

Python Scripting Syllabus

Session 1:

- Installing Python
- Introduction to Python
- Basic Syntax, Data Types, Variables, Operators, Input/output
- Declaring variable, data types in programs
- Your First Python Program
- Flow of Control (Modules, Branching)
- If, If- else, Nested if-else
- Looping, For, While
- Nested loops
- Control Structure
- Uses of Break & Continue

Module 1 : Basic Concepts (1 hr)

- What is Python?
- Your First Program
- Simple Operations
- Floats
- Other Numerical Operations
- Strings
- Simple Input & Output
- String Operations

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- Type Conversion
- Variables
- In-Place Operators
- Using an Editor
- Module 1 Quiz/Assignment

Module 2: Control Structures (1 hr)

- Booleans & Comparisons
- If - Else statements
- Boolean logic
- Operator precedence
- While loop
- Lists
- List Operations
- List Functions
- Range Function
- For loop
- A Simple Example
- Module 2 Quiz/Assignment

Module 3: Functions & Modules (1 hr)

- Code Reuse
- Functions

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- Function arguments
- Returning from Functions
- Comments and Docstrings
- Functions as objects
- Modules
- The Standard Library & pip
- Module 3 Quiz/Assignment

Module 4: Exceptions & Files (1 hr)

- Exceptions
- Exception Handling
- Finally
- Raising Exceptions
- Assertions
- Opening Files
- Reading Files
- Writing Files
- Working with Files
- Module 4 Quiz/Assignment

Module 5: More Types (2 hrs)

- None
- Dictionaries

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- Dictionary Functions
- Tuples
- List Slices
- List Comprehension
- Dictionary Comprehension
- String Formatting
- Useful Functions
- Text Analyzer
- Module 5 Quiz/Assignment

Module 6: Functional Programming (2 hrs)

- Introduction
- Lambdas
- Map & Filter
- Generators
- Decorators
- Recursion
- Sets
- Itertools
- Module 6 Quiz/Assignment

Module 7: Object Oriented Programming (4 hrs)

- Classes

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- Inheritance
- Magic Methods & Operator Overloading
- Object Lifecycle
- Data Hiding
- Class & Static Methods
- Properties
- Abstract Base Class
- MetaClass
- Type Class
- Singleton Design Pattern
- Factory Design Pattern
- A Simple Game
- Module 7 Quiz/Assignment

Module 8: Regular Expressions (2 hrs)

- Introduction
- Simple Metacharacters
- Character Classes
- More Metacharacters
- Groups
- Special Sequences
- Email Extraction

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Classroom

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- Module 8 Quiz/Assignment

Module 9: Python & Packaging (1 hr)

- The zen of Python
- PEP2
- More on functions arguments
- Tuple Unpacking
- Ternary Operator
- More on Else Statements
- `__main__`
- Major 3rd party libraries
- Packages
- Packaging for users
- Module 9 Quiz/Assignment

Module 10: Multithreading, Database & Debugging (3 hrs)

- Python Threading module
- Python Queue
- Python + MySQL
- Python debugging using pdb
- Module 10 Quiz/Assignment

Note: We will have practical sessions for all the topics mentioned above