

# Mastering Analytics with R

Duration: 30 Hours

## Exploring R

- Installing R
- Working with Scripts
- Navigating the Workspace

## Reading Datasets into R, Exporting Data from R

- Using `C()` command to create Data
- Using `scan()` command for getting Data in R
- Reading Bigger Data files
- Getting data out of R
- Saving your work in R

## Manipulating and Processing Data in R

- Deciding most appropriate data structure
- Creating subset of data
- Adding calculated fields to data
- Combining and merging datasets in R
- Sorting and ordering Data
- Introduction to the formula interface
- Putting your data into Shape

## Using Functions and Packages in R

- Moving from Scripts to Functions
- Using Argument the smart way
- Scope of the function
- Dispatching to a Method
- Packages
- Using Packages

### **Descriptive Statistics in R**

- Summary Commands
- Name Commands
- Summarizing Samples
- Cumulative Statistics
- Summary Statistics for Data Frames
- Summary Statistics for Matrix Objects
- Summary Statistics for Lists
- Contingency Tables
- Cross Tabulation

### **Analyzing Data Using Functions, Loops, and Data Frames**

- Matrices, Lists, and Data Frames
- Indexing vectors, Matrices, and Lists
- Programming in R

### **Graphical Analysis in R**

- Plots for single variable
- Plots with two variables
- Plots with multiple Comparisons
- Plots with multiple Variables
- Special plots
- Saving Graphs to External Files

### **Hypotheses Testing in R**

- Introduction to Statistical Hypotheses
- Using the student's t-test
- U-test
- Paired t- and u-test
- Tests for Association
- Goodness of Fit Tests

### **Linear Regression in R**

- Basics of Linear Regression Analysis
- Working with Linear Regression
- Simple Linear Regression in R
- Linear Model result Objects
- Model Building
- Curvilinear Regression

### **Nonlinear Regression**

- Introduction to Nonlinear Regression Analysis
- Nonlinear Regression and Generalized Linear models
- Logistic Regression
- Line Estimation using MLE
- Transformation of a Nonlinear Models into a Linear Model
- Other Nonlinear Regression Models
- Generalized Additive Models
- Self-starting Functions
- Bootstrapping a Family of Nonlinear regressions
- Applications of Logistic Regression