

PYTHON

Module 1: Introduction to Python

- 1.1 What is Python?
- 1.2 Why Python?
- 1.3 Setting up Python (installation)
- 1.4 Your first Python program (Hello World)

Module 2: Python Basics

- 2.1 Variables and data types (integers, floats, strings, booleans)
- 2.2 Operators (arithmetic, comparison, logical)
- 2.3 Input and Output (print, input)
- 2.4 Comments and documentation

Module 3: Control Structures

- 3.1 Conditional statements (if, elif, else)
- 3.2 Loops (for, while)
- 3.3 Control flow (break, continue)
- 3.4 Exception handling (try, except, finally)



Module 4: Data Structures

- 4.1 Lists
- 4.2 Tuples
- 4.3 Dictionaries
- 4.4 Sets

Module 5: Functions

- 5.1 Defining functions
- 5.2 Parameters and arguments
- 5.3 Return statements
- 5.4 Scope and lifetime of variables
- 5.5 Lambda functions

Module 6: Object-Oriented Programming (OOP)

- 6.1 Classes and objects
- 6.2 Inheritance
- 6.3 Encapsulation
- 6.4 Polymorphism

Module 7: File Handling

- 7.1 Reading from and writing to files
- 7.2 File modes (read, write, append)



Module 8: Modules and Libraries

- 8.1 Importing modules
- 8.2 Creating your own modules
- 8.3 Introduction to popular libraries (e.g., NumPy, Pandas, Matplotlib)

Module 9: Error Handling and Debugging

- 9.1 Common errors
- 9.2 Debugging techniques
- 9.3 Best practices

Module 10: Introduction to Web Development (Optional)

- 10.1 Basics of web development with Python (e.g., Flask or Django)

Module 11: Introduction to Data Science (Optional)

- 11.1 Data manipulation with Pandas
- 11.2 Data visualization with Matplotlib/Seaborn
- 11.3 Introduction to Machine Learning (Scikit-Learn)



Module 12: Final Project

12.1 Apply what you've learned to a real-world project

Module 13: Beyond the Basics (Optional)

13.1 Advanced topics (decorators, generators, context managers)

13.2 Working with databases (SQL or NoSQL)

13.3 Concurrency and parallelism

Module 14: Python Best Practices and Coding Standards

14.1 PEP 8 style guide

14.2 Code readability and maintainability

Module 15: Python in the Real World

15.1 Python in industry and research

15.2 Python community and resources

15.3 Career paths and opportunities

Module 16: Conclusion and Next Steps

16.1 Review of course content

16.2 Continuing your Python journey

