PYTHON

Module 1: Getting Started with Python Core

- Need of Programming with an Example
- Why Programming
- Advantages of Programming
- Different Programming Languages
- Introduction to Python
- A Brief History of Python
- Why Python
- Installing Python
- Creating Python File using IDLE
- Write your first Program in Python
- How to execute Python Program
- Identifier
- Rules for Naming Identifiers
- Variables
- Operator
- Operator Types

Module 2: Datatypes in Python

- Introduction to Python Data Types
- Strings
- Introduction to Python 'String' data type
- String Properties
- String built-in functions
- Programming with Strings
- String Formatting
- Lists and Tuples
- Introduction to Python 'List' data type
- List Properties
- List built-in functions
- Programming with Lists
- List Comprehension
- Introduction to Python 'tuple' data types
- Tuples as Read only lists
- Dictionary and Sets
- Introduction to Python 'Dictionary' data type
- Creating a dictionary
- Dictionary built-in functions
- Introduction to Python 'set' data types
- Set and Set properties
- Set built-in functions

Module 3: Conditional & Control Statements in Python

- Introduction to Conditional Statements

- Types of Conditional Statements
- If....Statement
- If....Else Statement
- Elif.... Statement
- Introduction to Loops
- Types of Loops in Python
- While.... Loop
- For....Loop
- Nested Loop
- Introduction to Loop Control Statements
- Loop Control Statements Keywords
- Break Statement
- Continue Statement
- Pass Statement

Module 4: Functions in Python

- Introduction to Python Functions
- User Defined Functions
- Functions definition and return statement
- Calling a Function
- Parameters and Arguments
- Required Arguments
- Default Argument
- Variable Scope in Function
- Local Scope
- Global Scope
- Enclosing Scope
- Built-in Scope
- Modules and Packages
- Importing Module (from, import statement)
- Anonymous functions (Lambda)

Module 5: Exception Handling & OOPS Concepts

- Getting started working with Files
- File Objects and Modes of file operations
- Reading, Writing, and use of 'With' Keyword
- Read(), Readline(), Readlines(), Write(), Writeline()
- Introduction to Exception Handling
- Understanding Exceptions
- Handling An Exceptions
- Try, Except, Else, and Finalizing
- Raising Exceptions with: Raise, Assert
- Introduction to Object Orientated Programming (OOPs)
- Why OOPS
- Difference Between POPs and OOPS
- OOPs Concepts
- Python OOP Vs Other OOPS
- Class and Objects

- Relation Between Class and Objects
- Creating a Class
- Attributes
- Built-In Class Attributes
- Class Variable and Instance Variable
- Constructor and Destructor
- Multiple Constructors
- Abstraction
- Inheritance
- Inheritance Types
- Overloading
- Overriding
- Data Hiding

Module 6: Database Connectivity & Regular Expressions

- Introduction to Regular Expressions
- What are Regular Expressions
- Regular Expressions Operations
- Search Function
- Match Function
- Modifiers
- Patterns
- Database Connectivity
- Introduction to Database Connectivity
- Connections
- Executing Queries
- Transactions

Module 7: Data Manipulation & Data Visualization

- What is Data Manipulation
- Introductions to Pandas
- Data Manipulation with Pandas
- Data Structures & Series
- Data Frame
- Missing Values
- Data Operations
- Data Standardizations
- Pandas File Read (CSV, Excel, SQL) and Write Support
- Data Acquisition (Import & Export)
- Introduction to Data Visualization using Matplotlib
- Installing Matplotlib
- Plotting in Matplotlib
- Creating First Plot with Matplotlib
- Creating Column/Line/Scatter Plots
- Wrapping Python Core Program

SQL

Module 1:- Getting Started with My SQL

- An Introduction and Overview of MySQL
- Installation and GUI Tools
- An Overview

Module 2:- My SQL Fundamentals

- Introducing SELECT statement
- Introducing WHERE clause
- Sort result with ORDER BY
- Using FROM to specify the source tables
- Importance of Clause Orders
- Data Modification tricks

Module 3:- Creating Database & Tables

- Creating a database
- Creating a table
- Creating Indexes
- Controlling column behavior with constraints
- Using foreign key constraints
- Creating an ID column
- Changing a schema with ALTER
- Introducing NULL and NOT_NULL
- Introduction to MySQL Data Types
- Setting up default values
- MySQL Warnings
- Alerting a table

Module 4:- My SQL Functions & Clause

- Introduction to MySQL Functions
- String Functions - CONCAT, SUBSTRING, REPLACE, REVERSE, LENGTH, UPPER, LCASE etc.
- Aggregate Functions - COUNT, MIN, MAX, SUM, AVG, ROUND etc
- Date/Time Functions - CURDATE, CURTIME, CURRENT_DATE, LOCALTIME etc.
- Control Flow Functions - IF, IFNULL, NULLIF etc.

Module 5:- Multiple Tables & Joins

- Introduction to JOINS
- Different types of JOINS
- JOINS and Aliases
- Multiple Table Joins
- Creating a simple Subselect
- Understanding of Primary keys and Foreign keys

Module 6:- Transactions, Stored Routines & Triggers

- Transactions & Stored Routines

- Triggers

Bonus Modules 7 :-

- Windows functions
- Creating a New User Login
- Granting access to new users
- Backup and Restore databases
- Important Keyboard Shortcuts Guide
- Session Study Material
- Situational Case Studies for Best Practice and Getting Ready for Corporate World

EXCEL

Module 1:- Getting Started with Excel

- Introduction to Excel
- Application Interface and Key Components of Excel
- Navigating Through Excel Ribbon Tabs
- Exploring Important Excel Options
- Live Session Exercise
- Splitting data of Single Column into multiple
- 10 Examples to use Auto-fill and Flash Fill
- Magic of Go-To Special
- Merge/Unmerge Cells & Wrap Text
- Extracting Unique Values & Important Ribbon, General and Data Entry Keyboard Shortcuts

Module 2:- Formatting Essentials

- Formatting Essentials Introduction
- Custom Cell Number Formats
- Custom Date/Time Formats
- Working with Comments / Notes
- Format Painter - A Quick way to copy 'Formatting Attribute'
- Paste Special
- Table, Table Styles & Formatting
- Freeze Panes

Module 3:- Functions & Formulas

- Introduction to Excel Functions and Formulas
- Basics of Functions & Formulas
- Working with Cell References Types
- Most Used Basics & Advanced Functions & Formulas
- Working with Array Formulas
- Creating Customized Formulas Step-by-Step with Live examples
- Creating and Working with Dynamic Ranges using Function and Excel Table features
- Formulas Debugging / Formulas Auditing
- Types of Formula Errors / Error Handling Tricks
- Text Functions: - CLEAN, CONCATENATE, LEFT, RIGHT, MID, LEN, FIND, SEARCH, SUBSTITUTE, and TEXT, etc.

- Date & Time Functions: - DATE, DAYS, TIME, NOW, WEEKNUM, WORKDAY, and WORKDAY.INTL etc.
- Math & Trig Functions: - INT, MOD, ROUND, ROUNDDOWN, SUMIF, SUMIFS, SUMPRODUCT etc.
- Statistical Functions: - AVERAGE, COUNT, COUNTA, COUNTBLANK, MAX, MIN, LARGE etc.
- Logical Functions: - IF, IFS, AND, OR, and IFERROR.
- Lookup & Reference Functions: - FORMULATEXT, VLOOKUP, HLOOKUP, INDEX, MATCH, INDIRECT, and OFFSET
- Newly Introduced Functions in Recent Version of Excel*: -
- CONCAT, TEXTJOIN, IFS, SWITCH, DGET, UNIQUE, FILTER, etc.
- Nested Conditions/Customize Formulas*

Module 4:- Data Analysis

- Data Sorting
- Data Filtering
- Named Ranges
- 10 different ways to use Conditional Formatting
- 10 different use of Data Validation
- What-If Analysis

Module 5:- Excel Charts

- Introduction to Excel Charts
- Exploring the most commonly used Charts and Templates
- Basics of Charts
- Selecting Requirement based Charts
- Working with Basic Charts:
- Creating Customized / Advanced Charts
- Creating Dynamic Chart
- Working with Dynamic Interactive Charts in Excel using Drop Down
- Working with Chart Elements, Formatting, Chart Styles, Properties, etc.

Module 6:- Pivot Tables

- Introduction to Pivot Table
- Creating a Pivot Table
- Use of Calculated Fields/Items
- Pivot Table Formatting
- Grouping Items & Summarizing data in Pivot Tables
- Grouping and Bucketing data in Pivot Table
- Changing/Modifying Data Sources
- Working with Pivot Table Designs & Layouts
- Exploring Important Pivot Table Options & Field Settings
- Pivot Table Filters
- Changing Pivot Table Summary Calculation
- Use of Slicers in Pivot Table
- Using Source Data to Convert into Infographic Summary
- Introduction to Pivot Charts

TABLEAU

Module 1:- Getting Started with Tableau

- Introduction to Data Visualization
- Leading Data Visualization Tools
- Introduction to Tableau
- Exploring Interface and Important Key Components
- Navigating Through Tableau Menu Tabs
- Exploring Each Menu Tab i.e. File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Server, etc.*
- Tableau - Design Flow
- File Types
- Tableau Data Types
- Show Me
- Data Terminology

Module 2:- Connecting to Data with Tableau Desktop

- Introduction to Data Connection
- Data Source Interface
- Types of Data Connections
- Extracting Data
- Custom Data View
- Joins and Unions
- Data Blending
- Live Connection Vs Extract
- Field Operations
- Basic Project Activity

Module 3:- Examining & Filtering

- The Sheet Interface
- Dimensions & Measures
- Hierarchies
- Data Granularity
- Highlighting
- Data Sorting
- Grouping Data
- Data Filtering
- Data Source Filters
- The Filter Shelf
- Dimension Filters & Card Modes
- Context Filters
- Measure Filters
- Creating Sets

Module 4:- Field Types & Charts

- Utilize Auto-Generated Fields

- Use Titles, Captions and Tooltips Effectively
- Creating Bins
- ToolTip
- Basic Charts

Module 5:- Calculations in Tableau

- What are Calculations
- Methods to Create Calculated Field
- Introduction to Tableau Functions
- Operator and Syntax Conventions
- Introduction to Table Calculations

Module 6:- Level of Detail (LOD) Expression

- Level of Detail (LOD) Calculations
- Live Use Cases of LOD
- Introduction to Parameters
- Parameters Data Type Options

Module 7:- Geographical Visualization

- Introduction to Geographic Visualizations
- Assigning Geographical Locations
- Spatial Files
- Map Types
- Custom Geocoding
- Background Image

Module 8:- Advanced Charts in Tableau

- Introduction to Advanced Charts
- Bar in Bar Chart
- Bullet Chart
- Pareto Chart
- Gantt Chart
- Hierarchy and Tree Maps
- Box and Whisker's Plot
- Waterfall Chart
- Step and Jump Lines
- Maps on a Scatter Plot
- Bubble Chart
- Control Chart
- Funnel Chart
- Packaged Bubbles
- Word Cloud
- Donut Chart
- Trendlines
- Reference Line, Bands, and Distributions

Module 9:- Dashboard & Stories

- Introduction to Dashboards
- The Dashboard Interface
- Important Dashboard Objects
- Adding Objects to the Dashboard
- Building a Dashboard
- Dashboard Design and Formatting
- Types of Actions
- Designing Dashboard for Tablets & Mobile-Phones
- Story Points
- Sharing Workbook
- Wrapping up Tableau Program

POWER BI

Module 1:- Introduction to Power BI

- What is Data Analytics & Data Visualization
- Introduction to Data Analysis
- Introduction to Data Visualization
- What is Business Intelligence?
- Overview of Self-Service Business Intelligence
- (SSBI) Tools
- Leading Self-service tools
- Comparison of Leading Visualization Tools
- Getting Started with Power BI
- Introduction to Microsoft Power BI
- Why Power BI
- Power BI Elements
- Basic Components of Power BI
- Building Blocks of Power BI
- Key Benefits of Power BI
- Hands-On
- Power BI Installation

Module 2:- Getting Data from Different Data Sources

- Power Bi Desktop (Getting Data)
- What is Power BI Desktop
- Quick Walk-through Power BI Interface
- Views in Power BI Desktop
- Report View
- Data view
- Model view
- Understanding ETL Concepts: Extract, Transform & Load
- Data Sources in Power BI Desktop
- Connecting and Getting data from different sources in Power BI
- Getting data from Excel, CSV, Access, etc
- Saving Workfile
- Hands-On

- Identifying and retrieving data from different data sources
- Extracting and Loading data into Power BI
- Preparing Data

Module 3:- Clean, Transform and Load the Data

- Shaping Data using Power Query
- Loading data into Power BI Desktop
- What is Query Editor
- Cleaning Data with Query Editor
- Transforming Data with Query Editor
- Unpivoting Columns
- Eliminating Rows / Columns
- Changing / Modifying Data Types
- Adding Custom Columns
- Replacing Values / NULL
- Promoting / Demoting Row as Header
- Modifying and managing existing 'Steps'
- Extracting Date Components from Date-Time
- Introduction to "M Query"
- Combining Data
- Append Merge / Joins, Transpose & Formatting Data Operations
- Hands-On
- Cleaning Data using Power Query Editor
- Shaping the data
- Transforming and cleaning the data
- Merging Rows / Columns from multiple tables
- Joins / Append activities

Module 4:- Design a Data Model

- Introduction to Data Modeling
- Understanding of Relationship
- What is Relationship?
- One to Many Vs One to One Relationship
- Auto-Detect Relationship during Load
- Dimension Table Vs Fact Table
- Cardinality in Data Modeling
- Creating Relationship Manually
- Managing Data Relationship
- Editing Relationship
- Creating Calculated Columns
- Creating Measures
- Optimizing Data Models for Better Visuals
- Cross Filter Direction
- Defining Hierarchies
- Hands-On
- Creating Model Relationships
- Managing Relationships
- Creating Measures

- Creating hierarchies

Module 5:- DAX Formulas & Calculations

- Introduction to Data Analysis Expression (DAX)
- Importance of DAX
- Data Types in DAX
- Defining Calculation Type
- Calculated Column Vs Calculated Measures
- Adding New Measures to Report
- Creating Calculated / DAX Tables
- DAX Syntax & Operators
- Most Important & Common Basics & Advanced DAX Functions
- Aggregate Functions
- Logical Functions
- Time-Intelligence Functions
- Information Functions
- DAX Variables
- Formatting DAX Code
- Handling Errors in DAX Expressions
- Hands-On
- Creating Calculated Tables
- Creating Calculated Columns and Measures
- Writing DAX calculations to perform Data Analysis
- Beautifying DAX
- Creating Variables

Module 6:- Data Visualization & Creating Reports

- Introduction to Visuals in Power BI
- Creating Visualization
- How to use Visual
- Exploring Visualizations' List
- Exploring Most Common & Important Visualizations
- Bar, Column, Line and Area Charts
- Pie, Donut, and Gauge Charts
- Single Number Cards and Multi Row Cards
- Table & Matrix Visuals
- Combo Chart, Funnel and Treemap Charts
- Slicer, KPI and Custom Visuals
- Map & Filled Map Visuals
- Modifying Color Properties of Charts and Visuals
- Shapes, Text Box, Buttons, and Images
- Types of Filters
- Slice and Dice Data in Power BI
- Drilling-Up/Down
- Understanding Custom Visuals & How to add them
- Customizing Canvas
- Setting up Canvas & Must Know Global Fonts
- Page Layout & Formatting

- Bookmarks in Power BI
- Reports in Power BI
- Conditionally formatting tables/matrixes
- Activity: Creating Sales Report
- Hands-On
- Creating visual and charts
- Designing a report
- Managing visual fields and format properties

Module 7:- Power BI Service and Managed Workspaces

- Introduction to Power BI Service & Workspaces
- What is Power BI Service
- Exploring Interface of Power BI Service
- Understanding the Admin Portal settings
- What is Power BI Workspace
- Understanding of "Workspace"
- My Workspace Vs New Workspace
- Creating New Workspace
- Sharing and Managing Workspaces
- Roles in workspaces in Power BI
- Exploring Power BI Licensing
- Power BI Free Vs Power BI Pro Vs Premium
- Hands-On
- Publishing reports on Power BI Service
- Creating workspaces
- Sharing and Managing Reports
- Moving important assets to App and Publishing app in Power BI

Module 8:- Creating Dashboard in Power BI

- Dashboard in Power BI
- Introduction to Dashboard
- Difference between Report Vs Dashboard
- Preparing and Creating Dashboard
- Configuring a Dashboard
- Pinning Visuals to Dashboard
- Dashboard Tiles
- Pinning Tiles
- Dashboard Widgets
- Introduction to Power BI Q&A
- Asking questions about data
- Fetching results using Q&A
- Using Q&A to create a dashboard tile
- Quick Insights in Power BI
- Data Analysis using Quick Insights
- Sharing and Collaborating Dashboard with Business Users
- Hands-On
- Creating a Dashboard
- Pinning visuals to Dashboard

- Adding text/video widgets to Dashboard
- Sharing and Moving Dashboard to distributed app
- Use of Power BI Q&A to question your data

Module 9:- Data Gateway, Security & Schedule Refresh

- Report Security in Power BI
- Introduction to Row-level Security (RLS)
- Setting up and Enforcing Row-level security
- Implementing Row-level security
- Data Gateway & Report Scheduling
- What is Data Gateway
- Types of Gateway
- On-premises data gateway (personal mode)
- On-premises data gateway (standard mode)
- Installing Data Gateway
- Data Gateway System Requirement
- Benefits of Data Gateway
- Scheduled Refresh & Refreshing Data
- Managing Data Source
- Adding and removing a Data Source
- Hands-On
- Configuring & Implementing RLS
- Managing datasets
- Setting up On-Premise Data Gateway
- Connecting Reports on Power BI Cloud with Local Data Files
- Schedule dataset refresh

Bonus Module 10:- In-Class Project

- In-Class Project: Building Sales Report & Dashboard from Scratch
- Extracting Data from the Local Source
- Transforming Data using Power Query
- Cleaning, Shaping and Preparing the data if necessary
- Loading Data to Power BI Desktop
- Building Data Model
- Visual and Charts
- Row-level Security
- Publishing Reports
- Power BI Service
- Creating Dashboard
- Hands-On
- Analyzing Sales data
- Derive conclusions from the patterns and trends shown in the visualization