

Department of Statistics
Institute of Social Sciences
Dr. Bhimrao Ambedkar University, Agra

Value Added Course: Fundamental Data Analysis using R Software
Course Duration: 30 h **Maximum Marks: 100**

Course Objectives

Unit	Objectives	Mode of Teaching
I	Understanding the R workspace and how to write R commands for graphical representation of Data	Theory & Practical
II	Writing codes to find different types of central tendency and dispersions in R software	Theory & Practical
III	Visualize the data and analyse it using correlation and regression in R software	Theory & Practical

Course Content

Unit	Content	Time
I	R Fundamentals: Introduction to the interface (R/ R Studio): Basic Functionalities: Type of vectors, Data Exploration using R, Reading Data into R, Subsetting, Matrices & Data Frames. Diagrammatic Representation - Bar Diagrams – Subdivided, Multiple, Percentage, Pie Charts, Stem & Leaf, Box-plot. Frequency distributions: Preparation of frequency distribution table, graphical representation, histogram (grouped & ungrouped), polygon, ogives, empirical distribution.	10 hours
II	Using R software : Measures of central tendency and dispersion – Mean(Arithmetic Mean, Geometric Mean, Harmonic Mean), Median, Mode, Quantiles (for grouped and ungrouped data), Mean deviation, Quartile deviation, Standard deviation, Skewness, Kurtosis.	10 hours
III	Using R software: Scatter Diagram, Product Moment correlation and its properties. Spearman’s Rank Correlation, Concept of linear regression. Fitting a straight line by method of least square. Relation between regression coefficients and correlation coefficient. Concept and use of coefficient of determination R^2	10 hours

Course Outcomes

- **The students will be able to install and use open access R Software.**
- **Students will be able to apply various R techniques in order to solve real life problems.**
- **Students will be able to process and analyse the data in order to extract information.**
- **From this course students will come to know how to analyse statistical data using R software.**

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References

- **W. John Braun and Duncan J. Murdoch: A First Course in Statistical Programming with R**
- **Jim Albert and Maria Rizzo: R by Example**
- **Peter Dalgaard: Introductory Statistics with R**
- **Michael J. Crawley: The R Book**