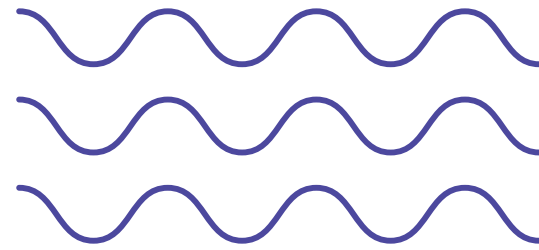**Fusion Software Institute**

# FULL STACK DATA ANALYST

Empower your career with comprehensive Full Stack Data Analyst Training: From Data Acquisition to Advanced Analytics. Unleash the power of data to drive insights and innovation.

# 1.  INTRODUCTION

This Full Stack Data Analytics course Syllabus, in collaboration with Top MNCs, features a multifaceted realm of data analysis, equipping you with the essential knowledge and practical skills to navigate the modern data landscape with confidence and proficiency.

Throughout this course, we'll traverse the entire data analysis lifecycle, starting from the foundational concepts of data acquisition and preprocessing, all the way to advanced analytics and interpretation. Our comprehensive syllabus is meticulously crafted to provide you with a holistic understanding of data analysis principles and techniques, empowering you to extract meaningful insights and drive informed decision-making.

# 2. TOOLS

| | |
|---|---|
| DATA VISUALIZATION USING PYTHON | AZURE SYNAPSIS |
| SQL | AZURE DATABRICKS |
| POWER BI | AZURE DATA LAKE |
| ADF | LOGIC APPS |
| MICROSOFT COPILOT | |

# INTRODUCTION OF PYTHON

- What is Python?
- Why Python?
- Installing
- Python
- Python IDEs
- Jupiter Notebook Overview

# PYTHON BASICS

- Introduction
- Variables
- Python Basic Data types
- Lists
- String Slicing, Indexing
- Operator
- IF statements Loops
- Dictionaries
- Tuples
- Functions I) Functions arguments
  II) Lambda Function III) Built in function
- Modules, Packages Anaconda
- Array

# PYTHON PACKAGES

- Pandas
- Numpy
- Sci-kit Learn
- Mat-plot library
- Seaborn Library
- Installing jupyter notebook for windows, Linux and
  Installing numpy, pandas and matplotlib

# IMPORTING DATA

- **Reading CSV files saving in Python data**
- **Loading Python data objects**
- **Writing data to CSV file**

# DATA VISUALIZATION USING PYTHON

## SQL

SQL is a must-have skill for every data science professional. This course will start from the basics of databases and structured query language (SQL) and teach you everything you would need in any data science profession including Writing and executing efficient Queries, Joining multiple tables, and appending and manipulating tables

# KEY TAKEAWAYS FROM STRUCTURED QUERY LANGUAGE (SQL)

- Start using MySQL – the most popular Database Management System
- Learn how to perform database tasks in SQL
- How to insert, update, and delete records from your database
- How to create reports and perform basic analysis using SQL's aggregate functions
- How to perform efficient joins to fetch your data from multiple tables

# COURSE CURRICULUM

- What is SQL?
- Brief History of SQL
- Why is SQL Important
- Popular Databases
- What Is MySQL?
- Introduction to MySQL & MySQL workbench
- Install MySQL Database Server
- Connect to MySQL Server
- Selecting Database
- Create Database
- Drop Database
- Data Types
- Create Table
- Sequence
- Alter Table
- Add Column
- Drop Column
- Rename Table
- Drop Table
- Truncate Table
- Select
- Order By
- Where
- Select Distinct
- And
- Or
- In
- Between
- Like
- Limit

- Is Null
- Table & Column Aliases
- Group by
- Having
- Subquery
- Derived Tables
- Exists
- Union
- Minus
- Intersect
- Insert
- Update
- Delete
- Replace
- Grant
- Revoke
- Commit
- Rollback
- Savepoint
- Set Transaction
- Bit
- Boolean
- Char
- Date
- Datetime
- Decimal
- Int
- Time
- Timestamp
- Varchar
- Primary Key
- Foreign Key
- Unique Constraint

- Check Constraint
- Not Null
- Default
- Joins
- Inner Join
- Left Join
- Right Join
- Self-Join
- Cross Join
- Single-row subqueries
- Multiple-row subqueries
- Correlated subqueries
- Rank
- Dense Rank
- Row number

# POWER BI

### About Microsoft Power BI

Microsoft Power BI is considered the leader in the Business Intelligence platforms and is way ahead of other industry giants. With seamless integration with other Microsoft products, Power BI gives organizations easy access to connect to various data sources, crunch numbers, and prepare, view, and publish interactive dashboards. Power BI comes with Power Query and Data Modeling capabilities that allow users to clean, reshape, transform, and link data from various sources with just a click.

## KEY TAKEAWAYS FROM THE COURSE

- Learn about the features of Power BI and explore how can it be integrated into the current business intelligence framework

- Know about some key concepts specific to Power BI (measures and calculated columns) for performing your tasks
- Create your first interactive business intelligence dashboard with Power BI
- Storytelling and data security using Power BI
- Learn about transforming the data with Power Query in Power BI
- About Microsoft Power BI

# COURSE CURRICULUM

- Introduction to Reporting
- History of Power BI
- Power BI desktop installation
- Advantages of Power BI over SSRS
- Tool Introduction
- Creating a Sample Report
- What is Power BI Desktop?
- Connecting / fetching the data to power BI from SQL Server / Excel
- Tabular SSAS / text file.
- Modifying the data source settings.
- Understanding of Relationships View/Data, view/report view
- Creating / modifying and deleting the relationships.
- Manage Relationships.
- Creating / deleting and renaming the reports
- Data Refresh options
- Table-level & column-level options
- Delete
- Rename
- Hide
- View Hidden
- Unhide / collapse / expand all

- All filter
- New Hierarchy
- New Measure/calculation
- Datatypes, Changing the Datatype of a Column
- Filters in Power Query
- Auto Filter / Basic Filtering
- Filter a Column using Text Filters
- Filter a Column using a Number
- Filters Filter a Column using Date Filters
- Filter Multiple Columns
- Other reporting options
- Cut
- Copy
- Paste
- Format Painter
- Adding images/Text boxes/shapes
- Enter Data
- Page View
- Table level options
- Copy
- Paste
- Delete
- Rename
- Duplicate
- Reference
- Move up/down/group
- Create function
- Copy/rename
- Rename other columns
- Duplicate columns
- Remove duplicate / errors
- Change type

- Transform
- Replace
- Replace error
- Split column
- Group by
- Fill up
- Fill down
- Unpivot columns and other columns
- Rename
- Move
- Drilldown
- Add as a new query
- Other options
- Merge queries
- Append queries
- Use the first row as a header
- Sorting
- Create/work with parameters
- Append Queries
- Append Queries as New
- Append 2 or more files individually with different queries
- Query Options
- Copy Query, Paste Query
- Delete Query, Rename Query
- Enable Load, Include in report Refresh
- Duplicate Query, Reference Query
- Move to Group, Move Up, Move Down
- Merge Queries, Merge Queries as New
- Default Types of Joins / Join Kinds / Merge Type
- Left Outer (all from first, matching from second)
- Right Outer (all from second, matching from first)

- Full Outer (all rows from both)
- Inner (only matching rows)
- Left Anti (rows only in first)
- Right Anti (rows only in second)
- Cartesian Join or Cross Join
- Transpose
- Reverse columns
- Count
- Detect data types
- Extract
- Parse
- Date
- Time
- Expand
- Aggregate
- Power BI Service Introduction, Power BI Cloud
- Architecture
- Creating a Power BI Service Account, SIGN IN to
- Power BI Service
- Account
- Publishing Reports to the Power BI service, Import
- Getting the Report to PBI Service
- My Workspace / App Workspaces Tabs

# DATASETS, WORKBOOKS, REPORTS, DASHBOARDS

- Working with Datasets, Creating Reports in the Cloud using Published Datasets
- Power BI Datasets Live Connection using Desktop
- Working with Workbooks, working with Reports, Sharing Reports
- **Real-Time Projects | Guidance With Resume & Interview | Rich Material With Lifetime Access**

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- Power Bi
- Course Curriculum
- Dashboards
- Development
- Data Gateways
- Publishing Reports to the Power BI service, Import / Getting the Report to PBI Service
- My Workspace / App Workspaces Tabs

## DATASETS, WORKBOOKS, REPORTS, DASHBOARDS

- Working with Datasets, Creating Reports in the Cloud using Published Datasets
- Power BI Datasets Live Connection using Desktop
- Working with Workbooks, working with Reports,
- Sharing Reports Creating Dashboards
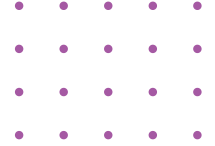- Pin Visuals and Pin LIVE Report Pages to Dashboard

## ADVANTAGES OF DASHBOARDS

- Interacting with Dashboards
- Adding Tiles to Dashboards
- Web Content, Image, Text Box, Video
- Formatting Dashboard
- Sharing Dashboard
- Introduction to Data Gateways
- How Data Gateways Work
- Connect to an on-premise Data Source by using a Data Gateway
- Download Data Gateway
- Installing a Data Gateway
- Types of Gateways

- On-premises Data Gateway, On-premises Data
- Gateway (personal mode)
- Manage Data Gateway
- Add and Remove Administrators
- Add Data Source, Add or Remove Users to a Data Source
- Refresh Premise Data
- Configuring Automatic Refresh using Schedules
- Collaboration in
- Power BI using App
- Workspace
- Sharing Power BI
- Content using Apps and Content Packs
- Row Level Security in Power BI
- Power BI Mobile App
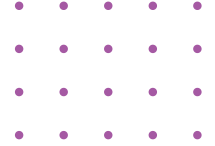- Power BI Licensing
- Models (Pro)

# INTRODUCTION TO APP WORKSPACES

- Create an App Workspace
- Add Members to App Workspace to Collaborate
- App Workspace Access
- Admin, Member, Contributor
- Introduction to App
- Publish an App
- Update a Published App
- Manage Content in the App
- Include in App, Exclude in App
- Sharing App
- Entire Organization, Specific individuals, or group
- Introduction to Row-Level Security
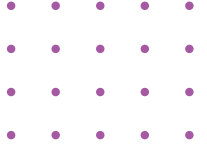- Row Level Security (RLS) with DAX

- Manage Roles, Creating Roles, Testing Roles
- Adding Members to Roles in Power BI Service
- How to install the Power BI Mobile App
- How to sign in to the mobile app
- How to customize reports/visuals only for mobile app specific.
- Introduction to power bi-licensing model
- What is Power BI Pro
- What Is Power BI Premium
- Difference between the two Pro and Premium
- Enhancing the Data Model - DAX
- What is DAX, Calculated Column, Measures
- DAX Table and Column Name Syntax
- Creating Calculated Columns, Creating Measures
- Calculated Columns Vs Measures
- DAX Syntax & Operators
- DAX Operators
- Types of Operators
- Arithmetic Operators, Comparison Operators, Text
- Concatenation
- Operator, Logical Operators
- Filter & value functions
- Logical functions
- Mathematical functions
- Statistical functions
- Text functions
- Time functions
- Year, Month, Day
- Weekday, Week Num
- Format (text function) month name, weekday
- Name
- Date, today, now
- Hour, minute, second, time

- Date diff, calendar
- Creating date dimension table
- Len, concatenate (&)
- Left, right, mid
- Upper, lower
- Trim, substitute, blank
- If
- True, false
- Not, or, in, and
- If error
- Switch
- Int
- Round, roundup, round down
- Divide
- Even, odd
- Power, sign
- Sqrt, fact
- Sum, sumx
- Min, minx
- Max, maxx
- Count, countx
- Average, average
- Countrows, countblank
- Calculate
- Calculate table
- All
- Related
- All selected
- Allcross filtered
- Hasonefilter
- Hasonevalue
- Isfiltered
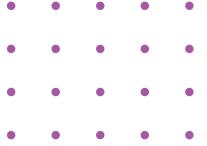- Iscross filtered
- Selected value

- User relationship
- Time intelligence introduction
- Total mtd, totality, totality
- The previous day, previous month
- The previous quarter, previous year
- Next day, next month
- Next quarter, next year
- Same period last year
- Parallel period
- PBI certified Visuals
- Word Cloud
- Infographic Designer
- Drill down the pie chart
- Histogram
- What are paginated reports in Power BI?
- Installation
- Compare Power BI reports and paginated reports
- Create reports in Power BI Report Builder
- Report Design
- Page Layout
- Create paginated reports with matrix, chart, and free-form layouts
- Deployment pipelines with paginated reports
- Embed Power BI paginated reports limitations

## COURSE CURRICULUM MICROSOFT FABRIC

- What is Microsoft Fabric?
- Components of Microsoft Fabric
- Trial Types
- Limitations
- Features of Fabric

- Latest Updates
- Known Limitations and Future Scope
- Synapse Data Engineering
- Data Factory

# SYNAPSE DATA SCIENCE

- Lakehouse
- Notebook
- Connector
- Data Pipeline
- Dataflow Gen2
- Data Wrangler
- Model
- **Real-Time Projects | Guidance With Resume & Interview | Rich Material With Lifetime Access**
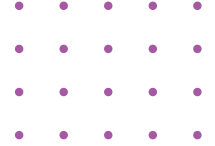
# SYNAPSE DATA WAREHOUSING
# SYNAPSE REAL-TIME ANALYTICS

- Data Warehouse
- KQL database
- Event stream

# COURSE CURRICULUM AZURE (AZURE ANALYTICS) & ADF

- What is Cloud Computing?
- Different cloud platforms
- Could Services
- Overview of Azure
- Azure Free Account
- Azure Portal

- Azure Services and Applications
- Introduction to Blob and ADLS
- Creation of storage accounts
- Why and what is ETL with its components?
- ADF introduction
- Components of ADF
- Linked Services
- Datasets
- Activity
- Pipelines
- Dataflow
- Parameters
- Variables
- Triggers
- Data Transformation
- Integration runtime and types
- Real-time Use Cases
- Scenario-based Dataflows

**End-to-End Pipeline (ADLS-> ADF -> Azure SQL)**

- Add email notification in Azure Data Factory
- Azure - Incremental load using ADF Data Flows
- Refresh Power BI Datasets with ADF

## COURSE CURRICULUM AZURE SYNAPSE ANALYTICS

- What is Azure Synapse Analytics?
- Components of Azure Synapse Analytics.
- Difference between ADF and Synapse.
- Concepts of Pools (Dedicated and Serveries).
- Analyse and Monitor Data in serverless and
- Dedicated Pool.

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- Create Pipelines in Azure Synapse.
- Creation of Synapse Notebooks.
- Synapse with Power BI

## AZURE DATA BRICKS

- What are Data bricks?
- Components and Environments in Data Bricks.
- Create and run Data Bricks Notebook.
- Jobs and automation of Notebooks in Data bricks.
- Creating Scopes in Data bricks key vault integration.
- Creation of clusters and spark use cases.
- Spark Architecture and Master Slave Mechanism in Spark.

## COURSE CURRICULUM AZURE DATA LAKES

- What are Storage accounts/Data lakes in Azure?
- What are storage services and why is Data Lake in Azure?
- How to create the Data lake services in Azure.
- Gen1 vs Gen2 Data lake difference.
- Creation of containers and folders.
- Use case in storing large data and integration of ADF
- Copy activities in Data Lakes

## AZURE LOGIC APPS

- What are Logic Apps?
- Logic Apps and Power Automate Differences.
- Connectors in Logic Apps.
- How Logic Apps are useful for automation or notification purposes.
- Send an email notification using Logic Apps.

# WHY CHOOSE US?

- 100% Job Placement Assistance
- Industry Experts as Trainer
- Resume Preparation
- Weekly Mock Interviews
- Digital Classroom
- 2 Real-time Projects
- Expert Faculty
- Expert Instructors
- Hands-On Learning
- Career Support
- Innovative Curriculum
- State-of-the-Art Facilities
- Career Path Support
- Industry-Relevant Courses
- Community Connection
- Exclusive Networking Opportunities
- Career Services Beyond Graduation
- Industry-Recognized Certifications
- Provide Internship Program
- We Provide Soft Skill Corporate Training

**Fusion Software Institute**

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