Course Title: Introduction to Python
Instructor: Muhammad Uzair Aslam
Contact Information: m.uzair@statdevs.com
Office Hours: 11 Am – 1 Pm (Saturday & Sunday)
Class Location: Upcode Labs (Onsite)
Class Time: Saturday & Sunday (3 – 5 Pm)

Course Description:

This two-month course is designed to empower students by imparting a robust foundation in Python programming. By the end of this course, students will have the skills needed to write Python code, create functions, and be well-prepared for advanced fields such as Artificial Intelligence (AI) and Data Science. Python's versatility and extensive libraries make it a key language in these domains, and this course equips students with the proficiency to excel in these cutting-edge areas of technology and science.

Course Materials:

Reference Books:

1. Think Python, 2nd Edition (Allen B. Downey)
2. A Smarter Way to Learn Python (Mark Myers)

Lecture Slides will be uploaded on Google Drive.

Weekly Plan:

Week 1:

Class 1:
- Why Python - usage in AI/ML, easy to learn, popularity
- Set up Python, VS Code, extensions First program, arithmetic operations, values and types

Class 2:
- Variables - types, naming, arithmetic operations
- Expressions vs statements, order of precedence, comments

Week 2:

Class 3:
- Floor division, modulus operator
- Boolean expressions, logical operators
- Conditionals - if, else, elif
- Alternate execution

Class 4:
- Chained conditionals, nested conditionals
- Introduction to functions

Week 3:

Class 5:
- Function calls, math functions, composition
- Adding new functions, flow of execution
- Parameters and arguments

Class 6:
- Local variables and parameters
- Stack diagrams, fruitful vs void functions
- Return values

Week 4:

Class 7:
- Iterations and loops
- For loop While loop, break

Class 8:
- Nested Loops

Week 5:

Class 9:
- Strings - sequence, traversal, slicing, searching

Class 10:
- String methods, in operator, string comparison.

Week 6:

Class 11:
- Lists - operations, methods, traversal

Class 12:
- List indexing, slicing
- Map, filter, reduce
- Modifying lists

Week 7:

Class 13:
- Dictionaries - operations, traversal

Class 14:
- Dictionaries and lists, reverse lookup
- Tuples
- Session on creating projects

Week 8:

Class 15:
- File I/O - reading, writing, paths
- Loading data, plotting with Matplotlib

Class 16:

- Exception handling
- Introduction to pickling

Week 9:

Class 17:

- Numpy introduction and basics
- Numpy use cases

Class 18:

- Project presentations and final exam

Attendance: 3 Absences are allowed in the full course.
Participation: Students are expected to raise questions, participate in class discussion and complete all Class Labs.

Instructions for Passing the Course:

A minimum 60% is required to pass this course.

Grading:

Assignments	Description	Weight age (%)
Class Participation	It includes attendance of classes and participate in class discussions.	10
Class Labs	All classes will have hands on Lab Exercises where students are expected to complete and submit the labs.	30
Home Assignments	Students are required to submit all three problem sets within the deadlines.	30
Final Project	A maximum of 2 students will form a group to create the Final Project. The project idea should be shared and finalized with the instructor by the end of Week 5.	30

Home Assessment Breakdown:

Home Assignments (30%):
Assignment 1: 10% (Due at end of Week 3)
Assignment 2: 10% (Due at end of Week 6)
Assignment 3: 10% (Due at end of Week 9)

Contact Information:

The office hours for the instructor is 11 Am – 1 Pm (Saturday & Sunday)
For personal contact, you can email the instructor at m.uzair@statdevs.com.