

Course: OE
Descriptive Statistics

Semester: I	Credits: 2	Subject Code: OE1-12306	Lectures: 30
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Course Outcomes:

At the end of the course students will be equipped to

- CO1 - Organize, manage and present data. Analyze statistical data graphically using frequency distributions and cumulative frequency distributions.
- CO2 - Understand and apply concepts of measures of central tendency and dispersion in problem solving.
- CO3 - Remember, understand, apply, evaluate and interpret data using measures of skewness and kurtosis.
- CO4 - Present and interpret the data for correlation, using scatter plot. Understand, evaluate and interpret the data for correlation using Karl Pearson's formula.

Unit 1: Descriptive Statistics	15
<ul style="list-style-type: none"> • Definition, importance, scope and limitations of statistics. • Data Condensation: Types of data (Primary and secondary), Attributes and variables, discrete and Continuous variables. • Graphical Representation: Histogram, Ogive Curves, Stem and leaf chart. [Note: Theory paper will contain only procedures. Problems to be included in practical] • Measures of central tendency: Concept of central tendency, requisites of good measures of central tendency. • Arithmetic mean: Definition, computation for ungrouped and grouped data, properties of arithmetic mean (without proof) combined mean, weighted mean, merits and demerits. • Median and Mode: Definition, formula for computation for ungrouped and grouped data, graphical method, merits and demerits. Empirical relation between mean, median and mode (without proof) • Partition Values: Quartiles, Box Plot. • Concept of dispersion, requisites of good measures of dispersion, absolute and relative measures of dispersion. • Measures of dispersion: Range and Quartile Deviation definition for ungrouped and grouped data and their coefficients, merits and demerits, Variance and Standard deviation: definition for ungrouped and grouped data, coefficient of variation. • merits and demerits • Problem solving 	

Unit 2: Moments, Skewness, Kurtosis and Correlation	15
<ul style="list-style-type: none"> • Concept of Raw and central moments: Formulae for ungrouped and grouped data (only first four moments), relation between central and raw moments up to fourth order. (without proof) • Measures of Skewness: Types of skewness, Pearson's and Bowley's coefficient of skewness, Measure of skewness based on moments. • Measure of Kurtosis: Types of kurtosis, Measure of kurtosis based on moments. 	

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- Concept of bivariate data, scatter diagram, its interpretation, concept of correlation, positive correlation, negative correlation, zero correlation.
- Karl Pearson's coefficient of correlation, properties of correlation coefficient, Interpretation of correlation coefficient.

Recommended: Text books

- Gupta S. C. and Kapoor V. K. 1987, *Fundamentals of Applied Statistics* (3rd Edition) S. Chand and Sons, New Delhi.
- Sarma K.V.S. 2001 *Statistics Made Simple. Do it Yourself on P.C.* Prentice Hall

Reference Books:

- Agarwal B. L., *Programmed Statistics*, New Age International Publishers.
- Freund J.E., *Modern Elementary Statistics*, Pearson Publication, 2005.
- George W. Snedecor, William G, Cochran, *Statistical Methods*, John Wiley & sons.
- Gupta and Kapoor, *Fundamentals of Applied Statistics(3rd Edition)*, S. Chand And Sons, New Delhi, 1987.
- Kennedy and Gentle, *An Introductory Statistics*.
- Mukhopadhyay P., *Mathematical Statistics (3rd Edition)*, Books And Allied (P), Ltd 2015.

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VC Nominee (SPPU)	Dr. Rajendra Gurao	<i>Rajendra</i> 3/6/23
Industry Expert	Dr. Madhuri Kulkarni	<i>MK</i> 3/6/23
Alumni	Nisha Singh	<i>Nisha</i> 3/6/23



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