PYTHON COURSE

Coverage

- ➤ **Introduction to Python:**

- ➤ **Variables and Data Types:**

- ➤ **Operators and Expressions:**

- ➤ **Control Flow Statements:**

- ➤ **Lists and Tuples:**

- ➤ **Dictionaries and Sets:**

- ➤ **Functions:**

- ➤ **Modules and Packages:**

- ➤ **File Handling:**

- ➤ **Exception Handling:**

- ➤ **Object-Oriented Programming (OOP):**

- ➤ **Advanced Topics:**

- ➤ **Web Development with Python:**

- ➤ **Data Analysis and Visualization:**

- ➤ **Final Project:**

Syllabus in details:

1. **Introduction to Python:**

   o Overview of Python Programming Language
   o Setting up Python Development Environment
   o Running Your First Python Program
   o Basic Syntax: Comments, Indentation, Data Types

2. **Variables and Data Types:**

   o Variables and Constants
   o Numeric Data Types: int, float, complex
   o Text Data Type: str
   o Boolean Data Type: bool

3. **Operators and Expressions:**

   o Arithmetic Operators: +, -, *, /, %
   o Assignment Operators: =, +=, -=, *=, /=
   o Comparison Operators: ==, =, <, >, <=, >=
   o Logical Operators: and, or, not

4. **Control Flow Statements:**

   o Conditional Statements: if, elif, else
   o Looping Statements: while, for
   o Break and Continue Statements
   o Nested Loops and Conditional Statements

5. **Lists and Tuples:**

   o Introduction to Lists and Tuples
   o List Operations: Accessing Elements, Slicing, Concatenation, Repetition
   o List Methods: append (), insert (), remove (), pop ()
   o Tuple Methods: count (), index ()

6. Dictionaries and Sets:

o Introduction to Dictionaries and Sets
o Dictionary Operations: Accessing Elements, Adding and Modifying Elements, Deleting Elements
o Dictionary Methods: keys (), values (), items ()
o Set Operations: Union, Intersection, Difference, Symmetric Difference

7. Functions:

o Introduction to Functions
o Function Declaration and Invocation
o Function Parameters and Return Values
o Lambda Functions and Anonymous Functions

8. Modules and Packages:

o Introduction to Modules and Packages
o Creating and Using Modules
o Importing Modules: import statement, from...import statement
o Introduction to Python Standard Library

9. File Handling:

o Reading and Writing Files
o File Modes: read, write, append
o File Handling with Context Managers (with statement)
o Working with CSV and JSON Files

10. Exception Handling:

o Introduction to Exception Handling
o try-except Blocks
o Handling Multiple Exceptions
o Custom Exceptions

11. Object-Oriented Programming (OOP):

o Introduction to OOP Concepts: Classes and Objects
o Class Declaration and Instantiation
o Instance Variables and Methods
o Inheritance and Polymorphism

12. Advanced Topics:

o Decorators and Generators
o Regular Expressions
o Multithreading and Multiprocessing
o Database Access with Python

13. Web Development with Python:

o Introduction to Web Development with Python
o Web Frameworks: Flask, Django
o Creating a Simple Web Application

14. Data Analysis and Visualization:

o Introduction to Data Analysis with Python
o Data Analysis Libraries: NumPy, Pandas
o Data Visualization Libraries: Matplotlib, Seaborn

15. Final Project:

o Apply Python concepts learned throughout the course to develop a small project or solve a real-world problem using Python programming language.