

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 to be implemented
from the Academic Year 2023-24.

FACULTY OF SCIENCE

DEPARTMENT OF STATISTICS

MDC- Statistics for All

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course	Title	Content	Hours/week	Credit
MDC208C	Statistics for All	U-1 Univariate data U-2 Bivariate data U-3 Regression U-4 Experiential learning base on above units	4 hrs	4

Course Title & Code	Credit Distribution of TheCourse (Total credit-04)			Eligibility Criteria	Prerequisite(s) of the Course (if any)
	Lecture	Practical	Experiential lab-1		
MDC- Elementary Statistics Statistics For All	3	1	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 areas such as Medical, Engineering, Agricultural and Social Sciences, Biology etc.
- CO-2 Learn various types of data, their organization, visualisation and classification.
- CO-3 Learn presentations of data in tabular form and graphs.
- CO-4 Understanding paired data along with different types of association-measures and exploring cause-effect relation through the study of linear regression.

Learning Outcomes: At the end of the 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 and Bivariate Frequency distribution for qualitative and quantitative data.
- (4) Gain valuable insights on correlation and regression

Unit 1. Univariate data:

(10Hrs)

- Variable, notion of population and sample, different types of data
- Methods of collecting primary and secondary data, presentation of data (graphical and tabular)
- Measures of central tendency
- Dispersion (primarily range, quartile deviation, standard deviation, coefficient of variation)
- Ideas of skewness and kurtosis
- Simple numerical problems

Unit 2. Bivariate data:

(25Hrs)

Scatter Diagram

- Construction of scatter diagrams
- Interpretation of scatter plots
- Positive, negative, and no correlation
- Numerical examples based on scatter plots

Pearson's Correlation Coefficient

- Meaning and definition
- Properties of Pearson's correlation coefficient
- Interpretation of coefficient values
- Advantages and limitations
- Numerical problem

Spearman's Rank Correlation

- Meaning and concept of rank correlation
- Applications of rank correlation
- Advantages and limitations
- Numerical problems

Association of attribute

- Meaning of an attribute
- Difference between attributes and variables
- Consistency of data
- Criteria of Independence of two attributes Proportion Method and
- Association of attributes - Yule's coefficient of association, Coefficient colligation
- Numerical problems

Unit 3. Regression**(15Hrs)**

- Introduction to Regression
- Bivariate Linear Regression
- Regression coefficients and properties (without proof)
- Angle between two regression line
- Coefficient of determination
- Simple numerical problems

Unit 4. Activities based on above units:**(10Hrs)**

- Case study
- Report writing
- Presentation
- Computing all above topics using Excel

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.