AC – 24/05/2024
Item No. – 6.6 Sem. II (1a)

As Per NEP 2020

University of Mumbai

Syllabus for Basket of Minor	
Board of Studies in Statistics	
UG First Year Programme	
Semester -II	
Title of Paper	**Credits 2**
Elementary Statistics-I	**2**
From the Academic Year	**2023-24**

Course Name:- Elementary Statistics-I

1	**Description the course :** **Including but Not limited to :**	Introduction: Elementary statistics course is focuses on basic statistics such as collection of data and how to measure variables on different scale. Student will equip with to identify the scale of measurement and analyze elementary statistical analysis through graphical presentation. Also student will learn to identify nature of the data through statistical methods. This course mainly emphasizes the method of collecting data, summarizing and presenting data, and drawing inferences from the data. This course will be useful for science, humanity and commerce faculty also. This course will be applicable to various field to analyze their basic data structure. This course is focuses practical as well as theoretical aspects of basic statistics along with subjects from psychology, Economics, sociology, commerce , Computers , Mathematics , IT etc. There is growing demand for highly skilled statisticians in the 21st century in many fields including government, banking sector, health sciences, veterinary sciences, agricultural sciences, business, and social sciences etc
2	**Vertical :**	Minor
3	**Type :**	Theory
4	**Credit**:	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	**Hours Allotted :**	30 Hours
6	**Marks Allotted**:	50 Marks

7	**Course Objectives**: Students will be able to, 1. Understand the meaning of statistics and scope of statistics. 2. Understand techniques of data collection and its presentation. 3. Compute various measures of central tendencies and measures of dispersion. 4. Summarize data through central tendencies and measures of dispersion. 5. Understand the behavior of data using skewness and kurtosis.
8	**Course Outcomes**: **on successful completion of the course Students Should be able to,** 1. Calculate arithmetic mean, Geometric mean and Harmonic Mean 2. Differentiate between qualitative and quantitative data through scale of measurement. 3. Construct graphs and diagrams from data and interpret the result. 4. Compute Skewness and Kurtosis of the data to describe nature of data distribution.

Semester-II
Minor-I
Name of the course: Elementary Statistics-I

9	**Modules**:-	**Lectures**
	Module 1: Types of Data and Data Condensation	
	• Definition and scope of Statistics • Types of Characteristics, Different types of scales: nominal, ordinal, interval and ratio. • Collection of Primary data: concept of a questionnaire and a schedule, Secondary data • Types of data: Qualitative and quantitative data; Time series data and crosssection data, discrete and continuous data. • Tabulation. • Dichotomous classification- for two and three attributes, verification for consistency, ultimate class frequencies, fundamental set of class frequencies.	10
	Module 2: Classification of Data and Measure of central tendancy	**10**

	• Univariate frequency distribution of discrete and continuous variables.Cumulative frequency distribution. • Graphical representation of frequency distribution by Histogram, frequency polygon, Cumulative frequency curve. Stem and leaf diagram. • Concept and Requirements of good measures of central tendency. • Mathematical averages Arithmetic mean (Simple, weighted mean, combined mean), Effect of change of origin and scale on arithmetic mean .Geometric mean, Harmonic mean, relation between Geometric mean, Harmonic mean. Arithmetic mean.. • Geometric mean of ratio of two series is the ratio of their geometric means. • Positional averages: Median, Mode, and Partition Values: Quartiles, Deciles, and Percentiles. Graphical representation of mode, median and partition values. • Empirical relation between mean, median and mode • Merits and demerits of using different measures &their applicability	
	Module 3: Measures of Dispersion, Skewness & Kurtosis	**10**
	• Concept and requirements of good measures of dispersion. • Absolute and Relative measures of dispersion: Range, Quartile Deviation, Mean absolute deviation, Standard deviation, Coefficient of variation, Variance and Combined variance, Raw moments and central moments , relation between them and their properties. Merits and Demerits of measures of dispersion. • Concept of Skewness and Kurtosis: Measures of Skewness: Karl Pearson's, Bowley's and Coefficient of skewness based on moments. Measures of Kurtosis based on moments. Box Plot	

11	**Reference Books:** 1 Agarwal B.L. : Basic Statistics, New Age International Ltd. 2 Spiegel M.R. : Theory and Problems of Statistics, Schaum' s Publications series.Tata McGraw-Hill. 3 Kothari C.R. : Research Methodology, Wiley Eastern Limited. 4 Goon A.M., Gupta M.K., Dasgupta B. : Fundamentals of Statistics, Volume II :The World Press Private Limited, Calcutta. 5 Elhance D. N, Elhance V, Aggarwal B. M, Fundamentals of Statistics, Kitab Mahal Daryaganaj New Delhi, 2018. 6 Grewal P. S, Methods of Statistical Analysis, Sterling Publishers, 1990 7 S.C. Gupta and V.K. Kapoor, Fundamentals of Mathematical Statistics, Sultan Chand and Sons

Format of Question Paper:

Internal Continuous Assessment: (20 marks)

Assignment/viva Quizzes, Class Tests, presentation, project, assignment etc	Class Test	Total
05	15	20

Semester End Examination: (30 marks)

Semester End Examination will be of 30 marks of 01 hour duration covering entire syllabus of the semester. Examiners should frame sub questions for Q.1, Q2 and Q3. Each question carrying 15 marks. Attempt any two out of three questions.

Theory Question Paper Pattern:

Q 1	Max. marks: 15	Attempts any two questions out of Three.
Q 2	Max. marks: 15	
Q 3	Max. marks: 15	

Sign of the BOS Chairman
Dr. Santosh Gite
Board of Studies in Statistics

Sign of the Offg. Associate Dean
Dr. Madhav R. Rajwade
Faculty of Science & Technology

Sign of the Offg. Dean
Prof. Shivram S. Garje
Faculty of Science & Technology