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|-----------------------|----------------------------|
| <b>COURSE TITLE</b>   | <b>BUSINESS STATISTICS</b> |
| <b>COURSE CODE</b>    | <b>05FN0206</b>            |
| <b>COURSE CREDITS</b> | <b>2</b>                   |

**Objective:**

- 1 To understand about fundamental of Business Statistics and its importance
- 2 To impart a thorough understanding of practical implacability of Measures of Central Tendency & Dispersion
- 3 To impart a thorough understanding of statistical investigation and data collection methods including primary and secondary data, methods of sampling, frequency distribution, and classification and tabulation of data
- 4 To evaluate various techniques for representation of the data in the real world
- 5 To learn how business statistics applicability in different scenarios

**Course Outcomes:** After completion of this course, student will be able to:

- 1 Students can learn about the meaning of business statistics and understand its significance in the business world. They can explore the scope and limitations of business statistics to comprehend its applicability and constraints in different scenarios.
- 2 Students can gain knowledge about statistical investigation and the various data collection methods. They can delve into the intricacies of collecting primary and secondary data to ensure they gather accurate and relevant information.
- 3 Students can familiarize themselves with different methods of sampling, which are crucial for obtaining representative data. They can also learn how to construct frequency distributions to organize and summarize data effectively
- 4 Students can understand the importance of classifying and tabulating data to facilitate easier analysis and interpretation. They can practice creating tables and charts that visually represent data, making it more accessible.
- 5 Students can study measures of central tendency such as mean, median, and mode, to determine the central point of a data set. They can also learn about measures of dispersion, including range, mean deviation, standard deviation, quartile deviation, and coefficient of variation, along with their practical applications and the pros and cons of each method.

**Pre-requisite of course:** Basic of excel

**Teaching and Examination Scheme**

| <b>Theory Hours</b> | <b>Tutorial Hours</b> | <b>Practical Hours</b> | <b>ESE</b> | <b>IA</b> | <b>CSE</b> | <b>Viva</b> | <b>Term Work</b> |
|---------------------|-----------------------|------------------------|------------|-----------|------------|-------------|------------------|
| 0                   | 0                     | 4                      | 0          | 0         | 0          | 25          | 25               |

| <b>Contents : Unit</b> | <b>Topics</b> | <b>Contact Hours</b> |
|------------------------|---------------|----------------------|
| <b>Total Hours</b>     |               |                      |

**Suggested List of Experiments:**

| <b>Contents :<br/>Unit</b> | <b>Topics</b>  | <b>Contact<br/>Hours</b> |
|----------------------------|--|--------------------------|
| 1                          | <b>UNIT 1</b><br>1.Compare the advantages and disadvantages of random sampling and stratified sampling, providing examples of situations where each method would be most appropriate. 2.Given the following data representing the number of products sold in a week: 10, 15, 20, 25, 25, 30, 35, 40, 45, 50, construct a frequency distribution table with appropriate class intervals. 3.Using the same data set as above, construct a cumulative frequency distribution table. 4.Determine the cumulative frequency for a given class interval .A company has 1000 employees. Using systematic sampling, select a sample of 100 employees for a job satisfaction survey. 5.In a population of 5000 customers, conduct stratified sampling based on age groups (18-25, 26-35, 36-45, 46+), with a sample size of 400. (Note: The survey is intended to study / infer the customer satisfaction about the product based on the parameters of - Brand Loyalty, Pricing, Quality, Value, Disposable Income) 6.Classify and tabulate the following data representing monthly sales figures for a retail store: January: Rs.5000, February: Rs.7000, March: Rs.6000, April: Rs.8000, May: Rs.9000. Create an appropriate classification scheme for the data based on sales ranges. (Note: The company's ideal / expected sales were determined to be around Rs. 8000.) Rate the classification scheme under following tags: Moderate Sales, Under Sales, above ideal Sales | 15                       |
| 2                          | <b>UNIT 2</b><br>1. Given the following dataset: {12, 15, 18, 20, 22}, calculate the mean, median, and mode. 2. Compute the variance and standard deviation for the dataset: {4, 6, 8, 10, 12, 14, 16}. 3. Calculate the variance and standard deviation for the dataset: {17, 19, 21, 23, 25, 27}. 4. Find the mean, median, and mode for the dataset: {23, 25, 28, 30, 31, 31, 32, 35}. 5. Calculate the mean, median, and mode for the dataset: {10, 12, 15, 18, 20, 21, 22}. 6. Determine the mean, median, and mode for the dataset: {2, 3, 4, 5, 5, 6, 6, 7}. 7. Compute the mean, median, and mode for the dataset: {15, 15, 20, 25, 25, 30, 35, 35}. 8. Given the dataset: {17, 18, 20, 21, 23, 24, 25}, calculate the variance and standard deviation. 9. Find out standara deviation, mean, median, mode from the following information. Class 100--200 200--300 300--400 400--500 500--600 Frequency 8 7 41 51 14   | 15                       |

**Suggested List of Experiments:**

| <b>Contents :<br/>Unit</b> | <b>Topics</b>  | <b>Contact<br/>Hours</b> |
|----------------------------|--|--------------------------|
| 3                          | <b>UNIT 3</b><br>1.Describe a situation where cluster sampling would be more effective than stratified sampling. Justify your reasoning. 2.Create a frequency distribution for the dataset: {3, 7, 7, 10, 12, 15, 15, 18, 20, 20, 20, 25, 30} with intervals of size 5. 3.Prepare a relative frequency distribution for the dataset: {5, 10, 15, 20, 20, 25, 30, 35, 40, 40, 50}. 4.A store has 1500 customers visiting each month. Select 200 customers using systematic sampling and explain the method used. 5.Divide the population of a town (200,000 residents) into 4 regions for cluster sampling and explain how you would sample 500 residents for a survey, A company's monthly sales data (in Rs. thousands) is as follows: January: 25, February: 30, March: 20, April: 35, May: 40. Classify the data into sales ranges and assign labels: "Low Sales", "Moderate Sales", "High Sales". Create a pie chart for the following data representing a store's revenue contribution by category: Electronics: 40%, Clothing: 30%, Groceries: 20%, Miscellaneous: 10%. For the dataset {500, 600, 700, 800, 900, 1000}, classify and tag the sales data as "Below Target", "On Target", or "Above Target", assuming the target is Rs.800.   | 15                       |
| 4                          | <b>UNIT 4</b><br>1.Calculate the range, interquartile range (IQR), and mean deviation for the dataset: {15, 18, 21, 24, 27, 30}. 2.Compute the mean, median, mode, and geometric mean for the dataset: {2, 4, 8, 16, 32}. 3.Calculate the mean absolute deviation (MAD) for the dataset: {10, 15, 20, 25, 30, 35}. 4.Find the weighted mean for the following data: Scores {50, 60, 70, 80}, Weights {1, 2, 3, 4}. 5.Determine the coefficient of variation (CV) for the dataset: {100, 110, 120, 130, 140}. 6.Using the class intervals {0–10, 10–20, 20–30, 30–40} with frequencies {4, 6, 8, 10}, calculate the median using interpolation. 7.Determine the percentile rank of the value 75 in the dataset: {50, 60, 70, 75, 80, 90, 100}. 8.For the dataset {5, 10, 15, 20, 25}, compute the cumulative percentage for each value. 9.A company wants to analyze income levels. Calculate the Gini coefficient for the dataset: {10, 20, 30, 40, 50}. 10.Create a box-and-whisker plot for the dataset: {5, 7, 9, 10, 12, 15, 20, 25}. Identify any outliers. 11.Using a time series data of monthly revenue {200, 220, 210, 230, 240}, plot a line chart and interpret the trend. 12.For a survey data of customer satisfaction (1: Dissatisfied, 2: Neutral, 3: Satisfied), prepare a bar chart and calculate the mode. | 15                       |
| <b>Total Hours</b>         |  | <b>60</b>                |

**Textbook :**

- 1 Business Statistics: A First Course, David M. Levine, Kathryn A. Szabat, and David F. Stephan, Pearson, 2020

**References:**

- 1 Statistics for Business and Economics, Statistics for Business and Economics, Paul Newbold, William L. Carlson, and Betty Thorne, Pearson, 2019
- 2 Business Statistics: A First Course, Business Statistics: A First Course, David M. Levine, Kathryn A. Szabat, and David F. Stephan, pearson, 2020
- 3 Essentials of Business Statistics, Essentials of Business Statistics, Bruce L. Bowerman, Richard T. O'Connell, and Emily S. Murphree, McGraw-Hill Education, 2014

**Suggested Theory Distribution:**

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

| Distribution of Theory for course delivery |            |       |         |          |                                  |
|--|------------|-------|---------|----------|----------------------------------|
| Remember / Knowledge                       | Understand | Apply | Analyze | Evaluate | Higher order Thinking / Creative |
| 20.00                                      | 30.00      | 25.00 | 15.00   | 10.00    | 0.00                             |

**Instructional Method:**

- 1 Board and pen method
- 2 Demonstrate method
- 3 PPT

**Supplementary Resources:**

- 1 <https://www.khanacademy.org/math/statistics-probability>
- 2 <https://www.investopedia.com/terms/s/statistics.asp>