Course Title: Introduction to Python Programming for Professionals

Module 1: Getting Started with Python

1.1 Introduction to Python

- Overview of Python and its applications
- Python's popularity and use cases in various industries

1.2 Installing Python

- Installing Python interpreter
- Setting up a development environment (IDEs like VS Code, PyCharm)

1.3 Writing Your First Python Program

- Understanding the basic syntax
- Printing to the console
- Variables and data types

Module 2: Control Flow and Logic

2.1 Conditional Statements

- Introduction to if, elif, and else statements
- Comparison operators and logical operators

2.2 Loops

- For loops and while loops
- Loop control statements (break, continue)

Module 3: Functions

3.1 Functions

- Defining functions
- Parameters and return values
- Scope and lifetime of variables

Module 4: Data Structures

4.1 Lists

- Creating and manipulating lists
- List methods and slicing

4.2 Dictionaries

- Creating and accessing dictionaries
- Dictionary methods

4.3 Sets and Tuples

- Understanding sets and tuples
- Set and tuple operations

Module 5: Python Packages

5.1 Introduction to Modules

- Creating and using Python modules
- Exploring the Python Standard Library

Module 6: File Handling

6.1 Reading from and Writing to Files

- Opening and closing files
- Reading and writing text and CSV files

Module 7: Error Handling

7.1 Exception Handling

- Understanding exceptions
- Using try, except blocks

Module 8: Introduction to Object-Oriented Programming (OOP)

8.1 Basics of OOP

- Classes and objects
- Attributes and methods

8.2 Working with Classes

- Creating and using classes
- Inheritance and polymorphism

Module 9: Introduction to Libraries and Frameworks

9.1 Overview of Popular Python Libraries

- NumPy for numerical computing
- Pandas for data manipulation
- Matplotlib for data visualization

9.2 Introduction to FASTAPI (Optional)

- Building a simple web application

Final Project:

- Capstone project to apply learned concepts in a real-world scenario

Assessment:

- Regular quizzes, coding exercises, and a final project evaluation.