PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE
Autonomous
Siddhartha Nagar, Vijayawada–520010
Re-accredited at 'A+' by the NAAC

23STMIL123: Descriptive Statistics for Business Analytics

Offered to: All UG Honours Programs **Course Type:** Minor 1 (Core -TH)

Year of Introduction: 2023-24 **Year of offering: 2023 - 2024**

Semester: II 60 Hrs **Credits: 3 Course Prerequisites (if any):**
Student required basic knowledge in Mathematics.

Course Description:

This course is an introduction to statistics for computer applications. The objective of the course will be to learn to use statistical techniques to evaluate, interpret and quantify uncertainty. This will provide a basis for analysing and interpreting data from designing and conducting formal studies to reading magazine, journal and newspaper articles.

Course Objectives:

1) To enable the students to develop basic knowledge in Statistics
2) To provide understanding in some basic statistical techniques which are used for Solving data science related problems.

Course Outcomes:

Course Outcome	Upon successful completion of this course, students should have the knowledge and skills to:	**Program Outcomes Mapping**
CO 1	To impart knowledge on Statistical concepts like Data Collection and Classification.	PO1
CO 2	Students will be able to draw the descriptive statistics for the data and interpret the data with the appropriate diagrams and graphs.	PO1
CO3	Describe the central tendency value measurement	PO2
CO 4	Knowledge of various types of data, their organization and evaluation of summary measures such as non- central and central moments, measures of skewness and kurtosis.	PO6
CO 5	Get the knowledge in respect of usage in day-to-day life in decision making in the face of uncertainty and also obtained the knowledge of probability applications.	PO6

CO-PO MATRIX							
COURSE CODE	**CO-PO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
23STMIL123	**CO1**	**3**					
	CO2	**3**					
	CO3		**3**				
	CO4						**3**
	CO5						**3**

Syllabus

Unit	Learning Units	Lecture Hours
I	**Statistical Description of Data** Origin, history and definitions of Statistics. Importance, Scope and limitations Statistics. Function of Statistics – Collection, Presentation, Analysis and Interpretation. Collection of data - primary and secondary methods and its methods. Classification of data – Quantitative, Qualitative, Temporal, Spatial. Presentation of data – Textual, Tabular – essential parts.	**12**
II	Measurement Scales – Nominal, Ordinal, Ratio and Interval. Frequency distribution and types of frequency distributions, forming a frequency distribution. Diagrammatic representation of data – Histogram, Simple Bar, Multiple bar and Pie with simple problems. Graphical representation of data: Histogram, frequency polygon and Ogives with simple problems.	**12**
III	**Measures of Central Tendency (MCT)** Objectives of averages, Characteristics of a good average. Arithmetic mean, Geometric mean, Harmonic mean, Median and Mode – merits, demerits, properties and applications.	**12**
IV	**Measures of Dispersion** Significance of measures of dispersion, Characteristic of an ideal measure of dispersion, Absolute and relative measures of dispersion – range, quartile deviation, mean deviation, variance and standard deviation – merits, demerits, properties and applications. **Moments:** Central and Non – Central moments and their interrelationship. Sheppard's correction for moments. Skewness and its methods, kurtosis.	**12**

V	**Elementary Probability** Basic Terminology - Random experiments, trial, sample space, mutually exclusive, exhaustive, equally likely, favorable, conditional and independent events. Definitions-Mathematical, Statistical and Axiomatic definitions of probabilities. Conditional Probability and independence of events, Addition and multiplication theorems of probability for 2 events and simple problems. Boole's inequality, Bayes theorem and its applications in real life problems.	**12**

No derivations and proofs of statistical techniques

Text Book:

Fundamentals of Statistics, S. C. Gupta, Himalaya Publishing House (1 May 2018), ISBN-13 : 978-9350517697

References Books:

1. Business Statistics - A First Course 2023 Edition, Levine David M. Publisher: Pearson Education India. ISBN: 9789332578951
2. Business Statistics , J.K.Sarma Publisher:: Dorling Kindersley 9788177586541
3. Statistics for Management, Author:Richard I. Levin, Published:December 2008 ISBN:9788177585841, 8177585843, Publisher:Pearson Education

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23STMIL123: Descriptive Statistics for Business Analytics.

Course Type Minor 1(Th) Semester II

Max.Time: 3 hours Maximum Marks: 70

Section-A

Answer the following Question **5X4= 20M**

1. a) What are different sources of Primary data?

(Or)

b) Name two kinds of statistical data and describe them in brief.

2. a) Explain briefly the various methods that are used for graphical representation of frequency polygon.

(OR)

(b) What are the advantages of diagrammatic representation of data.

3. a) Calculate Arithmetic mean for the following data

Class intervals	0-8	8-16	16-24	24-32	32-40	40-48
Frequency	8	7	16	24	15	7

(OR)

b) Characteristics of ideal measures of central tendency.

4. a) The first four moments of a distribution about the value 5 are -4, 22,-117 and 560. Find the corresponding moments about the mean, about zero and also find $\beta_1 \, and \, \beta_2$.

(OR)

b) Calculate mean deviation from mean for the following data

Class interval	0-9	10-19	20-39	39-39	40-49	50-59	60-69
Frequency	5	7	10	12	18	10	6

5. a) Write a note on axiomatic definition of probability.

(OR)

b) State the Law of addition and multiplication theorems of probability.

Section-B

Answer the following Question **5X10= 50M**

6. a) Discuss the Origin and scope of Statistics

(OR)

b) What precautions should be taken in the planning of a statistical survey?

7 a) Draw the histogram for table depicts the number of students of a class engaged in any one of the sports. Note that the number of students is actually the frequency.

Sports	Archery	Cycling	Power lifting	Swimming	Snooker	Table Tennis	Skate boarding
Frequency	8	12	13	15	14	10	9

(OR)

b) Draw Ogive curve to the following data and also obtain median through Ogives

Wages (in Rs.)	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130
No. Of workers	15	20	34	50	70	45	26	10

8. a) Calculate Mean, Median and Mode for the following data

Class intervals	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	15	20	34	40	50	30	10

(OR)

b) Define merits and demerits of Median and also calculate median Wage of the following distribution:

Wages (in Rs)	2000-3000	3000-4000	4000-5000	5000-6000	6000-7000
No. of workers	3	5	20	10	5

9. a) Calculate Standard deviation and coefficient of variation for the following table giving the age Distribution of 542 members of a club:

Age (in Years)	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. Of Members	3	61	132	153	140	51	2

(OR)

b) Calculate the first four moments of the following Distribution about Mean and hence find β_1 *and* β_2

X	0	1	2	3	4	5	6	7	8
f	1	8	28	56	70	56	28	8	1

10. a) A box contains 6 red, 4 white and 5 black balls. A person draws 4 balls from the box at random. Find the probability that among the balls drawn there is at least one ball of each color.

(OR)

b) The content of urns I, II and III are as follows

1 white, 2 black and 3 red balls

2 white, 1 black and 1 red balls and

4 white, 5 black and 3 red balls

One urn is chosen at random and two balls are drawn. They happen to be white and red. What is the probability that they come from the urns I, II and III?

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