Gurugrah Private Limited

Department of Editorial Excellence

AI and Beyond: Python-Powered Insights into Machine Learning and Data Science (24CS-ANB-ALPHA)

Course Module

Sr. No.	Component
Unit - 1	**Introduction to Computer and Python Programming**
	• Introduction
	• Overview of Programming Languages
	• History of Python
	• Executing Python Programs
	• Commenting in Python
	• Internal working of Python
	• Python Implementation
Unit - 2	**Basics of Python Programming**
	• Introduction
	• Python Character Set
	• Token
	• Python Core Data Type
	• The print() Function
	• Assigning Value to a Variable
	• Multiple Assignments
	• Writing Simple Programs in Python
	• The input() Function
	• The eva1() Function
	• Formatting Number and Strings
	• Python Inbuilt Functions
Unit - 3	**Operators and Expressions**
	• Introduction
	• Operators and Expressions
	• Arithmetic Operators
	• Operator Precedence and Associativity
	• Changing Precedence and Associativity of Arithmetic Operators
	• Translating Mathematical Formulae into Equivalent Python Expressions
	• Bitwise Operator
	• The Compound Assignment Operator
Project - I	**Arithmetic Operators**

Unit - 4	**Loop Control Statements**
	• Introduction
	• The While Loop
	• The range() Function
	• The for Loop
	• Nested Loops
	• The break Statement
	• The continue Statement
Project - II	**Loop (While, range, for, Nested) any of the above mentioned.**
Programming Assignment-I	**Written Assignment given by the Professor**
Unit - 5	**Functions**
	• Introduction
	• Syntax and Basics of a Function
	• Use of a Function
	• Parameters and Arguments in a Function
	• The Local and Global Scope of a Variable
	• The return Statement
	• Recursive Functions
	• The Lambda Function
Unit - 6	**Strings**
	• Introduction
	• The str class
	• Basic Inbuilt Python Functions for Strings
	• The index [] Operator
	• Traversing String with for and while loop
	• Immutable Strings
	• The String Operators
	• String Operations
Unit - 7	**Lists**
	• Introduction
	• Creating Lists
	• Accessing the Elements of a List
	• Negative List Indices
	• List Slicing [Start : end]
	• List Slicing with Step Size
	• Python Inbuilt Functions for Lists
	• The List Operator
	• List Comprehensions
	• List Methods
	• List and Strings
	• Splitting a String in List
	• Passing List to a Function

	• Returning List from a Function
Unit - 8	**List Processing: Searching and Sorting**
	• Introduction
	• Searching Techniques
	• Introduction to Sorting
Unit - 9	**Object-Oriented Programming: Class, Objects and Inheritance**
	• Introduction
	• Defining Classes
	• The Self-parameter and Adding Methods to a Class
	• Display Class Attributes and Methods
	• Special Class Attributes
	• Accessibility
	• The_init_Method(Constructor)
	• Passing an Object as Parameter to a Method
	• _del_() (Destructor Method)
	• Class Membership Tests
	• Method Overloading in Python
	• Operator Overloading
	• Inheritance
	• Types of Inheritance
	• The Object Class
	• Inheritance in Detail
	• Subclass Accessing Attributes of Parent Class
	• Multilevel Inheritance in Detail
	• Multiple Inheritance in Detail
	• Using super()
	• Method Overriding
	• Precaution: Overriding Methods in Multiple Inheritance
Unit - 10	**Tuples, Sets and Dictionaries**
	• Introduction to Tuples
	• Sets
	• Dictionaries
Unit - 11	**Graphics Programming: Drawing with Turtle Graphics**
	• Introduction
	• Getting Started with the Turtle Module
	• Moving Turtle to Any Location
	• The color, bgcolor, circle and Speed Method of Turtle
	• Drawing with Colors
	• Drawing Basic Shapes using Iterations
	• Changing Color Dynamically Using List
	• Turtles to Create Bar Charts

Unit - 12	**File Handling**
	• Introduction
	• Need of File Handling
	• Text Input and Output
	• The seek() Function
	• Binary Files
	• Accessing and Manipulating Files and Directories on a Disk
Programming Assignment-II	**Written Assignment given by the Professor**
Practical Presentation	**Classroom Activity(Screen sharing)**