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We believe that everyone should get the opportunity to learn their desired course. So we provide flexibility timings.

DATASCIENCE

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Lesson 01 - Introduction to Business Analytics

- Introduction
- Objectives
- Need of Business Analytics
- Business Decisions
- Introduction to Business Analytics
- Features of Business Analytics
- Types of Business Analytics
- Descriptive Analytics
- Predictive Analytics
- Prescriptive Analytics
- Supply Chain Analytics
- Health Care Analytics
- Marketing Analytics
- Human Resource Analytics
- Web Analytics
- Application of Business Analytics - Wal-Mart Case Study
- Application of Business Analytics - Signet Bank Case Study
- Business Decisions
- Business Intelligence (BI)
- Data Science
- Importance of Data Science
- Data Science as a Strategic Asset
- Big Data
- Analytical Tools
- Quiz
- Summary
- Conclusion

Lesson 02 - Introduction to R

- Introduction
- Objectives
- An Introduction to R
- Comprehensive R Archive Network (CRAN)
- Cons of R
- Companies Using R
- Understanding R
- Installing R on Various Operating Systems
- Installing R on Windows from CRAN Website
- Demo - Install R
- Install R
- IDEs for R
- Installing R-Studio on Various Operating Systems
- Demo - Install R-Studio
- Install R-Studio
- Steps in R Initiation
- Benefits of R Workspace
- Setting the Workplace
- Functions and Help in R
- Demo - Access the Help Document
- Access the Help Document
- R Packages
- Installing an R Package
- Demo - Install and Load a Package
- Install and Load a Package
- Quiz
- Summary
- Conclusion

Lesson 03 - R Programming

- Introduction
- Objectives
- Operators in R
- Arithmetic Operators
- Demo - Perform Arithmetic Operations
- Use Arithmetic Operations
- Relational Operators
- Demo - Use Relational Operators
- Use Relational Operators
- Logical Operators
- Demo - Perform Logical Operations
- Colon Operator
- Accessing Vector Elements
- Matrices
- Accessing Matrix Elements
- Demo - Create a Matrix
- Create a Matrix
- Arrays
- Accessing Array Elements
- Demo - Create an Array
- Create an Array
- Data Frames
- Elements of Data Frames
- Demo - Create a Data Frame
- Create a Data Frame

Lesson 04 – Factor and List

- Factors
- Demo - Create a Factor
- Create a Factor
- Lists
- Demo - Create a List
- Create a List Importing Files in R
- Importing an Excel File
- Importing a Minitab File Importing a Table File Importing a CSV File
- Demo - Read Data from a File Read Data from a File Exporting Files from R
- Quiz Summary Conclusion

Lesson 05 – Apply

- Objectives
- Types of Apply Functions Apply() Function
- Demo - Use Apply() Function use Apply Function
- Lapply() Function
- Demo - Use Lapply() Function Use Lapply Function
- Sapply() Function

Lesson 06 - Data Visualization

- Introduction
- Objectives
- Graphics in R
- Types of Graphics
- Bar Charts
- Creating Simple Bar Charts
- Demo - Create a Bar Chart
- Editing a Simple Bar Chart
- Demo - Create a Stacked Bar Plot and Grouped Bar Plot
- Pie Charts
- Histograms
- Creating a Histogram
- Kernel Density Plots
- Creating a Kernel Density Plot
- Line Charts
- Creating a Line Chart
- Box Plots
- Heat Maps
- Creating a Heat Map
- Create a Heatmap
- Word Clouds
- Creating a Word Cloud
- Demo - Create a Word Cloud
- File Formats for Graphic Outputs
- Saving a Graphic Output as a File
- Demo - Save Graphics to a File
- Exporting Graphs in RStudio
- Exporting Graphs as PDFs in RStudio
- Demo - Save Graphics Using RStudio
- Quiz and Summary

Lesson 07 - Introduction to Statistics

- Introduction
- Objectives
- Basics of Statistics
- Types of Data
- Qualitative vs. Quantitative Analysis
- Types of Measurements in Order
- Statistical Investigation
- Statistical Investigation Steps
- Normal Distribution
- Example of Normal Distribution
- Importance of Normal Distribution in Statistics
- Use of the Symmetry Property of Normal Distribution
- Standard Normal Distribution
- Demo - Use Probability Distribution Functions
- Use Probability Distribution Functions
- Distance Measures
- Distance Measures - A Comparison
- Euclidean Distance
- Example of Euclidean Distance
- Manhattan Distance
- Minkowski Distance
- Demo - Mahalanobis Distance
- Cosine Similarity
- Correlation
- Correlation Measures Explained
- Pearson Product Moment Correlation (PPMC)
- Pearson Correlation - Case Study
- Dist() Function in R
- Demo - Perform the Distance Matrix Computations
- Quiz and Summary

Lesson 08 - Hypothesis Testing

- Introduction
- Objectives
- Hypothesis
- Need of Hypothesis Testing in Businesses
- Null Hypothesis
- Alternate Hypothesis
- Null vs. Alternate Hypothesis
- Chances of Errors in Sampling
- Types of Errors
- Contingency Table
- Decision Making
- Critical Region
- Level of Significance
- Confidence Coefficient
- Beta Risk
- Power of Test
- Factors Affecting the Power of Test
- Types of Statistical Hypothesis Tests
- An Example of Statistical Hypothesis Tests
- Upper Tail Test
- Test Statistic
- Factors Affecting Test Statistic
- Critical Value Using Normal Probability Table
- Quiz and Summary

Lesson 09 - Hypothesis Testing II

- Introduction
- Objectives
- Parametric Tests
- Z-Test
- Z-Test in R - Case Study
- T-Test
- T-Test in R - Case Study
- Demo - Use Normal and Student Probability Distribution Functions
- Objectives of Null Hypothesis Test
- Testing Null Hypothesis
- Three Types of Hypothesis Tests
- Hypothesis Tests About Population Means
- Decision Rules
- Hypothesis Tests About Population Means - Case Study
- Hypothesis Tests About Population Proportions 00:28
- Chi-Square Test
- Steps of Chi-Square Test
- Degree of Freedom
- Chi-Square Test for Independence
- Chi-Square Test for Goodness of Fit
- Chi-Square Test for Independence - Case Study
- Chi-Square Test in R - Case Study
- Demo - Use Chi-Squared Test Statistics
- Introduction to ANOVA Test
- One-Way ANOVA Test
- The F-Distribution and F-Ratio
- F-Ratio Test
- F-Ratio Test in R - Example

- One-Way ANOVA Test - Case Study
- One-Way ANOVA Test in R - Case Study
- Demo - Perform ANOVA
- Perform ANOVA
- Quiz
- Summary
- Conclusion

Lesson 10 - Regression Analysis

- Introduction
- Objectives
- Introduction to Regression Analysis
- Use of Regression Analysis - Examples
- Types Regression Analysis
- Simple Regression Analysis
- Multiple Regression Models
- Simple Linear Regression Model
- Simple Linear Regression Model Explained
- Demo - Perform Simple Linear Regression
- Perform Simple Linear Regression
- Correlation
- Correlation Between X and Y
- Demo - Find Correlation
- Method of Least Squares Regression Model
- Coefficient of Multiple Determination Regression Model
- Standard Error of the Estimate Regression Model
- Dummy Variable Regression Model
- Interaction Regression Model
- Non-Linear Regression
- Non-Linear Regression Models

- Demo - Perform Regression Analysis with Multiple Variables
- Non-Linear Models to Linear Models
- Algorithms for Complex Non-Linear Models

Lesson 11 – Classification

- Introduction
- Objectives
- Introduction to Classification
- Examples of Classification
- Classification vs. Prediction
- Classification System
- Classification Process
- Classification Process - Model Construction
- Classification Process - Model Usage in Prediction
- Issues Regarding Classification and Prediction
- Data Preparation Issues
- Evaluating Classification Methods Issues
- Decision Tree
- Decision Tree - Dataset
- Classification Rules of Trees
- Overfitting in Classification
- Tips to Find the Final Tree Size
- Basic Algorithm for a Decision Tree
- Statistical Measure - Information Gain
- Calculating Information Gain - Example
- Calculating Information Gain for Continuous-Value Attributes
- Enhancing a Basic Tree
- Decision Trees in Data Mining
- Demo - Model a Decision Tree
- Model a Decision Tree
- Naive Bayes Classifier Model
- Features of Naive Bayes Classifier Model
- Bayesian Theorem
- Naive Bayes Classifier

- Applying Naive Bayes Classifier - Example
- Naive Bayes Classifier - Advantages and Disadvantages
- Demo - Perform Classification Using the Naive Bayes Method
- Nearest Neighbor Classifiers
- Computing Distance and Determining Class
- Choosing the Value of K
- Scaling Issues in Nearest Neighbor Classification
- Support Vector Machines
- Advantages of Support Vector Machines
- Geometric Margin in SVMs
- Linear SVMs
- Non-Linear SVMs
- Demo - Support a Vector Machine
- Quiz
- Summary
- Conclusion

Lesson 12 – Clustering

- Introduction
- Objectives
- Introduction to Clustering
- Clustering vs. Classification
- Use Cases of Clustering
- Clustering Models
- K-means Clustering
- K-means Clustering Algorithm
- Pseudo Code of K-means
- K-means Clustering Using R
- K-means Clustering - Case Study
- Demo - Perform Clustering Using K-means
- Hierarchical Clustering
- Hierarchical Clustering Algorithms
- Requirements of Hierarchical Clustering Algorithms
- Agglomerative Clustering Process

Other Activities

Assessments

•Objective Assessments

-- Syntactical based

-- Scenario based

Note: At least 2 objective based assessments in each module

•Hands On – Practical Assessments

-- Scenario based

Note: At least 2 Hands on assessments in each module

Assignments

•Hands On – Practical Assignments

Note: At least 4 Hands on assignments in each module

Tasks – Home Work

•Regular tasks on each module

Note: Tasks are focused more to improve self learning

Resume Support & Interview Preparation

•Work on one or two mini projects

•Discuss and convert the current working project into R project to add in resume & to explain Data Science experience in interviews