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SELF-PACED

CERTIFICATE IN R PROGRAMMING FOR BEGINNERS

COURSE OVERVIEW

This course gives a comprehensive introduction to R, a popular programming language for statistical analysis and data visualization. You will learn the fundamentals of R programming, starting from the basics of variables, data types, and operators. Programming concepts like loops, conditionals, and functions. You will understand data structures in R, learn data manipulation and data analysis in R. Work with various R libraries like dplyr, ggplot2. Visualize data in R. Hands-on coding exercises to equip with the skills to handle data manipulation, analysis, and visualization tasks.

COURSE OBJECTIVE

The R Programming for Beginners course aims to equip participants with a solid foundation in R programming language. Through this course, learners will understand the fundamentals of R, including variables, data types, and operators. They will explore essential programming concepts like loops and conditionals, and gain proficiency in working with data structures such as vectors, matrices, and data frames. Participants will learn how to manipulate and transform data, create visualizations, and apply statistical analysis techniques using R. By the end of the course, learners will have developed basic programming skills, a deep understanding of R's capabilities, and the ability to tackle data analysis tasks with confidence.

WHAT YOU WILL LEARN

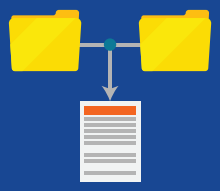
Upon completion of the course, participants will have developed a strong grasp of R programming, enabling them to proficiently handle data manipulation, perform basic statistical analysis, and create impactful data visualizations. Equipped with these skills, participants will be well-prepared to embark on a career in data analysis or data science, using R as their primary tool. This course serves as a fundamental stepping stone, providing participants with the essential knowledge and abilities needed to succeed in the field.

COURSE SKILL SET.

1) R Programming
2) Data Manipulation
3) Statistical Analysis
4) Data Visualization
5) Problem-Solving
6) Data Cleaning
7) Data Exploration
8) Data Wrangling

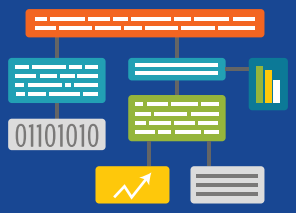
Instructor- Priyanka Sharma | Trainer (Subject Expert) Future Skill Academy
Duration- 2 Weeks
Eligibility- Any graduate with a Science stream
No. of Modules – 06 Modules
Language - English
Shareable certificate- Yes

PROGRAM SYLLABUS



Module 01 Introduction to R Programming
Session 1.1 Introduction to R Programming Language, R Advantages and Disadvantages
Session 1.2 Applications and Career Opportunites in R Programming Language
Session 1.3 Set Up and Installation of R

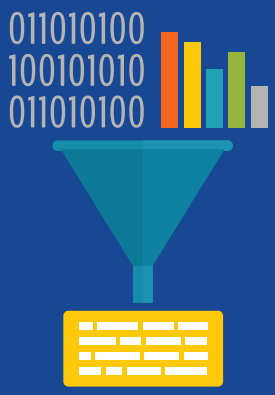
Module 02 Basics of R Programming
Session 2.1 Section Introduction
Session 2.2 Understanding Data Types in R
Session 2.3 Understanding and Assigning variables in R
Session 2.4 Control Structures in R
Session 2.5 Loop Statements in R
Session 2.6 Practical Exercise 'for' and 'while' loop in R
Session 2.7 Understanding if, if-else statements, and else-if statements
Session 2.8 Practical Exercise on if, if-else statements
Session 2.9 Practical Exercise on else-if statements in R
Session 2.10 Understanding Repeat, Break, Next Statements in R
Session 2.11 Practical Exercise on Repeat, Break, and Next Statements in R



Module 03 Data Types and Data Structure in R
Session 3.1 Section Introduction
Session 3.2 Introduction to Data Structures in R
Session 3.3 What are Arrays and Vectors in R?
Session 3.4 Working with Vectors
Session 3.5 Working with Arrays
Session 3.6 What is Matrix? Working with Matrix
Session 3.7 What are Lists? Working with lists in R
Session 3.8 What is a data frame? Working with data frame in R
Session 3.9 What are Factors? Working with Factors.
Session 3.10 Summary of Data Structures in R

Module 04 File Handling in R
Session 4.1 Section Introduction
Session 4.2 What is Data, Types of Data

Session 4.3 Import and Export data in Excel
Session 4.4 Import and Export data in CSV
Session 4.5 Import and Export data in JSON



Module 05 Data Manipulation in R using Data Set
Session 5.1 Section Introduction
Session 5.2 Tidy Verse Introduction
Session 5.3 dplyr Introduction, understanding the Pipe %% Operator
Session 5.4 Understanding the Data set , Working with Data
Session 5.5 Understanding arrange() function with practical exercise
Session 5.6 Understanding filter() function with practical exercise
Session 5.7 Understanding select() function with practical exercise
Session 5.8 Understanding summarize() function with practical exercise
Session 5.9 Understanding mutate() function with practical exercise
Session 5.10 Understanding group_by() function with practical demonstration

Module 06 Data Visualization Capstone Project
Session 6.1 Section Introduction
Session 6.2 What is Data Visualization? Introduction to ggplot2
Session 6.3 Understanding Layers in ggplot2
Session 6.4 Overview of mtcars dataset
Session 6.5 Understanding Bar Charts
Session 6.6 Visualizing Data with Bar Charts
Session 6.7 Understanding Scatter Plots
Session 6.8 Working with Scatter Plots in R
Session 6.9 Understanding Box Plots
Session 6.10 Working with Box Plots in R
Session 6.11 Understanding Pie Charts
Session 6.12 Visualizing Data With Pie Charts

Module 7 Capstone Project in R
session 7.1 Project Introduction and Objectives
session 7.2 Data Exploration and Analysis

session 7.3 Understanding the Count Function
session 7.4 Sub-setting the Data
session 7.5 Data Manipulation using dplyr, arrange, and filter function
session 7.6 Data Manipulation using select function
session 7.7 Removing and Dropping Columns
session 7.8 Dealing with Null values
session 7.9 Data Manipulation using group by function
session 7.10 Mutate function for Data Manipulation
session 7.11 Data Visualization using Bar Plots and Box Plot
session 7.12 Data Visualization using Pie Charts
session 7.13 Understanding Relationships using Scatter Plots
session 7.14 Adding Layers to Count Plot

Module 8 Introduction to Machine Learning
session 8.1 Section Introduction
session 8.2 Introduction to Machine Learning, Applications of Machine Learning
session8.3 Supervised Machine Learning
session 8.4 Unsupervised Machine Learning
session 8.5 Reinforcement Learning
session 8.6 Machine Learning Life Cycle
session 8.7 Understanding Bias and Variance in Machine Learning
session 8.8 Overfitting and Underfitting
session 8.9 Introduction to Deep Learning
session 8.10 Introduction to Artificial Intelligence
session 8.11 Understanding Natural Language Processing

Module 9 Machine Learning Algorithms
session 9.1 Section Introduction
session 9.2 Introduction to Classification Algorithms
session 9.3 K-Nearest Neighbour
session 9.4 Support Vector Machines
session 9.5 Logistic Regression
session 9.6 Decision Tree
session 9.7 Random Forest
session 9.8 Introduction to Regression Algorithms
session 9.9 Types of Regression Algorithms
session 9.10 Unsupervised ML Algorithm: K-Means
session 9.11 Hierarchical Clustering

Module 10 Machine Learning Model Capstone Project-2

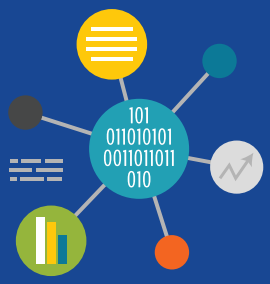
session 10.1 Working with Data, Creating Train and Test Data

session 10.2 Linear Regression Model: Predictions and Evaluating the Model

session 10.3 Building ML Model using Random Forest

session 10.4 Building ML Model using Decision Tree

session 10.5 Visualizing Random Forest Evaluation Metrics



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