

"Ask not, for job; take pride in choosing it"



**High Value**

## Statistical Programming with R

### Program Objectives

- ✓ Master the use of R Console
- ✓ Learn R flow control and data structures
- ✓ Use vectorized calculations
- ✓ Write R functions
- ✓ Understand basic R graphics
- ✓ Familiar with advanced graphics
- ✓ Discover how to install R packages
- ✓ Explore the R documentation
- ✓ Learn to avoid R pitfalls
- ✓ Use R for descriptive statistics
- ✓ Use R for inferential statistics
- ✓ Write R statistical models

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drops<sup>2</sup>**

**Research**

**Theory**

**Practical**



### You will

- ✓ Become a Certified R Programmer
- ✓ Get skills in Statistical Programming
- ✓ Get skills in R
- ✓ Get skills in Data Analytics
- ✓ Certificate from dots2drops
- ✓ Interact with researches
- ✓ Learn from experts in the field

Center for Analytics

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# Statistical Programming with R, the analytics way

## Overview

- History of R
- Advantages and disadvantages
- Downloading and installing

## Introduction

- Using R console
- Getting help
- Environment

## R Programming

### Objects & Data Structures

- Data types
- Vectors and matrices
- Data frames and lists
- Datasets included in R packages
- Summarizing and exploring data
- Objects, Models, Graphics

### Control Flow

- Truth testing
- Branching, Looping
- Vectorized calculations

### Functions

- Parameters, Return values
- Variable scope
- Exception Handling

## Data Handling

- Reading data from CSV/XLS
- Writing data to CSV/XLS
- Creating & storing R Workspaces
- Dealing with missing data

## Visualization

- Introduction to R Graphics
- Slicing and extracting data

- Developing Graphs, GGplot2
- Adding overlaid lines, text, etc
- Graphical parameters
- Data exploration
- Summary graphics

## Statistical Analysis

- Mean, Median, Mode
- Dispersion
- Continuous data
  - Scatter plot, Box plot
- Categorical data
  - Mosaic plot
- Correlation and Covariance

## Probability Distributions

- General modeling syntax
- Extracting model results
- Confidence intervals
- Graphics for regression
- Tabular displays
- Extracting model results
- Confidence intervals
- Regression diagnostics
- Normal, Uniform, Exponential
- Sampling, Discrete Distributions

## Hypothesis Testing

- ANOVA
- t tests
- Z tests and more

## Other Topics

- Classification, Clustering, Time series
- Machine Learning

## Conclusion & Next Steps

**Skill Revolution:** It is time for India to move up in value chain in software industry. We invite you to join dots2drops in this skill revolution movement. Contact us to know how you can join this movement. Kindly help taking this message across the intended audience.