

# **Data Analytics Syllabus**

**Trainer - Amit Dhomne**

**Duration - 3 month**

## **1. Introduction to Data Analytics**

- What is Data Analysis
  - Understanding of Data ,pattern in data
  - How to get Insight out of Data
  - Data different format
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## **2. Python for Data Analysis**

- Install setup and overview
- Ipython /Jupyter Notebook overview.
- Intro to NUMPY.
- Creating Arrays.
- Using Arrays and Scalar.
- Indexing Arrays.
- Arrays transposition.
- • Universal arrays function.
- Arrays processing.
- Array input and output.
- Series.
- Data frames.
- Index Objects.
- Re index.
- Drop entry.
- Selecting entries.
- Data alignment.
- Rank and Sort.
- Summary statistics.
- Missing data.
- Index Hierarchy.
- Reading and writing text files.
- JSON with Python.
- HTML with Python.
- Microsoft Excel files with Python.
- Merge.
- Merge on Index.
- Concatenate.

- Combining Data Frames.
  - Reshaping.
  - Pivoting.
  - Duplicates in DataFrames
  - Mapping.
  - Replace.
  - Rename index.
  - Binning.
  - Outliers.
  - Permutation.
  - GroupBy on DataFrames
  - GroupBy on Dict and Series.
  - Aggregation.
  - Splitting, Applying and combining.
  - Cross Tabulation.
  - Installing Seaborn.
  - Histograms.
  - Kernel Density estimate plots.
  - Combining plot styles.
  - Box and Violin plots.
  - Regression Plots.
  - Heat maps and clustered matrices.
  - Introduction to SQL with Python.
  - SQL SELECT, DISTINCT, WHERE, AND & OR.
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- SQL WILDCARDS, ORDER BY, GROUP BY, and Aggregate Functions.
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### 3. SQL Query Relational Database

- Introduction.
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- ER Diagram.
  - Schema Design.
  - Normalization.
  - SQL SELECT statement.
  - SQL SELECT using common functions.
  - SQL JOIN overview.
  - INNER JOIN.
  - LEFT JOIN.
  - RIGHT JOIN.
  - FULL JOIN.
  - SQL best practice.

- INNER JOIN Advanced.
  - INNER JOIN and LEFT JOIN combo.
  - SELF JOIN.
  - JOINS and AGGREGATION Subqueries.
  - Sorting.
  - Independent Subqueries.
  - Co related Subqueries.
  - Analytic function.
  - Set operations.
  - SQL views.
  - Create a view.
  - Create a view using DDL.
  - SQL insert Advanced Technique.
  - Insert to create table.
  - INSERT to new data on existing table 1.
  - INSERT to new data on existing table 2.
  - INSERT to new data on existing table 3
  - INSERT to new data on existing table 4.
  - SQL update Advance technique and TCL.
  - SQL delete and TCL.
  - SQL constraints.
  - SQL aggregations.
  - SQL programmability.
  - SQL query performance.
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- SQL Extras.
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## **4 . Data Analysis through Ms - Excel**

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- Data wrangling with Excel
  - Microsoft Excel fundamentals.
  - Entering and editing texts and formulae.
  - Working with basic Excel functions.
  - Modifying an Excel worksheet.
  - Formatting data in an excel worksheet.
  - Inserting images and shapes into an Excel worksheet.
  - Creating Basic charts in Excel.
  - Printing an Excel worksheet.
  - Working with an Excel template.
  - Working with an excel list.
  - Excel list function.

- Excel data validation.
  - Importing and exporting data.
  - Excel pivot tables.
  - Working with excels PowerPivot tools.
  - Working with large sets of Excel data.
  - Conditional function.
  - Lookup functions.
  - Text based functions.
  - Auditing and Excel worksheet.
  - Protecting Excel worksheets and workbooks.
  - MasteringMasteringExcelExcel"What"What--if?"if?"Tools?Tools?
  - Automating Repetitive Tasks in Excel with Macros.Automating Repetitive Tasks in Excel with Macros.
  - Macro Recorder Tool.Macro Recorder Tool.
  - Excel VBA Concepts.Excel VBA Concepts.
  - Advance VBA.Advance VBA.
  - Preparing and Cleaning Up Data withPreparing and Cleaning Up Data withVBA.VBA.
  - VBA to Automate Excel Formulas.VBA to Automate Excel Formulas.
  - Preparing Weekly Report.Preparing Weekly Report.
  - Working with Excel VBA User Forms.Working with Excel VBA User Forms.
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- Importing Data from Text Files.Importing Data from Text Files.
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## 5 . Business Statistic & Machine learning

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- Descriptive Analytics.
  - Inferential Statistics.
  - Hypothesis Test 1 & 2.
  - Covariance
  - Correlation.
  - Regression.
  - Conjoint & Discriminant Analysis.
  - Discrete Uniform Distribution.
  - Continuous Uniform Distribution.
  - Binomial Distribution.
  - Poisson Distribution.
  - Normal Distribution.
  - Sampling Techniques.
  - T Distribution.
  - Hypothesis Testing and Confidence Intervals.
  - Chi Square Test and Distribution.
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- Bayes Theorem

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## 6. Data Warehousing

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- What is DWH?
- Characteristics of Datawarehouse
- Difference between OLTP and DWH
- Architecture of DWH
- Various BI tools
- Types of DWH
- Types of Dimensional Data Modeling
- Surrogate key
- Types of Dimension
- Business Intelligence Concepts
- BI application types (ad hoc, standard reporting, analytic applications, dashboards) and audiences
- Specification of templates, applications and navigation framework
- Development of applications and BI portal

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## 7. Tableau tool

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- Tableau Desktop (Introduction)
- Introduction Tableau
- Connecting to Excel, CSV Text Files
- Getting Started
- Product Overview
- Connecting to Databases
- Working with Data
- Analyzing
- Formatting
- Introduction to Calculations
- Dashboard Development
- Sharing
- Data Calculations
- Aggregate Calculations
- User Calculations
- Table Calculations
- Logical Calculations
- String Calculations
- Number Calculations
- Type Conversion

- Parameters
- Filtering Conditions
- Filtering Measures
- Histograms
- Sorting
- Grouping
- Sets
- Tree maps, word clouds and bubble charts
- Pareto Charts
- Waterfall Charts
- Bump Charts
- Funnel Charts
- Bollinger Bands
- Tableau Server
- Install Configuration
- Tab admin
- Tab cmd
- Data Server
- End User Training
- JavaScript API Intro and Embed
- JavaScript API Switching Views
- JavaScript API Filtering and Selecting
- JavaScript API Asynchronous Programming
- JavaScript API Event Listeners
- JavaScript API Advanced Filtering
- JavaScript API Utility Function
- Tableau Advanced
- Authoring for Interactivity
- Data Blending
- Basic Mapping
- Advanced Mapping Techniques
- WMS Servers
- Polygon Maps
- Background Images
- Custom Geo coding
- Cubes
- Trend Lines, Residuals, and Forecasting
- Statistics Calculations
- Benford's Law
- Box Plots
- Sales force
- Google Analytics
- Extract API CSV to TDE
- Connecting to Web-based Data Sources with the Extract API

- Extract API Transforming Your Data
- Analyzing Sales Data with Tableau
- Tableau Online Security and Administration
- Tableau Online Security and Administration
- Tableau Online Updating Data to the Cloud
- Tableau Visual Analytics Training

## 8 . Google Data Studio Dashboard

- How Data Studio works
- How to navigate Data Studio
- How to connect to your data
- How to create and edit reports
- How to share and collaborate with other users
- How to use report templates

## 9. R programming

- Introducing to R – R Data Structures

Help functions in R – Vectors – Scalars – Declarations – recycling – Common Vector operations – Using all and any – Vectorized operations – NA and NULL values – Filtering – Vectorised if-then else – Vector Equality – Vector Element names

- Matrices, Arrays And Lists:

Creating matrices – Matrix operations – Applying Functions to Matrix Rows and Columns – Adding and deleting rows and columns – Vector/Matrix Distinction – Avoiding Dimension Reduction – Higher Dimensional arrays – lists – Creating lists – General list operations – Accessing list components and values – applying functions to lists – recursive lists

- Creating Data Frames

Matrix-like operations in frames – Merging Data Frames – Applying functions to Data frames – Factors and Tables – factors and levels – Common functions used with factors – Working with tables - Other factors and table related functions - Control statements – Arithmetic and Boolean operators and values – Default values for arguments - Returning Boolean values – functions are objects – Environment and Scope issues – Writing Upstairs - Recursion – Replacement functions – Tools for composing function code – Math and Simulations in R

## 10 .Real time Industry Project

- Data Analysis R based project
- Tableau Dashboard project
- Google Data Studio project
- Ms-Excel Project
- Data Analysis Python based project
- Statistic based Mathematical Analysis project