

Data Analytics – 6 Modules

Module – 1 : Excel Analytics

Module – 2 : Sql

Module – 3: PowerBi

Module – 4: Business Statistics & Visualization

Module – 5: Python for Analytics

Module – 6: Hands-On-Project

Introduction to Data Analytics

- a. What is Data Analytics ? Its importance in business and decision-making process ?
- b. Skills required to become Data Analyst , Business Analyst, Business Intelligence Analyst, Marketing Analyst, Research Analyst, Reporting Analyst
- c. Difference between Data Analyst, Business Analyst, Business Intelligence Analyst
- d. Tools Covered: Excel, Sql, PowerBi, Python
- e. Career Opportunities, Roles, Jobs Description & Pay Packages for Data Analyst ?
- f. Difference between Data Analytics, Business Analytics & Data Science
- g. Learning Objectives of Data Analytics Course:
 - Data Collection & Cleaning
 - Data Exploration & Analysis
 - Data Visualization
 - Reporting & Dash boarding
 - Business Insights & Recommendations

Key Takeaways

- a. Hands-On-Project delivered using Tools like Excel ,Sql, PowerBi & Python for data analytics project implementation
- b. Resume preparation
- c. All topics explained with REAL WORLD projects only
- d. Data Analytics Project End to End Lifecycle explanation
- e. Mock Interviews & Test for Data Science Interview preparation
- f. Detailed assistance in Resume preparation. Special attention for experienced people on previous experience
- g. Real time interview questions and answers e-book
- h. Trainer & Lab Coordinator available for doubt clarification
- i. Latest resources, blogs and articles shared

Module - 1**Excel****2. Excel Overview**

- a. Creating a New Workbook
- b. Navigating in Excel
- c. Moving the Cell Pointer
- d. Using Excel Menus
- e. Using Excel Toolbars: Hiding, Displaying, and Moving Toolbars
- f. Entering Values in a Worksheet and Selecting a Cell Range
- g. Previewing and Printing a Worksheet
- h. Switching Between Sheets in a Workbook
- i. Inserting and Deleting Worksheets
- j. Renaming and Moving Worksheets
- k. Hiding Columns, Rows and Sheets
- l. Splitting and Freezing a Window
- m. Editing, Clearing, and Replacing Cell Contents
- n. Cutting, Copying, and Pasting Cells
- o. Moving and Copying Cells with Drag and Drop
- p. Collecting and Pasting Multiple Items Using the Paste Special Command
- q. Inserting and Deleting Cells, Rows, and Columns Using Undo, Redo
- r. Checking Your Spelling Finding and Replacing Information
- s. Inserting Cell Comments
- t. Sort
- u. Filter

3. Formulas

- a. Creating a Basic Formula
- b. IF, Nested Ifs
- c. IFNA, IF Error
- d. Vlookup
- e. HLookup
- f. XLookup
- g. Sumif & Sumifs
- h. Countif & Countifs

- i. Averageif & Averageifs
- j. Match & Index
- k. Text Functions
- l. Data Functions
- m. Editing & Copying Formulas Fixing Errors in Your Formulas
- n. Formulas with Several Operators and Cell Ranges

4. Data Analysis & Pivot Tables

- a. Creating a PivotTable
- b. Specifying the Data, a PivotTable Analyzes
- c. Changing a PivotTable's Calculation
- d. Selecting What Appears in a PivotTable
- e. Grouping Dates in a PivotTable
- f. PivotTable Formatting
- g. Pivot Chart
- h. Slicing
- i. Conditional-Formatting
- j. Data Validation
- k. Data Consolidation
- l. Text To Columns
- m. Remove Duplicates
- n. Record Macros

5. Data Visualization Using EXCEL

- a. Creating a Chart
- b. Chart Formatting
- c. Changing a Chart Type and Working with Pie Charts
- d. Adding Titles, Gridlines

6. Conclusion

- a. Dashboard Building Tips & Tricks
- b. Data Cleaning Demo
- c. Sample Project Demo
- d. Review and Recap
- e. Final Project: Call Centre Analysis & Apparel Manufacture Analysis

7. Introduction to SQL

- a. What is SQL
- b. Overview of the SQL Language
- c. SQL Database Structure
- d. Advantages of SQL

8. Data Definition Language (DDL)

- a. Introduction to DDL
- b. Creating Database and Tables
- c. Modifying and Deleting Tables

9. Data Manipulation Language (DML)

- a. Introduction to DML
- b. Retrieving Data using Select Statement
- c. Inserting, Updating and Deleting data

10. Basics

- a. Syntax of Queries
- b. Create Database, Tables
- c. Drop Database, Tables
- d. Insert Into, Update, Alter, Truncate, Delete
- e. Constraints, Primary Key, Foreign Key
- f. Select Statement
- g. Commenting Query
- h. Filtering, Grouping, Sorting and Limiting.

11. Intermediate

- a. Aggregation
- b. Group by
- c. Having
- d. Case, Coalesce
- e. Text Functions
- f. Date & Time Functions
- g. Order Of Execution & Order of Writing

12. Advanced SQL

DATA ANALYTICS

- a. Joins
- b. Subqueries
- c. Common Table Expressions (CTE)
- d. Views
- e. Temporary Tables
- f. Stored Procedures and Triggers
- g. Advanced Query Optimization
- h. Window Functions

13. Introducing Power-BI Desktop

- a. Overview of Power-BI
- b. Power-BI Platform Types
- c. Why Power-BI
- d. Exploring Power-BI
- e. Power-BI vs Excel
- f. Three Components of Power-BI

14. Connecting & Shaping Data

- a. Data Connectors
- b. Connection Modes
- c. Intro to Power Query
- d. The Query Editor
- e. Data QA & Profiling
- f. Data Cleaning

15. Table Transformations

- a. Calendar Tools
- b. Combine & Append Queries
- c. M Language

16. Creating Data Model

- a. Data Modeling 101
- b. Normalization
- c. Facts & Dimensions
- d. Primary & Foreign Keys
- e. Cardinality
- f. Filter Flow
- g. Star & Snowflake Schemas
- h. Hierarchies
- i. Managing Relationships

17. Calculated Fields With DAX

- a. DAX 101
- b. Columns & Measures
- c. Row & Filter Context
- d. DAX Syntax
- e. Common Functions
- f. Text, Date Functions
- g. Calculate
- h. Iterators
- i. Time Intelligence

18. Visualising Data

- a. Data Viz Best Practices
- b. Formatting & Filtering
- c. Bookmarks
- d. Report Interactions
- e. User Roles
- f. Parameters
- g. Custom Tooltips
- h. Mobile Layouts
- i. Slicer panels
- j. Report navigation
- k. Row-level security
- l. Optimize reports
- m. Filtering
- n. Interaction Controls
- o. Top N Cards

19. Advance Topics

- a. Smart Narrative
- b. Q&A Visual
- c. Decomposition Tree
- d. Key Influencers
- e. Top Segments
- f. Optimize Ribbon
- g. Pause Visuals
- h. Optimization Presets
- i. Apply all Slicers
- j. Performance Analyzer
- k. External Tools

20. Hands-On Project

- a. Excel, Sql, PowerBI, Statistics, Python

1. Business Statistics & Data Visualization

- a. Qualitative & Quantitative
- b. Scales of Measurement – Nominal / Ordinal / Interval / Ratio
- c. Types of Statistics
 - Descriptive Statistics
 - Inferential Statistics
- d. **Descriptive Statistics**
 - Measures of Central Tendency or Location
 - Mean
 - Median
 - Mode
 - Percentiles
 - Quartiles (Q1 – 25th Percentile, Q2 – 50th Percentile/Median, Q3 – 75th Percentile)
- e. Measures of Dispersion or Spread or Variability
 - Variance
 - Standard Deviation
 - Interquartile Range
 - Range
 - Coefficient of Variation
- f. Measures of Distribution – Shape
 - Distribution Shape
 - Histogram (Summarizing Quantitative Data)
 - Skewness – Left & Right Skewed
 - Normal Distribution / Normal Curve / Normal Probability Distribution
 - Bell Shaped Curved
 - Understanding Properties of Normal Distribution
 - Area Under the Curve for any Normal Distribution
 - Normal Probability Density Function
 - Standard Normal Distribution
 - Z – scores – Standard Normalization (computation)
- g. **Inferential Statistics**
 - Point Estimation
 - Population & Sample
 - Population Parameter
 - Sample Statistics
 - Difference between Population Parameter & Sample Statistic?
 - Why Sample when Population data available?

- Sample Size to select
- Determining sample size for a hypothesis test about a population mean
- Sampling Methods or Distributions
 - Simple Random Sample
 - Systematic Sampling
 - Stratified Sampling
- Hypothesis Testing and Decision Making
 - What is hypothetical question (more than one answer)
 - Developing Null and Alternate Hypothesis
 - Alternate Hypothesis as a Research Hypothesis and we need evidence to believe
 - Null Hypothesis is an assumption to be challenged
 - Confidence Level
 - Type I & Type II Errors
 - T-Test (comparison of means)
 - Comparison between two groups
 - One Sample t-test
 - One Sided/Tailed
 - Two Sided/Tailed
 - Two Sample t-test
 - One Sided/Tailed
 - Two Sided/Tailed
 - Paired t-test
 - Steps for Evaluating Hypothesis – One Sample & Two Samples
 - Compute confidence level with t-test
 - Finding out t-critical values from t-distribution table
 - Degrees of Freedom
 - Calculating p-value (probability of making Type I Error)
- h. Measures of Association between Two Continuous Variables
 - Covariance
 - Correlation Coefficient (Measure of Relationship)
 - Interpretation of Covariance & Correlation Coefficient
 - Cause & Effect relationship
 - Difference between spurious correlation & correlation
- i. Probability
 - Sample Space
 - Event
 - How do we calculate Probability?
 - Classical approach
 - Relative frequency approach

- Conditional Probability
- Bayesian Conditional Probability
- j. Discrete Distributions
 - Ratio & Proportions
 - Odds & Odds Ratio
 - Conditional Odds Ratio
 - Discrete Distributions on Binary Variable
 - Binomial Distribution
 - Poisson Distribution
 - Uniform Distribution
 - Test of Independence
 - Chi-Square test for association (Measure of Relationship between two categorical/binary variables)
 - Chi-Square distribution
 - Degrees of Freedom in Chi-Square statistics
 - Chi-Square statistic formula
 - Steps for hypothesis testing using chi-square test
- k. ANOVA – Analysis of Variance
 - F-Test
 - Compute F-Statistics
 - F-Statistics Formula (between groups and within the group)
 - Compute F-Critical value
 - Degrees of Freedom
 - Confidence
 - Steps for hypothesis testing using F-statistics and F-critical values for more than two groups

2. Data Pre Processing

- a. Cleaning data with python
- b. Data Type Conversions
- c. Encoding categorical data
- d. Binning and Normalization
- e. Feature Scaling & Standardizing Data
- f. Handling missing values – Imputation

3. Exploratory Data Analysis (EDA) & Visualization

- a. Summary Statistics
- b. Charts & Graphs
 - One Dimensional Charts
 - Histogram / BarChart
 - Two Dimensional Charts
 - Bar Charts (Stack & Dodge)
 - Box Plots
 - Scatter Plots
 - Multi-Dimensional Plots
 - Fancy charts – Bubble Charts, Word Clouds
 - Outlier Detection & Management
 - Variable Selection / Variable Transformation

Module – 5

Python for Data Analytics

1. Introduction to Python

- a. Understanding the Reason for Python's popularity
- b. Different IDE, Anaconda and Jupyter Notebook
- c. **Basic, Core & Advanced Python:**
 - Variables & Data Types in Python
 - Functions
 - Local & Global Statements
 - Data Structures: List, Tuple, Set, Dictionaries
 - Operators, Loops, Functions, Dictionaries
 - Numeric & String related functions
 - Object Oriented Programming (OOP)
- d. **Scientific Python:**
 - Numpy
 - Pandas
 - Matplotlib
 - Seaborn
 - Sci-kit Learn

Module – 6

Hands-on Projects