



SIES

RISE WITH EDUCATION

NAAC REACCREDITED "A" GRADE

College of Arts,
Science & Commerce
(Autonomous)

Sion (West), Mumbai – 400022.

Department of Statistics

Program: B.Sc.

Open Elective Course (OE) Course in

INTRODUCTION TO ELEMENTARY STATISTICS

Syllabus for F.Y.B.A

Semester I and II (To be implemented from 2023 onwards)

Credit Based Semester and Grading System National Education Policy

OE SEMESTER – 1

TITLE OF COURSE	INTRODUCTION TO ELEMENTARY STATISTICS-I			
COURSE CODE	UNIT	TOPICS	LECTURES/WEEK	CREDITS
	I	DESCRIPTIVE STATISTICS	1	2
	II	ELEMENTARY PROBABILITY THEORY	1	

SEMESTER – 2

TITLE OF COURSE	INTRODUCTION TO ELEMENTARY STATISTICS-II			
COURSE CODE	UNIT	TOPICS	LECTURES/WEEK	CREDITS
	I	CORRELATION AND REGRESSION	1	2
	II	TIME SERIES	1	

SEMESTER I

Objectives:

- To be well versed with data collection techniques. To effectively use data visualization and summarization techniques to understand data.
- To understand the concepts of probability.

Course Code	Title	Credits
	INTRODUCTION TO ELEMENTARY STATISTICS-I	2 Credits (30 lectures)
	UNIT I: DESCRIPTIVE STATISTICS Types of data. Different types of scales: nominal, ordinal, interval, and ratio. Concept of population and sample. Census and Sample survey. Primary data: Concept of a questionnaire and a schedule. Secondary data: Sources. Case studies Illustrating use of Statistics in different sectors.	15 Lectures

<p>Diagrams: Bar diagrams, Pie diagram</p> <p>Classification and Tabulation of categorical data up to order three.</p> <p>Univariate frequency distribution of discrete and continuous variables.</p> <p>Cumulative frequency distribution.</p> <p>Graphical representation of frequency distribution by Histogram, Frequency curve, Cumulative frequency curves, Stem and leaf diagram.</p> <p>Central tendency of data. Requisites of a good measure of central tendency.</p> <p>Positional averages: Median, Mode, Partition Values: Quantiles. Mathematical averages: Arithmetic mean, Geometric mean, Harmonic mean.</p> <p>Concept of dispersion. Requisites of good measure of dispersion.</p> <p>Absolute measures of dispersion: Range, Quartile Deviation, Mean absolute deviation, Standard deviation, and corresponding relative measures of dispersion. Combined variance.</p> <p>Raw & Central moments and relationship between them.</p> <p>Concept of Skewness and Kurtosis: Absolute and Relative measures of Skewness: Karl Pearson's, Bowley's and Measure based on moments.</p> <p>Measure of Kurtosis based on moments.</p> <p>Box & Whisker Plot.</p>	
<p>UNIT II: ELEMENTARY PROBABILITY THEORY</p> <p>Random experiment, Sample space, Event, Operation of events, mutually exclusive and exhaustive events.</p> <p>Classical (Mathematical), Empirical (Statistical) definitions of Probability and their properties. Subjective probability.</p> <p>Theorems on Addition and Multiplication of probabilities.</p> <p>Independence of events, pairwise and mutual independence of three events.</p> <p>Conditional probability, Bayes' theorem.</p>	<p>15 Lectures</p>

SEMESTER II

Objectives:

- To explore the concept of correlation and regression.
- To forecast and predict future trends in time series.

Course Code	Title	Credits
	INTRODUCTION TO ELEMENTARY STATISTICS	2 Credits (30 lectures)
	UNIT I: CORRELATION AND REGRESSION ANALYSIS Bivariate frequency distribution, marginal and conditional distribution, Scatter Diagram, Bubble chart. Product moment correlation coefficient and its properties. Spearman's Rank correlation (with and without ties). Linear regression. Fitting a straight line by method of least squares. Coefficient of determination. Relation between regression coefficients and correlation coefficient. Fitting of curves reducible to linear form by transformation. Fitting a quadratic curve by method of least squares.	15 Lectures
	UNIT II: TIME SERIES Definition of time series. Its components. Models of time series. Exponential Smoothing method. Estimation of trend by: Freehand curve, Method of semi averages, Method of Moving averages, Method of least squares (linear trend only). Merits and demerits of these methods. Estimation of seasonal component by, Method of simple averages, Ratio to moving average method. Ratio to trend method.	15 Lectures