

Python Course Content

1) Introduction to Python (2 hours)

Day 1

- ☐ What is Python?
- ☐ Why should we learn Python?
- ☐ Installing Python
- ☐ Installation & walkthrough of Visual Studio Code Editor for Python Programming
- ☐ Different ways of execution of Python scripts
- ☐ Understanding Python Syntax, Indentation, Code Execution, Comments
- ☐ Memory management while running Python Scripts

2) Variables and Data types (2 hours)

Day 1

- ☐ Python Variables
- ☐ Python Numbers
- ☐ Python Strings
- ☐ Python Lists
- ☐ Python Tuples
- ☐ Python Dictionaries
- ☐ Python Sets
- ☐ Python Arrays
- ☐ Python Operators

3) Conditional Statements and Loops in Python (3 hours)

Day 2

- ☐ Python If...Else, If Elif else Loop
- ☐ Python While else Loops
- ☐ Python For else Loops
- ☐ Global vs Local variable in Python

4) Control Statements in Python (3 hours)

Day 2 & 3

- ☐ Return Statement
- ☐ Continue Statement
- ☐ Break statement
- ☐ Pass statement

5) Functions (4 hours)

Day 3 & 4

- ☐ Functions Concept in Python
- ☐ creating a function
- ☐ calling a python function
- ☐ Arguments in function – Formal and Actual Arguments
- ☐ Types of Actual Arguments – Positional, Keyword, Default, Variable length, Keyword variable length
- ☐ Built-in functions – Filter, Map, Reduce
- ☐ Function Recursion
- ☐ Decorators
- ☐ Generators in Python
- ☐ Iterators in Python
- ☐ Search algorithms in Python – Binary\Selection\Bubble

6) Modules and Packages (4 hours)

Day 5

- ☐ Importing Modules
- ☐ Creating Module
- ☐ Use a Module using pip commands.
- ☐ Understanding PyPI repository
- ☐ modularizing your project with modules
- ☐ Built-in Modules
- ☐ Special Variable `__name__`
- ☐ Multithreading in Python

7) Classes and Objects (4 hours)

Day 6

- ☐ Understanding Class and Object - Conceptual
- ☐ `__init__` - Understanding role of constructor
- ☐ Types of variables and methods in Class
- ☐ What is an Inner Class in Python?
- ☐ Class Inheritance – Single level, Multi-level and Multiple
- ☐ Method Resolution Order
- ☐ Abstraction in Python
- ☐ Polymorphism – Duck Typing, Method Overloading, Method Overriding, Operator Overloading
- ☐ Encapsulation in Python

8) File and Exception Handling (4 hours)

Day 7

- ☐ File handling\Read files
- ☐ Write\Create files
- ☐ Delete files
- ☐ Try...except...finally statement

9) Python Libraries (1 hours)

Day 8

- ☐ Essential Python Libraries
- ☐ Anaconda Installation & Setup
- ☐ Jupyter Lab\Notebook Overview (Anaconda Distribution)

10) Numpy Arrays (4 hours)

Day 8 and 9

- ☐ Create multi-dimensional arrays
- ☐ Numpy Data Types
- ☐ Array attributes
- ☐ Indexing and Slicing
- ☐ Manipulate array shapes

11) Introduction to Pandas (6 hours)

Day 9 & 10

- ☐ What is Python Pandas library?
- ☐ Dataframes basics
- ☐ Different ways of creating Dataframe
- ☐ Read write Excel / CSV files with Dataframes
- ☐ Handling Missing Data using fillna, dropna, interpolate, replace methods
- ☐ How to use GroupBy operation on Dataframe a.k.a Split Apply Combine Operation
- ☐ Joining Dataframes
- ☐ Merge Dataframes (Inner Join, Outer Join, Left Join and Right Join)
- ☐ Concatenating\Appending Dataframes
- ☐ Pivot table Operation on Dataframes
- ☐ Stack / Unstack Dataframes
- ☐ Crosstab Operations on Dataframes

12) Python Regular Expressions (3 hours)

Day 10

- ☐ Match function
- ☐ Search function
- ☐ Match vs String function
- ☐ Search and Replace
- ☐ Extended Regular Expression
- ☐ Wildcards