St. Xavier's College (Autonomous), Ahmedabad
Syllabus of Semester – I of the following departments under Faculty of Science
based on Under Graduate Curriculum Framework – 2023 (NEP)
to be implemented from the Academic Year 2023-24.

FACULTY OF SCIENCE

DEPARTMENT OF STATISTICS

Course	Title	Content	Hours/Week	Credit
Minor-I (Theory)	Basics of data types and classification	U-1: Data types and classification U-2: Data visualization	2 hrs	**2**
Minor-I (Lab)	Statistics Practical	Practical using manual calculation and Excel	4 hrs	**2**

Minor-I (Theory) Basics of data types and classification

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course (Total - 02 Credit)			Eligibility Criteria	Prerequisite(s) of the Course (if any)
	Lecture	Practical	Experiential Lab		
Basics of data types and classification	2	2	0	10 + 2 from a recognized board in any stream	Basic Mathematics, Observation & Analytical Skills

Course Outcomes:

CO-1 Acquire knowledge of introductory statistics, its scope and importance in various areassuch as Medical, Engineering, Agricultural and Social Sciences etc.

CO-2 Learn various types of data, their organization, visualization and classification.

CO-3 Learn presentations of data in tabular form and graphs.

Learning Outcomes: After completion of this course, the students will be able to

(1) Scrutinize an arbitrary data set.

(2) Represent the data in tabular and diagrammatic form.

(3) Prepare the frequency distribution for qualitative and quantitative data.

Unit: 1 Data Types and Classification (15Hrs)

- Types of data: Primary, Secondary, Internal and External data and their sources. Designing a questionnaire schedule.
- Classification of data: Qualitative, Quantitative: Discrete, Continuous; Chronological (Time series) data.
- Nominal, Ordinal, Interval and Ratio data.
- Frequency: grouped and ungrouped data; Construction of frequency and cumulative frequency distribution.
- Presentation of qualitative data: Tabulation (up to four attributes).

Unit: 2 Data visualization (15Hrs)

- Graphical representation of grouped data: Histogram, frequency curve, frequency polygon, ogives (cumulative frequency curves)
- Diagrammatic representation of data: Bar diagrams- simple Bar, multiple bar, sub-divided bar and percentage bar diagrams.
- Two dimensional diagrams: Rectangles and Pie diagrams. Stem - Leaf plot.
- Bivariate: Frequency distribution, Marginal and Conditional frequency distributions.

References:

1. Agresti, A. (2010): Analysis of Ordinal Categorical Data, 2nd Edition, Wiley.
2. Anderson T.W. and Jeremy D. Finn (1996). "The New Statistical Analysis of Data", Springer.
3. Freedman, D., Pisani. R and Purves. R. (2014), "Statistics",4th Edition, W. W. Norton & Company.
4. Gupta, S.C. (2018), "Fundamental of Statistics", Himalaya Publishing House, 7th Edition.
5. Gupta S.C. and V.K. Kapoor (2020), "Fundamental of Mathematical Statistics", Sultan Chand and Co. 12th Edition.
6. Goon A.M., Gupta M.K. and Dasgupta B. (2002): "Fundamentals of Statistics", Vol. I & II, 8th Edn. The World Press, Kolkata.
7. John E. Freund's "Mathematical Statistics with Applications", (7th Edn.), Pearson Education, Asia.
8. Mood, A.M. Graybill, F.A. and Boes, D.C. (2007): "Introduction to the Theory of Statistics", 3rd Edn., (Reprint), Tata McGraw-Hill Pub. Co. Ltd.

MODE OF EVALUATION

Evaluation will be divided in two parts.

- **Internal:** 50 marks (will be decided by the college)
- **External:** 50 marks (will be conducted by college)

Minor-I (Lab) Basics of data types and classification

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course (Total - 02 Credit)			Prerequisite(s) of the Course (if any)
	Lecture	Practical	Experimental Lab-1	
Basics of data types and classification	0	2	0	Basic Mathematics, Observation & Analytical Skills

Course Outcomes:

CO-1 Ability to represent/summarise the data/information

CO-2 Ability to use information and presenting them using appropriate Graphical methods including common graphical tools (such as boxplots, histograms, and stem plots) and also to draw inferences from these graphs

CO-3 Reflect the skill of presenting data by diagrams, graphs and charts using MS-Excel.

Learning Outcomes: After completion of this course, the students will be able to

(1) To present data by using different tables.

(2) To visualize data by different diagrams and graphs.

Computing all the practical manually and using Excel

1. Classification of the variable/data in to various category and tabulation
2. Presentation of data by frequency tables, diagrams and graphs, stem and leaf, partition values.
3. Data visualization: Histogram, Frequency curve, frequency polygon, ogives (cumulative frequency curves), Bar Diagrams, Pie Diagram, Stem - Leaf and box plot.