CAP742:PROGRAMMING IN R

L:0   T:0   P:4   Credits:2

Course Outcomes: Through this course students should be able to

CO1 :: Visualize and configure R software for statistical programming environment and describe generic programming language concepts implemented in a high-level statistical language

CO2 :: Develop a program in R environment to create custom analytical models to meet the dynamic business needs

CO3 :: Validate and verify the analysis findings by conducting various statistical tests used for hypothesis testing

CO4 :: Evaluate advanced data science concepts using predictive analytics fundamentals

CO5 :: Use and customize the various graphical packages for creating various types of graphs, plots and charts

CO6 :: Experiment on a real-life projects, implementing supervised and unsupervised machine learning techniques to derive business insights

List of Practicals / Experiments:

Installation and development environment overview
- downloading and installing R from CRAN
- installing R on your windows computer

Introduction to basics
- discover the basic data types and operators in R

R syntax
- conditional statements
- loops
- functions and packages in R

Vectors and matrices
- learn how to work with vectors and matrices in R

Factors
- R stores categorical data in factors
- learn how to create subset and compare categorical data

Data input and output in R
- CSV files

Data frames
- creating
- merging
- naming
- filtering
- Indexing and selection in data frames

Lists
- naming
- extracting
- adding
- deleting components from lists
- subsetting a list

Advanced R programming
- Mathematical functions

- Statistical functions
- Correlation
- standard deviation
- variance
- mean
- range

Data manipulation with R using
- Sorting
- ordering

Data visualization in R
- ggplot2
- histograms
- scatterplots
- barplots and boxplots

Text Books:
1. THE ART OF R PROGRAMMING by NORMAN MATLOFF, WILLIAM POLLOCK

References:
1. BEGINNING R: THE STATISTICAL PROGRAMMING LANGUAGE by DR. MARK GARDENER, WILEY