St. Xavier's College (Autonomous), Ahmedabad

FACULTY OF ARTS

DEPARTMENT OF ECONOMICS (SF)

BA. Hons. (Economics) SF

SEMESTER-1

Minor Course – 1: Statistics for Economics-1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course			Eligibility Criteria	Pre-requisite(s) of the Course (if any)
	Lectures	Tutorial	Practical / Practice		
Statistics for Economics-1 (ECH-1101)	4	0	0	10 + 2 from a recognized board in any stream	None

Learning Objectives (LO):
1. Build a foundation in descriptive statistics, including graphical and tabular displays, numerical measures, and data visualization best practices.
2. Understand key concepts in probability theory, including random variables, probability distributions, and their applications in statistical inference.

Course Outcomes (CO):
1. Apply descriptive statistics tools such as frequency distributions, histograms, boxplots, and summary statistics to summarize and interpret categorical and quantitative data.
2. Use probability rules, discrete probability distributions (binomial, Poisson, hypergeometric), and foundational inference techniques to analyse uncertainty and solve real-world problems.

Chapter-1: Descriptive Statistics: Tabular and Graphical Displays
Descriptive Statistics, Tabular and Graphical Displays, Summarizing Data for a Categorical Variable, Frequency Distribution, Relative Frequency, Percent Frequency Distributions, Bar Charts, Pie Charts, Summarizing Data for a Quantitative Variable, Dot Plot, Histogram, Cumulative Distributions, Stem-and-Leaf Display, Summarizing Data for Two Variables Using Tables, Crosstabulation, Simpson's Paradox, Summarizing Data for Two Variables Using Graphical Displays, Scatter Diagram, Trendline, Side-by-Side Bar Charts, Stacked Bar Charts, Data Visualization, Effective

Graphical Displays, Data Dashboards.

Chapter-2: Descriptive Statistics: Numerical Measures

Descriptive Statistics, Numerical Measures, Measures of Location, Mean, Weighted Mean, Median, Geometric Mean, Mode, Percentiles, Quartiles, Measures of Variability, Range, Interquartile Range, Variance, Standard Deviation, Coefficient of Variation, Measures of Distribution Shape, Relative Location, Detecting Outliers, z-Scores, Chebyshev's Theorem, Empirical Rule, Five-Number Summaries, Boxplots, Measures of Association Between Two Variables, Covariance, Correlation Coefficient.

Chapter-3: Introduction to Probability

Introduction to Probability, Random Experiments, Counting Rules, Combinations, Permutations, Assigning Probabilities, Events and Their Probabilities, Complement of an Event, Addition Law, Conditional Probability, Independent Events, Multiplication Law, Bayes' Theorem, Tabular Approach.

Chapter-4: Discrete Probability Distributions

Discrete Probability Distributions, Random Variables, Discrete Random Variables, Continuous Random Variables, Developing Discrete Probability Distributions, Expected Value, Variance, Bivariate Distributions, Covariance, Financial Portfolios, Binomial Probability Distribution, Binomial Experiment.

Textbook:
- Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., Cochran, J. J., Fry, M. J., & Ohlmann, J. W. (2020). Statistics for business & economics (14th ed.). Cengage Learning.

Suggestive Reading
1. Larsen, R.J. and M.J. Marx (2017) – An Introduction to Mathematical Statistics and Its Applications, Pearson Education, 6th edition.
2. Wackerly, D., Mendenhall, W., & Scheaffer, R. (2014) – Mathematical Statistics with Applications, Cengage Learning, 7th edition.
3. Hogg, R. V., Tanis, E. A., & Zimmerman, D. L. (2018) – Probability and Statistical Inference, Pearson, 10th edition.
4. Casella, G., & Berger, R. L. (2002) – Statistical Inference, Duxbury Press, 2nd edition.