Week 1: Introduction to Python

- Overview of Python and its applications
- Installing Python and setting up the environment
- Running Python scripts & the interactive shell
- Basic syntax, variables, and data types
- Input & output (print, input functions)
- Basic operators and expressions

Week 2: Control Flow and Functions

- Conditional statements (if, elif, else)
- Looping (for, while)
- Break, continue, and pass statements
- Defining functions and calling them
- Function arguments & return values
- Scope and lifetime of variables

Week 3: Data Structures

- Lists: operations, slicing, and methods
- Tuples: properties and usage
- Sets: set operations (union, intersection, difference)
- Dictionaries: key-value pairs and operations
- List & dictionary comprehensions

Week 4: File Handling and Exception Handling

- Reading and writing files (text and CSV)
- Working with file modes (r, w, a, etc.)
- Handling exceptions with try, except, finally
- Raising exceptions and custom exceptions

Week 5: Object-Oriented Programming (OOP)

- Classes and objects
- Constructors (**init** method)
- Instance & class variables
- Methods and inheritance
- Encapsulation and polymorphism

Week 6: Modules, Libraries, and Advanced Concepts

- Importing modules (built-in & third-party)
- Creating and using custom modules
- Working with NumPy/Pandas for data handling
- Introduction to regular expressions
- Lambda functions, map, filter, and reduce

Week 7: Projects and Applications

- Mini-project: Calculator, To-Do List, or Simple Game
- Web scraping with BeautifulSoup
- Data visualization with Matplotlib/Seaborn
- Introduction to databases (SQLite)
- Final project based on learned concepts