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Course: R Programming

Duration: 40 Hrs (Changeable) | Fees: Individual / Batch

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Syllabus on the Next Page ..

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* Data Frames

* VECTORS

* Scalars, Vectors, Arrays, and Matrices

* Adding and Deleting Vector Elements

* Obtaining the Length of a Vector

* Matrices and Arrays as Vectors

* Declarations

* Common Vector Operations

* Vector Arithmetic and Logical Operations

* Vector Indexing

* Generating Useful Vectors with the : Operator

* Generating Vector Sequences with seq()

* Repeating Vector Constants with rep

* Vectorized Operations

* Vector In, Vector Out

* Vector In, Matrix Out

* NA and NULL Values

* Using NA

* Using NULL

* Filtering

* Generating Filtering Indices

* Filtering with the subset() Function

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* The Selection Function which

* A Vectorized if-then-else: The ifelse() Function

* Extended Example: A Measure of Association

* Extended Example: Recoding an Abalone Data Set

* Testing Vector Equality

* Vector Element Names

* More on c()

* MATRICES AND ARRAYS

* Creating Matrices

* General Matrix Operations

* Performing Linear Algebra Operations on Matrices

* Matrix Indexing

* Filtering on Matrices

* Applying Functions to Matrix Rows and Columns

* Using the apply() Function

* Extended Example: Finding Outliers

* Adding and Deleting Matrix Rows and Columns

* Changing the Size of a Matrix

* More on the Vector/Matrix Distinction

* Avoiding Unintended Dimension Reduction

* Naming Matrix Rows and Columns

* Higher-Dimensional Arrays

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* LISTS

* Creating Lists

* General List Operations

* List Indexing

* Adding and Deleting List Elements

* Getting the Size of a List

* Accessing List Components and Values

* Applying Functions to Lists

* Using the lapply() and sapply() Functions

* ARRAYS

* Naming Columns and Rows

* Accessing Array Elements

* Check if an Item Exists

* Amount of Rows and Columns

* Array Length

* Manipulating Array Elements

* Calculations Across Array Elements

* DATA FRAMES

* Creating Data Frames

* Accessing Data Frames

* Other Matrix-Like Operations

* Extracting Subdata Frames

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* More on Treatment of NA Values

* Using the rbind() and cbind() Functions and Alternatives .

* Applying apply()

* Merging Data Frames

* Extended Example: An Employee Database

* Applying Functions to Data Frames

* Using lapply() and sapply() on Data Frames

* FACTORS AND TABLES

* Factors and Levels

* Common Functions Used with Factors

* The tapply() Function

* The split() Function

* The by() Function

* Working with Tables

* Matrix/Array-Like Operations on Tables

* Extended Example: Extracting a

* Other Factor- and Table-Related Functions

* The aggregate() Function

* The cut() Function

* R PROGRAMMING STRUCTURES

* Control Statements

* Loops

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* Looping Over Non vector Sets

* if-else

* Arithmetic and Boolean Operators and Values

* Default Values for Arguments

* Return Values

* Deciding Whether to Explicitly Call return()

* Returning Complex Objects

* Functions Are Objects

* Environment and Scope Issues

* The Top-Level Environment

* The Scope Hierarchy

* More on ls()

* Functions Have (Almost) No Side Effects

* No Pointers in R

* Writing Upstairs

* Writing to Nonlocals with the Super assignment Operator

* Writing to Nonlocals with assign()

* When Should You Use Global Variables?

* Replacement Functions

* What's Considered a Replacement Function?

* Tools for Composing Function Code

* Text Editors and Integrated Development Environments

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✳ The edit() Function

✳ Writing Your Own Binary Operations

✳ Anonymous Functions

✳ DOING MATH AND SIMULATIONS IN R

✳ Math Functions

✳ Extended Example

✳ Cumulative Sums and Products

✳ Minima and Maxima

✳ Functions for Statistical Distributions

✳ Sorting

✳ Linear Algebra Operations on Vectors and Matrices

✳ Extended Example: Vector Cross Product

✳ Set Operations

✳ Simulation Programming in R

✳ Built-In Random Variate Generators

✳ Obtaining the Same Random Stream in Repeated Runs

✳ INPUT/OUTPUT

✳ Accessing the Keyboard and Monitor

✳ Using the scan() Function

✳ Using the readline() Function

✳ Printing to the Screen

✳ Reading and Writing Files

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* Reading a Data Frame or Matrix from a File

* Reading Text Files

* Introduction to Connections

* Extended Example

* Accessing Files on Remote Machines via URLs

* Writing to a File

* Getting File and Directory Information

* STRING MANIPULATION

* An Overview of String-Manipulation Functions

* grep()

* nchar()

* paste()

* sprintf()

* substr

* strsplit()

* regexpr()

* Regular Expressions

* Extended Example

* R DATA INTERFACES

* R - CSV Files

* Reading a CSV File

* Analyzing the CSV File

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- ✳ Writing into a CSV File

- ✳ R - Excel Files

- ✳ Install xlsx Package

- ✳ Reading the Excel File

- ✳ R - Binary Files

- ✳ Writing the Binary File

- ✳ Reading the Binary File

- ✳ R - XML Files

- ✳ Reading XML File

- ✳ XML to Data Frame

- ✳ R - JSON Files

- ✳ Install rjson Package

- ✳ Read the JSON File

- ✳ Convert JSON to a Data Frame

- ✳ R - Database

- ✳ RMySQL Package

- ✳ Connecting R to MySql

- ✳ Querying the Tables

- ✳ Query with Filter Clause

- ✳ Updating Rows in the Tables

- ✳ Inserting Data into the Tables

- ✳ Creating Tables in MySql

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* Dropping Tables in MySql

* GRAPHICS

* Creating Graphs

* The Workhorse of R Base Graphics: The plot() Function

* R - Pie Charts

* R - Bar Charts

* R - Boxplots

* R - Histograms

* R - Line Graphs

* R - Scatterplots

* Starting a New Graph While Keeping the Old Ones

* Extended Example

* Adding Points: The points() Function

* Adding a Legend: The legend() Function

* Adding Text: The text() Function

* Pinpointing Locations: The locator() Function

* Restoring a Plot

* Customizing Graphs

* Changing Character Sizes: The cex

* Changing the Range of Axes: The xlim and ylim Options

* Graphing Explicit Functions

* Extended Example

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✳ Saving Graphs to Files

✳ R Graphics Devices

✳ Saving the Displayed Graph

✳ Closing an R Graphics Device

✳ Creating Three-Dimensional Plots

✳ R Statistics

✳ R Statistics Intro

✳ R Data Set

✳ R Max and Min

✳ R Mean Median Mode

✳ R Percentiles

✳ INSTALLING AND USING PACKAGES

✳ Package Basics

✳ Loading a Package from Your Hard Drive

✳ Downloading a Package from the Web

✳ Installing Packages Automatically

✳ Installing Packages Manually

✳ Listing the Functions in a Package

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(Click on Course for more details)

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- Thank You -

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