

Program Outline

Data Analytics & BI Career Path

Batch 1

Course Instructors

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Support Instructor

Tools & Technology

Advanced Excel, Power BI

SQL (Snowflake)

Statistics with R & Python for Data Analytics

*****Career Grooming, Interview Skill Development,
Freelancing Guidance**

Advanced Excel & Power Query

Week 01

- ❖ Class 01: Introduction to Data Analytics.
Understanding different Structure of Data and taking actions accordingly.
- ❖ Class 02: Important Excel Functions- vlookup, xlookup, filter, datediff, if, ifs, sumif, count, counta, countif, unique etc.

Week 02

- ❖ Class 03: Conditional Formatting, Removing Duplicates, Number Formatting.
Summarizing & Reporting with Pivot Table.
- ❖ Class 04: Building Interactive Charts in Excel.
Learning the Visualization Best Practices.

Week 03

- ❖ Class 05: Data Cleaning, Consolidation & Automizing work with Power Query.
Web Scrapping using Power Query.
- ❖ Class 06: Statistical Data Analysis using Excel.
Dashboard Building Best Practices.

Week 04

- Class 07: Professional-looking Dashboard Building in Excel (Start to End Project).
Explaining the Data Analysis Excel Project Outline.
- Class 08: Providing Feedback on Submitted Excel Projects.

Power BI

Week 01

- **Class 1: Introduction to Power BI & Getting Data in Power BI**
 - ❖ Installing Power BI Desktop.
 - ❖ Getting familiar with the Power BI User Interface, Features, Settings, Strength & Weakness.
 - ❖ Understanding the difference between the Power BI Desktop vs. Service Features.
 - ❖ Loading Data in Power BI.
 - ❖ Import vs Export Mode.
 - ❖ Checking Quality of Data; Modifying existing and adding new columns.
 - ❖ Pivoting, Aggregating, Merging & Appending Data.

- **Class 2: Data Modelling in Power BI**
 - ❖ Data Modelling in Power BI.
 - ❖ **Fact Table vs. Dimension Table.**
 - ❖ **Star Schema vs. Snowflake Schema.**
 - ❖ Active vs. Inactive Relationship; Downstream Flow.

Week 02

- **Class 1: Getting Started with the Visualization Components**
 - ❖ Analyzing Data using available Visualization Components.
 - ❖ Calculated Measures.

- **Class 2: DAX (Data Analysis Expression) Measures**
 - ❖ How DAX Measures are different than Calculated Measures and why they are so useful?
 - ❖ DAX Measures: Math & Stats, Iterator, Logical, Text.

Week 03

- **Class 1: DAX (Data Analysis Expression) Measures**
 - ❖ DAX Measures: Filter, Time Intelligence.
 - ❖ Other useful ones.
- **Class 2: Data Analysis & Report Building in Power BI**
 - ❖ Exploring all the visuals.
 - ❖ Exploring how tooltips, slicers & filters work?

Week 04

- **Class 1: Bookmark & Edit Interaction**
 - ❖ Taking the most out of **Edit Interaction Feature**.
 - ❖ Use **Bookmarks** for custom-view reports.
- **Class 2: AI Visuals & Custom Visuals**
 - ❖ Kew Influencers, Decomposition Trees, Q&A.
 - ❖ How to download and work with Custom Visuals.

Week 5

- **Class 1: Customizing Card & KPIs**
 - ❖ Customizing Card & KPIs for effective presentation of your work.
 - ❖ Customizing Formats of other Visuals.
- **Class 2: Creating a Professional Looking Power BI Dashboard**
 - ❖ Connecting the dots and creating a complete dashboard on Healthcare/Hotel Management Data.
 - ❖ Learning all the best practices.

Week 06

- **Class 1: Publishing the Report in Power BI Service (Web)**
 - ❖ Creating a 60-days free trial Pro Account in Power BI Service.
 - ❖ **Hosting/Publishing the Report on Power BI Service.**
 - ❖ Getting familiar with different features and limitations of Power BI Service.
- **Class 1: Advanced Features**
 - ❖ Setting up Row Level Security (RLS).
 - ❖ How to Incrementally Refresh Data in Power BI (parameterization).

Week 07

- **Class 1: End-to-End Data Analysis Project with Power BI**
 - ❖ **Advanced Retail Customer Analytics [Cohort Analysis, Customer Churn, Customer Lifetime Value, New vs Lost Cust Customers] End-to-End Project Solving in Live Class.**
 - ❖ **Explaining the Assignment Project Outline & Instructions.**
- **Class 2: Providing Feedback on Submitted Excel Projects.**

**** Working with Database (Import Mode) will be demonstrated after SQL Part.*

Database Fundamentals & SQL (Snowflake)

Week 01

- **Class 1: Fundamentals of DBMS-I**

- ❖ What is a Relational Database Management System?
- ❖ ACID Property.
- ❖ How is data stored in a relational database?
- ❖ Concept of Normalization.
- ❖ OLTP vs. OLAP.
- ❖ Database vs. Data Warehouse vs. Data Lake/Lakehouse.
- ❖ What is a NoSQL Database and BASE Property?
- ❖ Difference between relational and NoSQL Database.
- ❖ Which one should you choose in which case?
- ❖ For BI Solution, what should you choose to store your data?
- ❖ What is Snowflake and what advantage does it provide? (Micro-Partitioning)

- **Class 2: Fundamentals of DBMS-II**

- ❖ Creating Free Trial Account in Snowflake.
- ❖ Snowflake UI Tour.
- ❖ Concepts of Database, Schema, Table and Fields.
- ❖ Types of SQL Commands: DDL, DML, DCL, TCL, DQL.
- ❖ What are the Commands under each of these categories and what does each of these commands do?
- ❖ As a Data Analyst & Data Scientist which Commands you only need to Master?
- ❖ **Constraints:** Primary Key, Foreign Key, Not Null, Unique, Check, Default.
- ❖ **Data Types:** DATE, DATETIME, VARCHAR, INT, NUMBER, FLOAT, Auto Increment.

Week 02

- **Class 1: Designing a Relational Database in Snowflake & Bulk Insertion**

- ❖ Designing and Creating a Database, Schema, Tables.
- ❖ Masterclass on DDL, DML, TCL & DQL Commands/Statements.
- ❖ Bulk Insert of Data in Snowflake & MySQL.
- ❖ Creating File Format to Bulk Insert Data.
- ❖ Error Handling during Bulk Insertion.

- **Class 2: Basic Data Analysis using SQL**

- ❖ Basic Queries: SELECT, FROM, WHERE, LIKE, ILIKE, IN, DISTINCT, BETWEEN, GROUP BY, ORDER BY, LIMIT, OFFSET, ALIAS.
- ❖ Aggregate Functions: COUNT, SUM, AVG, MIN, MAX.
- ❖ Difference between WHERE and HAVING Clause.
- ❖ Some built-in Functions: EXTRACT, DATE_PART, TO_DATE, TO_CHAR
- ❖ CASTING, SUBSTRING, POSITION, COALESCE, NULLIF

Week 03

- **Class 1: JOINING, UNION & CASE WHEN**
 - ❖ SQL Join: Left, Right, Inner & Full Join.
 - ❖ Be aware of **Cross Join!**
 - ❖ UNION, UNION ALL.
 - ❖ **SQL Code Order of Execution.**
 - ❖ Wide use of **CASE WHEN** Statement during data Cleaning, Analysis & Feature Engineering.
- **Class 2: Subqueries and Common Table Expressions (CTEs)**
 - ❖ Sub Queries in SELECT, FROM and WHERE Clause.
 - ❖ Common Table Expressions (CTE).
 - ❖ Between Sub Queries and CTE, which one is more efficient and takes less time?

Week 04

- **Class 1: Window Functions**
 - ❖ Window Functions, the most widely used SQL Commands used by Data Analysts.
 - ❖ Window Functions: RANK, DENSE_RANK, ROW_NUMBER, LEAD, LAG, FIRST VALUE, AGGREGATE WINDOW FUNCTION, FRAME SPECIFICATION, WINDOW CHAINING.
- **Class 2: RFM Segmentation**
 - ❖ Segmenting Customers based on their Recency, Frequency & Monetary value using SQL.

Week 05

- **Class 1: Cohort Analysis & Churn Rate Calculation**

- ❖ Cohort Analysis using Transactional Data of Customers
- ❖ Customer Lifetime Value, Retention, and Churn Rate Calculation

- **Class 2: Views, Materialized Views and Project**
 - ❖ Difference between Views and Materialized Views and when to use which one?
 - ❖ Connecting Power BI with Snowflake Data Warehouse and Working with **Import Mode**.
 - ❖ **Explaining End-to-end Project on Database Creation, Data Insertion, Data Cleaning & Data Analytics Project Outline and Instructions.**

Statistics with R & Python for Data Analytics

Week 01

- **Class 1: Basics of R Programming Language**
 - ❖ Introduction to R Programming Language.

- ❖ Installing R & Rstudio.
 - ❖ Basics of R Programming.
 - ❖ Vector, Matrix, Factor, Data Frame, List.
 - ❖ Selection of Elements in Vector, Matrix, Factor, Data Frame, List.
 - ❖ Nominal and Ordinal Categorical Variables/Factor.
- **Class 2: Data Wrangling & Visualization using dplyr, ggplot2 packages**
 - ❖ Importing Data in R.
 - ❖ Data Wrangling using dplyr.
 - ❖ Visualization using ggplot2.

Week 02

- **Class 1: Basics of Python Programming Language**
 - ❖ Introduction to Python Programming Language.
 - ❖ Working on Google Colab.
 - ❖ Data Structures in Python: Numbers, Strings, Boolean, List, Dictionary, Tuple, Set, None.
 - ❖ Getting Familiar with Pandas, Numpy and Matplotlib
- **Class 2: Data Wrangling & Visualization using pandas, numpy & matplotlib libraries**
 - ❖ Importing Data in Python using pandas.
 - ❖ Data Wrangling using pandas and numpy.
 - ❖ Visualization using matplotlib.

Week 03

- **Class 1: Understanding of Data and Decision Making accordingly**
 - ❖ Statistics: Statistics is used in almost any field; What concepts only require doing your job successfully as a Data Analyst and Data Scientist?
 - ❖ Types of Data, Variable, and Frequency Distribution.
 - ❖ Plots you need to know about and in which situation you need to use which one, Use cases.
- **Class 2: Major Characteristics of Data**

- ❖ Measures of Central Tendency [Mean, Median, Mode], and Location [Quartile, Decile, Percentile].
- ❖ Measures of Dispersion [Range, Standard Deviation, Variance, Coefficient of Variation].
- ❖ Measures of Shape Characteristics: Skewness, Kurtosis.

Week 04

- **Class 1: Outlier Detection & Data Cleaning**
 - ❖ IQR & Boxplot Method to Detect Outlier.
 - ❖ Standardization and Z-score of Data to normalize.
 - ❖ Normal Distribution as a Standard and Central Limit Theorem.
 - ❖ Imputing Missing Values.

- **Class 2: Sampling Methods**
 - ❖ Convenience Sampling (Non-probability Sampling).
 - ❖ Sampling Bias.
 - ❖ Simple Random Sampling.
 - ❖ Systematic Sampling.
 - ❖ Stratified Sampling.
 - ❖ Cluster Sampling.

Week 05

- **Class 1: Hypothesis Testing**
 - ❖ Parametric vs Non-parametric Tests.
 - ❖ When to perform which one.
 - ❖ Assumption Checking.
 - ❖ Basics of Hypothesis Testing.
 - ❖ T-test, Z-test, Chi-square Test, ANOVA.
 - ❖ A/B Testing.

- **Class 2: Correlation & Regression Analysis**
 - ❖ What is causality and what is the difference between Correlation and Regression Analysis?
 - ❖ Performing Correlation and Regression Analysis; Also, creating publication standard tables and charts.
 - ❖ Interpreting the Results Properly
 - ❖ Difference between Linear and Logistic Regression.

- ❖ Interpreting the results of Logistic Regression (Odds Ratio).

Job Preparation

Week 1:

- ❖ Class 1 – CV Making & How to Write a Cover Letter
- ❖ Class 2 – Portfolio Building

Week 2:

- ❖ Class 1 – Interview Skill Development
- ❖ Class 2 - How to search job through LinkedIn

Week 3:

- ❖ Class 1 – **Guidance on** Freelancing Career
- ❖ Class 2 – Mock Interview & Roadmap for Future Ahead.