Python OUTLINE

1. **Introduction to Python**
2. **Python Syntax and Indentation**
3. **Variables and Data Types**
4. **Operators (Arithmetic, Comparison, Logical)**
5. **Conditional Statements (`if`, `else`, `elif`)**
6. **Loops (`for`, `while`)**
7. **Lists, Tuples, Sets, and Dictionaries**
8. **Functions and Scope**
9. **File Handling (Reading/Writing Files)**
10. **Exception Handling (`try`, `except`)**
11. **Modules and Importing Libraries**
12. **Object-Oriented Programming (OOP)**

Week 1: Python Basics & Fundamentals

Class 1: Introduction to Python

- **Overview of Python: History and Use Cases**
- **Setting Up Python (Installation, IDEs)**
- **Writing Your First Python Program: "Hello, World!"**
- **Python Syntax and Indentation**
- **Comments and Documentation Strings**

Class 2: Variables, Data Types, and Operators

- **Variables and Naming Conventions**
- **Data Types: Strings, Integers, Floats, Booleans**
- **Basic Operators: Arithmetic, Assignment, Comparison, Logical**
- **Input/Output Functions (`input()`, `print()`)**

Class 3: Control Structures

- **Conditional Statements: `if`, `elif`, `else`**
- **Introduction to Loops: `for` and `while`**
- **Break, Continue, and Pass Statements**
- **Practical Examples and Exercises**

Week 2: Data Structures and Functions

Class 4: Lists, Tuples, and Sets

- **Introduction to Lists and Basic List Operations**
- **Slicing and Indexing Lists**
- **Introduction to Tuples and Their Uses**
- **Sets: Basics and Operations**

Class 5: Dictionaries and Working with Data

- **Introduction to Dictionaries: Key-Value Pairs**
- **Accessing, Adding, and Removing Items**
- **Nested Data Structures (Lists of Dicts, Dicts of Lists)**
- **Practical Exercises Using Dictionaries**

Class 6: Functions

- **Defining and Calling Functions**
- **Function Arguments and Return Values**
- **Scope of Variables (Local vs Global)**
- **`*args` and `**kwargs` in Functions**
- **Practice with Small Functions**

Week 3: Intermediate Python

Class 7: File Handling

- **Opening, Reading, and Writing to Files**
- **Reading and Writing CSV Files**
- **Working with Text Files: Appending, Deleting**
- **Best Practices for File Handling**

Class 8: Exception Handling

- **Errors and Exceptions in Python**
- **`try`, `except`, `finally`**
- **Raising and Catching Exceptions**
- **Best Practices for Error Handling**

Class 9: Modules and Packages

- **Introduction to Modules**
- **Importing Built-in Modules (`math`, `os`, etc.)**
- **Creating Custom Modules**
- **Understanding and Using Python Packages**

Week 4: Advanced Concepts and Final Project

Class 10: Object-Oriented Programming (OOP)

- **Introduction to OOP: Classes and Objects**
- **Attributes and Methods**
- **Constructors (`__init__` method)**
- **Inheritance and Polymorphism**
- **Practical OOP Exercises**

Class 11: Working with Libraries and APIs

- **Using External Libraries (e.g., `requests`, `json`)**
- **Introduction to APIs: How to Make API Requests**
- **Parsing JSON Data from an API**
- **Practice API Project**

Class 12: Final Project and Review

- **Project Work: Develop a Small Python Application**
- **Review of Key Concepts Covered in the Course**
- **Q&A and Project Presentations**