

UNIT I: Introduction & Basics

- A. Introduction to Python
- B. Python Installation & IDEs
- C. Python Program Structure
- D. Data Types, Variables & Constants
- E. Operators & Expressions

UNIT II: Control Flow & Decision Making

- A. **Conditional Statements:** if, if-else, if-elif-else
- B. **Loops:** for, while, do while
- C. **Loop Control Statements:** break, continue, pass

UNIT III: Functions & Modular Programming

- A. Defining & Calling Functions
- B. Arguments & Return Values
- C. Variable Scope
- D. Lambda / Anonymous Functions
- E. Modules & Packages
- F. Standard Libraries

UNIT IV: Data Structures

- A. Strings & Operations
- B. Lists & List Operations
- C. Tuples & Tuple Operations
- D. Dictionaries & Dictionary Methods
- E. Sets & Set Operations
- F. List Comprehensions

UNIT V: Object-Oriented Python

- A. Object-Oriented Concepts
- B. Classes & Objects
- C. Attributes & Methods
- D. Inheritance & Polymorphism
- E. Encapsulation & Abstraction
- F. Method Overriding

UNIT VI: File Handling & Exception Management

- A. **File I/O:** open, read, write, close
- B. Handling Text & CSV Files
- C. Error & Exception Handling (try/except/finally)
- D. Raise & Custom Exceptions

UNIT VII: Working with Libraries

- A. Introduction to External Libraries
- B. NumPy (Arrays & Operations)
- C. Pandas (DataFrame Manipulation)
- D. Matplotlib/Seaborn for Visualizations

UNIT VIII: Automation & Applied Python

- A. Scripting Basics for Automation
- B. Interacting with Files, Folders & OS
- C. Regex for Text Processing
- D. Web Scraping with requests & BeautifulSoup
- E. Task Scheduling (e.g., Cron / schedule library)

Mini Projects:

- Automation Script (e.g., Bulk File Rename)
- Data Analysis Project using Pandas
- Web Scraping Project

