



CURRICULUM

The Learning Path



Module 1

Python



Module 2

Python Libraries



Module 3

SQL



Module 4

Power BI



Module 5

Advanced Excel



Module 6

Tableau



Module 7

Placement Preparation
Module





Module : 1 Fundamentals of Python

UNIT 1: The Basics of Python Programming

- Understanding Problem Solving
- Why Python
- What is an IDE (Integrated Development Environment)
- Installation of Python – Anaconda & Launching of Jupiter Notebook
- Write your first Python Program

UNIT 2: Variables and Operators in Python

- Python Arithmetic Operators
- Python Assignment Operators
- Python Boolean & Logical Operators
- Python Comparison Operators
- Python Bitwise Operator

UNIT 3: Built-in Functions of Python

- Round Function & Divmod Function

- Isinstance Function & Pow Function,
 - Input Function , int function, Float Function
 - Len, Min and Max function
 - Sorted Function and help function
-

UNIT 4: Control Flow Statements

- If Condition
 - If else Condition
 - If-Elif-else Condition
 - Nested if
-

UNIT 5: Concepts of Loops

- While Loop
 - Break & Continue Statements
 - For Loop & Range Function
 - Nested Loops in Python
-

UNIT 6: User-Defined Functions in Python

- Introduction & Doc String
 - Functions Input Arguments
 - Functions Order of input Arguments
 - Functions Return Statement
 - Function Variable Number of Input Arguments
 - *args and **kwargs in Function
 - Lambda function
-

UNIT 7: Python Strings

- Introduction to String
- Indexing & Slicing

- Methods – strip, lower, upper
 - Methods – replace, split, capitalize
 - Methods – title, swapcase, find, index
 - Methods – isalnum, isalpha, isdigit
 - Methods – isupper, islower, istitle, startswith, endswith
 - Multiline String & checking of substring in String
 - Converting String into another Data Type
 - Loops in string
-

UNIT 8: Python List

- Introduction to List
 - Slicing on List
 - Indexing on List
 - Methods - Append, Extend & Insert in List
 - Methods - Remove, Pop, Clear
 - Methods – Count, Max,Min
 - Reverse, Index Count, Copy
 - Using Loops in List
 - Using conditional statement in List
-

UNIT 9: Python Tuples

- Introduction, Concatenation & Nesting
 - length, count, index method, indexing & slicing
 - The tuple() Constructor
 - Duplicates in tuples
 - max, min, unpacking of tuples
 - conditional statement and loops in tuple
-

UNIT 10: Python Sets

- Introduction to Set

- Methods - add, update, remove, discard, pop, clear, del, union
 - Methods - intersection_update, intersection, difference_update, difference
 - Methods - symmetric_difference_update, symmetric_difference
 - Methods - isdisjoint, issuperset, issubset
 - Methods - set(), max, min, copy, loops in sets
-

UNIT 11: Python Dictionary

- Introduction to Dictionary
- Methods-, len, dict constructor fromkeys, setdefault
- Methods - get, keys, values, items, update
- Methods - pop, popitem, del, clear, copy
- Methods - Nested Dictionaries, loops in dictionary

Module : 2 Python Libraries

UNIT 1: NumPy

- Introduction to Numpy
- Numpy - Nd Array Object.
- Numpy - Data Types.
- Numpy - Array Attributes.
- Numpy - Array Creation Routines.
- Numpy - Array From Existing.
- Data Array From Numerical Ranges.
- Numpy - Indexing & Slicing.
- Numpy – Advanced Indexing.
- Numpy – Broadcasting.
- Numpy - Iterating Over Array.

- Numpy - Array Manipulation.
 - Numpy - Binary Operators.
 - Numpy - String Functions.
 - Numpy - Mathematical Functions.
 - Numpy - Arithmetic Operations.
 - Numpy - Statistical Functions.
 - Sort, Search & Counting Functions.
 - Numpy - Byte Swapping.
 - Numpy - Copies & Views.
 - Numpy - Matrix Library.
 - Numpy - Linear Algebra.
-

UNIT 2: Pandas

- Introduction to Pandas
- Reading Data From Different File Systems
- Python Pandas – Data Frame
- Python Pandas - operations
- Python Pandas - Basic Functionality
- Reading Data From Different File Systems
- Python Pandas – Re-Indexing Python
- Pandas – Iteration
- Python Pandas – Sorting.
- Working With Text Data Options & Customization
- Indexing & Selecting
- Data Statistical Functions
- Python Pandas - Window Functions
- Python Pandas - Date Functionality
- Python Pandas –Time Delta

- Python Pandas - Categorical Data
- Python Pandas – Visualization
- Python Pandas – Tools

UNIT 3: Matplotlib

- Introduction to Matplotlib
- Bar chart
- Scatter Plot
- Bar Graph
- Histogram
- Pie Chart
- Stem Plots
- Box Vs Whisker Plot
- Area Vs Stack Plot
- Step Plot
- Fill_Between Plot
- subplot
- Savefig
- Axis matplotlib plots
- Text in matplotlib plots

UNIT 4: Seaborn

- Introduction to Seaborn
- Heatmap plot method
- Count plot method
- Violin Plot method
- Pair plot method
- Strip Plot method
- Box plot method
- Factor plot method
- Cat Plot method
- Styling plot method
- Facet Grid Method
- Line Plot method
- Histogram plot method
- Bar plot method
- Scatter plot method

Project 1: WhatsApp Chats Analysis - WhatsApp is one of the most used messenger applications today so we can use WhatsApp chats for analyzing our chat with a friend, customer, or a group of people.

Project 2: Covid-19 Impacts Analysis - Covid-19 impacted the global economy. This project is to analyze the spread of Covid-19 cases and all the impacts of covid-19 on the economy.

Project 3: Google Image Scrapping - Scraping Google Images, involves extracting data from website the project involved sending requests to the Google Images website, parsing the HTML content, and extracting relevant image URLs using BeautifulSoup. This project showcases technical skills in Python programming and data analytics.

Module : 3 SQL

UNIT 1: Introduction and Installation Software

- Roadmap to learn SQL & syllabus discussion
- Download & Install MySQL
- Download & Install XAMPP
- Download & Install PostgreSQL & Pgadmin

UNIT 2: Fundamentals of SQL

- Introduction to SQL
- Database Fundamental
- Learning Resources - (Cheat Code | Practice Dataset | PDF Notes & Books | Learning Website | Interview Questions)

UNIT 3: Case Study with Example

- Create Database | Drop Database | Create Table | Insert Table | Drop Table
- Case study with XAMPP Software
- Case study with MySQL software
- Case study with PostgreSQL

UNIT 4: Data Types and Keys

- All Data Type in SQLs)
 - ER / Database Diagram Example: Amazon Ecommerce
 - Database Keys
 - Cardinality of Relationships
-

UNIT 5: DDL Commands for SQL

- DDL Commands for Databases: Create | Drop
 - DDL Commands for Table: Create | Truncate | Drop
 - Data Indignity
-

UNIT 6: Constraints

- Constraints in MySQL (NOT NULL | UNIQUE | PRIMARY KEY)
 - Constraints in MySQL (AUTO INCRIMENT | CHECK | DEFAULT | FOREIGN KEY)
 - Referential Actions (Restrict | CASCADE | SET NULL | SET DEFAULT)
-

UNIT 7: Alter Table

- ADD Columns in Alter Table
 - DELETE Columns in Alter Table
 - MODIFY Columns in Alter Table
-

UNIT 8: ADD, Editing and Deleting Constraints

- ADD Constraints
- DELETE Constraints
- EDIT Problems in MySQL, Drop Constrains

UNIT 9: INSERT Query

- INSERT query
 - INSERT query variation
 - INSERT multiple values
-

UNIT 10: SELECT Query

- SELECT all columns
 - Filter columns
 - Alias | renaming columns
 - Create expression using columns
 - Constant value
 - DISTINCT(unique) values from a column
 - DISTINCT Combinations
 - Filter rows WHERE clause
 - BETWEEN operator
 - IN and NOT IN Operator
-

UNIT 11: UPDATE Query

- Update Query to update row(s)
 - Update Multiple Columns
-

UNIT 12: DELETE

- DELETE Query to delete row(s)
 - Deletion based on multiple conditions
-

UNIT 13: Aggregate Functions

- MAX() & MIN()
 - AVG()
 - SUM()
-

UNIT 14: Scalar Functions

- ABS()
 - ROUND()
 - CEIL() & FLOOR()
-

UNIT 15: SQL Joins

- What are SQL joins?
 - Types of Joins
 - Cross Joins --- Cartesian Products
 - Inner Joins
 - Right Joins
 - Left Joins
 - Full Outer Join
 - Set Operations
 - Self-Join
 - Filtering Columns
 - Filtering Rows
-

UNIT 16: Subquery

- What is Subquery?
- Scalar Subquery
- Row Subquery

- Table Subquery
 - Correlated Subquery
-

UNIT 17: Sorting

- Fundamental of SQL Sorting
 - Sorting top 10 data
 - Sorting Descending Orders
 - Sorting functions in datasets
-

UNIT 18: Grouping

- Fundamental of SQL Grouping
- Grouping Average Function
- Group By on multiple columns
- Sorting Descending Orders
- Sorting functions in datasets

UNIT 19: Project & Case Study:

Project 1: Indian Premier League (IPL Dataset)

- Case Study in Indian Premier League
- Find the top 5 batsmen in IPL
- Find the 2nd highest 6 hitters in IPL
- Find Batsman (M.S Dhoni, Virat Kohli) performance against all IPL team
- Find the top 10 batsmen with centuries in IPL using Sub-Quires
- Find the top 5 batsmen with the highest strike rate
- Find 5 Batsman who have played a min of 1000 balls

UNIT 20: Project & Case Study:

Project 2: Shipping E-Commerce (Sorting: Smart Phone Datasets)

- Find the top 5 Samsung phones with the biggest screen size
- Sort all the phones in descending order of the number of total cameras
- Sort data on the basis of ppi in decreasing order
- Find the phone with 2nd largest battery
- Find the name and rating of the worst rated apple phone
- Sort phones alphabetically and then on the basis of rating in desc order
- Sort phones alphabetically and then on the basis of price in ascending order

Module : 4 Microsoft Power BI

UNIT 1: Introduction Power BI

- How to Download, Install and upgrade features in Power BI
- User Interface and Navigation Features in Power BI
- Import First Sample Data in Power BI

UNIT 2: Charts

- Introduction to Basic Charts in Power BI
- Create a Column Chart in Power BI
- Create a Stacked Column Chart in Power BI
- Create a Pie Chart in Power BI
- Create a Donut Chart in Power BI
- Create a Funnel Chart in Power BI

- Create a Ribbon Chart in Power BI
 - What is included & Exclude in Power BI
 - View Data and Export in CSV from Power BI Visuals
-

UNIT 3: Tables & Matrix

- Introduction Tables & Matrix in Power BI
 - Creating a Table in Power BI
 - How to Format a Table in Power BI
 - How to Apply Conditional Formatting in Power BI
 - How to Change Aggregations in Power BI
 - Create a Matrix in Power BI
 - Apply Conditional Formatting in Matrix in Power BI
 - Create Hierarchies in Power BI Matrix
 - Add Totals & Sub Totals in Matrix in Power BI
 - How to Change Number Formatting in Power BI
-

UNIT 4: Slicers

- Create Slicers in Power BI
 - Create Text Slicers in Power BI
 - How to format Text Slicers in Power BI
 - Create Date Slicers in Power BI
 - How to format a Date Slicer Power BI
 - Create a Number of Slicers in Power BI
-

UNIT 5: Charts Visualizations Tools

- Introduction to Other Charts in Power BI
- Create a Waterfall Chart in Power BI

- Create a Gauge Chart in Power BI
 - Create Line Chart in Power BI
 - How to Drill Down in Line Chart in Power BI
 - Create an Area Chart in Power BI
 - Create a Stacked Area Chart in Power BI
 - Create a Line vs Stacked Column Chart in Power BI
 - Create a Line vs Cluster Column Chart in Power BI
 - Create Scatter Plot in Power BI
 - Create Tree Map in Power BI
-

UNIT 6: Map

- Introduction Map Visualization
 - Create a Basic Map in Power BI
 - Creating a Filled Map in Power BI
 - Creating a Map with Pie Chart in Power BI
 - Use Slicer with Map of India
 - Learn Formatting of Map in Power BI
 - Change the Background of Maps in Power BI
 - Create a Map of the International Continent Vs Donut in Power BI
-

UNIT 7: Cards & Filter

- What is Cards & Filters in Power BI
- Create a Number Card in Power BI
- Create a Date Card in Power BI
- Create a Relative Date filter in Power BI
- Create a Text Card in Power BI

- How to Format a Card in Power BI
 - Create a Multi - Row Card in Power BI
 - Create a Filter on Visual in Power BI
 - Create a Filter On This Page in Power BI
 - How to Use Filter on All Pages in Power BI
 - How to Use Drill through in Power BI
-

UNIT 8: Insert & Action Functions

- Introduction Insert & Action
 - How to Insert Image in Power BI
 - Create Insert Text in Power BI
 - How to Insert Shapes in Power BI
 - Create Insert Buttons in Power BI
 - Use Web URL Action in Power BI
 - Work on Page Navigation Action in Power BI
 - Use Bookmark Action in Power BI
 - How to create Drill through Action in Power BI
 - Create Power BI Account
-

UNIT 9: Advanced Charts

- Introduction to Advanced Charts in Power BI Desktop
- Create Scroller in Power BI
- Create a Word Cloud in Power BI
- Create Infographics in Power BI
- Create Drill-Down Donut Chart in Power BI
- Create Drill-Waterfall Chart in Power BI
- Create Play Axis Slicer in Power BI
- Create an Animated Bar Chart Race in Power BI

- Create Sunburst Chart in Power BI
 - Create Sankey Chart in Power BI
 - Create Calendar & Timeline Slicers
-

UNIT 10: KPI & Other Functions

- Introduction to Advance Function
 - How to use KPI Visualization Tool
 - Learn Updates in MS Power BI
 - Create a Key influencer in Power BI
 - Create a Decomposition Tree in Power BI
 - Create a Python & R Scripting in Power BI
 - Third-Party Extensions 3 Icons Introduction in Power BI
-

UNIT 11: Create a Superstore Report

- Create reports and dashboards documentation.
 - Collaborate, share and integrate across products documentation.
 - Get Power BI samples.
 - Use report themes.
 - Add conditional table formatting.
 - Ways to share your work.
 - Organize work in the new workspaces.
 - Publish to web.
-

UNIT 12: Dashboard Functions

- How to Publish Report to Power BI Service
- Export Power BI Report into PPT, PDF & PBIX format
- Create a Pin Live Dashboard in Power BI

- What is Comment, Share & Subscribe in Power BI Reports
- How to Refresh Reports Automatically in Power BI Service
- Free Data Files Source for Practice

UNIT 13: Projects Microsoft Power BI Dashboards

Project Title: Virat Kohli ODI T20 Performance Index:

Description: Solve a problem statement with the help of Virat Kohli ODI T20 Performance Index Power Bi Dashboard and discuss multiple case studies.

Project Title: Netflix Stock Prediction & runtime by genres.

Description: Solve a problem statement with the help of Netflix Stock Prediction Datasets & analysis the runtime by genres in Power Bi Dashboard and discuss multiple case studies.

Project Title: Moon Mission Analysis Project

Description: Solve a problem statement with the help of moon mission datasets & analyse the multiple functions in Power Bi Dashboard and discuss multiple case studies.

Module : 5 Advance Excel

UNIT 1: Fundamental of Excel: Beginner Level

- Basic Features - Introduction
- Basic Formatting
- Using Formulas

- Save File
 - Filter & Sorting
 - Conditional Formatting
 - Insert & Delete Columns or Rows
 - Find & Remove Duplicates
 - Merge and Centre
-

UNIT 2: Intermediate Level of Excel

- Rounding of Numbers
 - Autofill in Excel
 - Add or Edit Comment
 - Filters for Data Manipulation
 - Sorting on multiple columns
 - Insert Table
 - Slicers
-

UNIT 3: Moderate Level of Excel

- Creating an Excel Column Chart
 - Working with Excel Pie Charts
 - Chart Group (Line, Area, Waterfall)
 - Insert Picture or Shapes
 - Add link or hyperlink
 - Excel Sparkline's
 - Add Drop Down List
 - Split Text
 - Page Layout Tab and Ribbon
 - Printing Excel Worksheet
-

UNIT 4: Advance Level of Excel

- Formula Tabs & Library
- Define Names
- Formula Auditing
- Calculation Options & Watch Window
- Get and Transform Data
- Queries and Connections
- Excel data validation
- Excel PivotTables
- Excel conditional functions
- Excel Text based Functions
- Excel “What if?” Tools
- Conditional IF Function IN [EXCEL]
- Result Format with Nested-IF [Excel]
- XOR Formula (Exclusive OR) EXCEL
- Excel VLOOKUP Function
- Advance VLOOKUP Formula

UNIT 5: Data Processing and Create Visualization Dashboard

Project Title: Analysis the Online Store Annual Report Like Mantra | AJio | Amazon | Etc.

Description: Importing data from text files Create a fully functional online store dashboard with the analysis the store annual reports and learn data cleaning, processing, analysis and dashboard creation in excel.

Module : 6 Tableau

Tableau is a business intelligence tool which is widely used in the analytics industry. It is one of the top data visualization tools used for data analysis and getting data driven business insights. Learn various techniques to extract meaning from large datasets, detailed approaches to design dashboards. Learn to create storyboards using Tableau which enables us to transform complex data into meaningful insights.

UNIT 1: Creating Visualizations

- Text Table and Formatting Visuals
 - Heatmap and Highlight table
 - Lines Area Chart
 - Circle, Side by Side Circle View and Shapes
 - WordCloud
 - Scatter Plot
 - Histogram Bins
 - Gantt view and Waterfall Chart
 - Reference lines and bands, Distribution band Bullet graphs
 - Dual Axes Visuals Part 1
 - Dual Axes Part 2
-

UNIT 2: Filtering, Sorting & Connecting

- Animated Charts
- Funnel Charts its types
- Donut Chart Multiple Donut Chart

- Dumbbell, Barbell or DNA Chart
 - Butterfly Chart
 - Box Whisker Plot
 - Filters in tableau part 1
 - Filters in tableau part 2
-

UNIT 3: Dashboard & Actions

- Parameters in tableau
 - Sets in tableau
 - Table Calculation
 - Joins & Unions
 - Data Blending
 - Tableau dashboard
 - Tableau Server
-

UNIT 4: Review of Tableau Desktop

- Bar chart
- Line chart
- Scatter plot
- Geographic map
- Filled map
- Crosstab report
- Side by side bar
- Combines axis
- Stacked bar
- Dual axis
- Bar in bar

- Heat map
- Highlight table
- Pie chart
- Tree map
- Motion chart
- Histogram
- Dashboard
- Groups
- Sets
- Dates
- Calculations
- Quick table
- Parameters
- Reference lines

Module : 7 Placement Preparation.

Crafting an impressive Resume - A resume is a summary of your career, whether yours is just getting started or has been going on for years. In this program, we will help you in crafting an impressive resume.

Portfolio Building - A portfolio helps you to organize information so that you're always ready to apply for jobs. Your portfolio creates an image of you in an employer's mind. In this curriculum, you will learn about building the best portfolio.

Interview Tips - Interview tips will help you gain valuable insights into effective communication and key strategies to showcase your skills confidently.

Online face-to-face mock interviews help you train & prepare for job interviews in a no-pressure, stress-free environment simulating a real job interview. Mock interviews will be conducted for you in this course.

**Learn tirelessly, Work diligently,
and
Success will be your Melody.**



Subjects	Master of Data Analytics Program	Full Stack Data Science and Generative AI Program
1. Fundamental of Python	✓	✓
2. Advance Python	X	✓
3. Basic Python Libraries	✓	✓
4. Advance Python Libraries	X	✓
5. Statistics	X	✓
6. Feature Engineering	X	✓
7. Exploratory Data Analysis	✓	✓
8. Machine Learning -I Supervised	X	✓
9. Machine Learning -II Unsupervised	X	✓
10. Deep Learning	X	✓
11. Natural Language Processing – NLP	X	✓
12. Computer Vision (Open CV)	X	✓
13. SQL	✓	✓
14. Power BI	✓	✓
15. Advanced Excel	✓	✓
16. Tableau	✓	✓
17. Placement Preparation Module	✓	✓

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