

#### BHAVAN'S VIVEKANANDA COLLEGE of Science, Humanities & Commerce

Science, numanities & Commerce Sainikpuri, Secunderabad, Telangana - 500094 Autonomous College, Affiliated to O.U. Reaccredited with 'A' grade by NAAC



## Value Added Course

under Cluster College Program

organized by Department of Mathematics & Statistics



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#### **Course Objective :**

- The main goal of this course is to update and complement the knowledge of students in applied statistics, preparing them to perform current statistical analysis supported by the software R.
- R can be used to perform simple and complex mathematical and statistical calculations on data objects of a wide variety. It can also perform such operations on large data sets.

#### **Course Overview:**

- Course Duration:30 hrs
- Course Date:15/02/2023 to 04/03/2023
- The course is offered to U.G and P.G students , Research Scholars and Faculty Members.

#### **Course Outcomes:**

At the end of the course, the participants are expected to:

CO1: choose the right method to summarize a dataset, graphically and numerically

CO2: perform basic hypothesis tests on a dataset

CO3: assess whether different variables are linked, using correlation and regression analysis

CO4: Use the R statistical package to run statistical analyses and interpret their outcome

## **Topics Covered:**

#### Module: 1 Introduction to R

Overview of R programming, Downloading and Helping, Help Menu, Viewing

Documentation, Data Types, writing data, Reading from CSV files, General issues and applications of R

#### Module: 2 Data Visualization and Basic Statistics

Creating Histogram and Box plot, Creating Bar Charts, Plotting with Base

Graphics, Computing Descriptive Statistics, Generation of Random Variable

#### **Module: 3 Statistical Methods**

Fitting of Curves, Correlation Coefficients, Simple Linear Regression, Multiple Linear Regression, Logistic Regression

#### Module: 4 Statistical Tests using R

Large Sample tests: Mean, Proportion, Variances based on Single and Two sample observations

Small Sample tests: Mean (single sample and two sample observations), Variances (single

sample observations), Variances (two sample observations), Chi-Square test for

independence of attributes

#### Module: 5 Design of Experiment using R

ANOVA one-way Classification, ANOVA Two-way Classification

### **Report:**

Value added course on R was organised by Department of Mathematics and Statistics under cluster college schemefrom "15<sup>th</sup> February to 4<sup>th</sup> March 2023. This course was organised for students, research scholars of different colleges under twin cities. Total 47 students enrolled for this course.

Dr.V.Selva Kumar, Dr.P.Rajini, Dr.N.Chandan Babuare the resource persons for thisvalue-addedcourse.

#### Introduction to R, Visualization and Descriptive Statistics: ( Day 1 to Day 6 )

Dr. N. Chandan Babu provided installation instructions for R as well as information on data categories and data frames. He provided clear examples for each idea while explaining scalars, vectors, matrices, and lists in data frames. He also demonstrated how to use r-Types programming's of Operators, which include assignment operators, relational operators, logical operators, and arithmetic operators. Each subject was thoroughly explained with an illustration. He then went on to discuss diagrammatic depiction, dispersion, and measures of central tendency.

# Probability Distributions, Statistical Tests & Design of Experiments ( Day 7 to Day Day 12)

Dr. P. Rajinicontinuing discussion of the subjects of probability distribution, hypothesis testing, and ANOVA. Binomial, Poisson, exponential, and normal distributions are all included in the category of probability distributions. For evaluating a hypothesis, both large samples (Mean, Proportion, Variances based on Single and Two Sample Observations), as well as small samples (Mean (Single Sample and Two Sample Observations), Variances (Single Sample Observations), and Chi-Square test for independence of characteristics), are included and ANOVA for one-way and two-way classification was also explained.

#### Statistical Methods & Time Series Forecasting (Day 13 to Day 15)

Dr. V. Selvakumar interpreted statistical techniques such as correlation, simple linear regression, multiple linear regression, and logistic regression, Autoregressive Model, Moving Average Model, Autoregressive Moving Average Model and ARIMA Model for forecasting the stock price exchange.

The students found the course to be really helpful and have given it positive feedbacks.

