Science based on Undergraduate Curriculum Framework to be implemented from the Academic Year 2024-25.

DEPARTMENT OF COMPUTER SCIENCE

BCA (Hons.)

Category-IV

Multidisciplinary Course: Statistical Computing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course			Eligibility Criteria	Prerequisite(s) of the Course (if any)
	Lecture	Tutorial	Practical / Practice		
Statistical Computing MDC263C	2		2	10 + 2 from a recognized board in any stream	Nil

Course Introduction:

This course introduces the subject of statistics and statistical problem solving. It also develops the ability to find approximate solutions and/or answer by choosing correct statistical technique for a given problem.

Objectives:

Students will be able to:

- 1.) Get a working knowledge of statistical methods.
- 2.) Understand the use of statistical methods with computer related computational approach.
- 3.) With statistical techniques so that they are prepared to apply the knowledge in the field of computer science.

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
	Introduction and Measures of Central Tendency	10 hours
	• Definitions, Functions, Scope and Limitations of Statistics ○ Introduction ○ Meaning of Statistics ○ Functions of Statistics ○ Scope or Importance of Statistics ○ Limitations of Statistics	2 hrs
	• Measures of Central Tendency ○ Introduction ○ Characteristics of a Good Average.	
1	• Different Types of Measures of Central Tendency ○ Mean ▪ Arithmetic Mean ▪ Arithmetic Mean of Grouped Frequency Distribution ▪ Short-cut Method and Step-Deviation Method of Obtaining Arithmetic Mean (Excluding Mathematical Properties of A.M) ▪ Combined Arithmetic Mean ▪ Cumulative Arithmetic Mean ▪ Advantages, disadvantages of Arithmetic Mean ▪ Geometric Mean	8 hrs

- Advantages, disadvantages and uses of G. M
- Harmonic Mean
- Advantages, disadvantages and Uses of H.M
- Relation Among A.M., G.M., H.M.
- Weighted Arithmetic Mean
- o Median
 - Individual Frequency Distribution
 - Ungrouped Frequency Distribution
 - Grouped Frequency Distribution
 - Advantages, disadvantages and uses of Median
- o Mode
 - Individual Frequency Distribution
 - Ungrouped Frequency Distribution
 - Grouped Frequency Distribution
 - Advantages, disadvantages and uses of Mode

Practical Demo should be given for Mean, Median and Mode in Excel

Measures of Dispersion Or Variation

10 hours

- **Quartiles, Deciles and Percentiles**
- **Introduction, Objectives and essentials of a good measure**
- **Absolute and Relative Measures of Dispersion**
 - o Range 4 hrs
 - o Quartile Deviation
 - Advantages and disadvantages of Q.D.
 - Coefficient of Quartile Deviation
 - o Mean Deviation
 - Coefficient of Mean Deviation
 - Advantages and disadvantages of M.D.
 - o Standard Deviation 4 hrs
 - Alternative Method of Standard Deviation
 - Relationship among Q.D., M.D., S.D.
 - Advantages and disadvantages of S.D.
 - o Variance (Excluding Properties of S.D)
 - Coefficient of Variation
 - Direct Method
 - Step-Derivation Method 2 hrs

Practical Demo should be given for Range, Q.D, M.D, S.D in Excel

Probability and Mathematical Expectation

10 hours

- **Probability**
 - o Introduction
 - o Definitions of Some Important Terms 3 hrs
 - Random Experiment
 - Trial Event
 - Favorable Cases

3

- Equally Likely Events
- Mutually Exclusive Events
- Exhaustive Events
- Dependent Events
- Independent Events
- Classical approach to probability
- Statistical approach to probability
- Modern approach to probability
- Symbols associated with probability
- Algebra of sets
- Conditional Probability
- Theorems (Laws) of Probability(Without Proof only Examples)
 - Addition (Only for two events)
 - Multiplication (Only for two events)
- Baye's Rule(only for two events)

7 hrs

Correlation Analysis And Regression Analysis

10 hours

• Correlation Analysis

- Introduction
- Types of Correlation
 - Positive, Negative and Zero Correlation
 - Linear and non-linear Correlation
 - Simple, Multiple and Partial Correlation
 - Positive, Negative and Zero Correlation
 - Methods of Measuring Correlation
 - Karl Pearson's Product Moment Method
 - Spearman's Rank Method
 - Concurrent Deviation Method

6 hrs

4

• Regression Analysis

- Definition
 - Regression Equation.
 - Method of Least Squares.
 - The regression equation of Y on X
 - The regression equation of X on Y
 - Regression Coefficient & Its Properties (without proof)
- Correlation Versus Regression
- Coefficient of Determination

4 hrs

Practical Demo should be given for Correlation and Regression in Excel

Note: - Excel function/s and its syntax should not be asked in theory examination.

Textbook:

Business Statistics (Third Revised Edition)

Publication: S.Chand

By Padmalochan Hazarika

- **Chapter-1**(1.1,1.2,1.3,1.4,1.5)
- **Chapter-5**(5.1,5.2,5.4,5.5)
- **Chapter-6**(6.1,6.2,6.3,6.4,6.5(Excluding Lorenz Curve))
- **Chapter-8**(8.1,8.2,8.3)
- **Chapter-13**(13.1, 13.2)

Reference Book:

1. Business Mathematics and Statistics
Publication: Tata McGraw Hill Education Private Limited
By N G Das and J K Das