CBEL CODE : NSCA 101

Course Name: Python Programming
Contacts Hours / Week : 4L
Credits : 4
Duration: 40 hours

Credits: 4		
Lecture Hours	**Practical/Activity Hours**	**Mode**
8	**32**	**Blended**

Course Objective-
The course is to give you a familiriaty of Python programming and its various tools and environments in a practical or Lab oriented approch. You should have some idea of how to work with different data types, operators and conditional operators in python. You should have some idea of how to work with string, list, tuple and dictionary You will be able to use and design program using the advanced data structures. You will learn to work with object oriented programming constructs in Python. By this way, a learner will be able to apply how to apply Python in real world problem solving.

Learning Outcome-

- To understand the Fundamentals of data types and operators in Python language.
- To understand concepts about conditional statements in Python.
- To understand and implement string, List, Tuples and Dictionary etc in Python.
- To understanding about Object Oriented Programming in Python.
- To apply the Python in solving real world problems practically.
- Hands-on learning using tools like – IDLE, PyCharm, Spider, Jupyter Notebook etc.

Detailed Syllabus -

Module I: Introduction to Python(12L)
1. Introduction to Python 2. Python variables, expressions, statements 2.1 Variables 2.2 Keywords 2.3 Operators & operands 2.4 Expressions 2.5 Statements 2.6 Order of operations 2.7 String operations 2.8 Comments 2.9 Keyboard input 2.10 Example programs

3. Functions
   3.1 Type conversion function
   3.2 Math functions
   3.3 Composition of functions
   3.4 Defining own function, parameters, arguments
   3.5 Importing functions
   3.6 Example programs

2. Module II: Conditions & Iterations (8L)

1. Conditions
   1.1 Modulus operator
   1.2 Boolean expression
   1.3 Logical operators
   1.4 if, if-else, if-elif-else
   1.5 Nested conditions
   1.6 Example programs
2. Iteration
   2.1 while
   2.2 for
   2.3 break
   2.4 continue
   2.5 Nested loop
   2.6 Example programs

Module III: Recursion, Strings, List, Dictionaries, Tuples (10L)

1. Recursion
   1.1 Python recursion
   1.2 Examples of recursive functions
   1.3 Recursion error
   1.4 Advantages & disadvantages of recursion
2. Strings
   2.1 Accessing values in string
   2.2 Updating strings
   2.3 Slicing strings
   2.4 String methods – upper(), find(), lower(), capitalize(), count(), join(), len(), isalnum(), isalpha(), isdigit(), islower(), isnumeric(), isspace(), isupper() max(), min(), replace(), split()
   2.5 Example programs
3. List
   3.1 Introduction
   3.2 Traversal
   3.3 Operations
   3.4 Slice
   3.5 Methods
   3.6 Delete element
   3.7 Difference between lists and strings
   3.8 Example program
4. Dictionaries
   4.1 Introduction
   4.2 Brief idea of dictionaries & lists
5. Tuples
   5.1 Introduction

5.2 Brief idea of lists & tuples 5.3 Brief idea of dictionaries & tuples
Module IV: Classes & Object (10L)
1. Classes & Objects 1.1 Creating class 1.2 Instance objects 1.3 Accessing attributes 1.4 Built in class attributes 1.5 destroying objects 1.6 Inheritance 1.7 Method overriding 1.8 Overloading methods 1.9 Overloading operators 1.10 Data hiding 1.11 Example program

Textbook and Suggested Readings:

- Python Programming - Using Problem Solving Approach, Reema Thareja, OXFORD UNIVERSITY PRESS
- Learn Python The Hard Way, Zed A. Shaw, ADDISON-WESLEY
- Learning Python, Mark Lutz, O'REILY
- Taming Python by Programming, Jeeva Jose, Khanna Publishing House
- Introduction to Computing and Problem Solving with Python, J. Jose, Khanna Publications
- Python Programming, Seema Thareja, Pearson
- Programming In Python, Dr. Pooja Sharma, BPB

ASSESSMENT SCHEME				
• Interim Formative Assessment [A1-A4: 4 Hours] □ • Course-end Summative Assessment [A5: 28 Hours]				
Formative Assessment- X				
SL No.	**Hours**	**Content/Topic**	**Assessment Type**	**Marks**
A1	1	Content / Topics covered in Module-I	Practical	25
A2	1	Content / Topics covered in Module-II	Practical	25
A3	1	Content / Topics covered in Module-III	Practical	25
A4	1	Content / Topics covered in Module-IV	Practical	25
			Total [A1+A2+A3+A4]	**100**
Summative Assessment- Y				
A5	36	Recommended MOOCS Courses/ Group Project	Certification/ Presentations	**100**

Computation of Final Score: [X + Y] □

- **X** : 20% of total marks obtained out of total marks 100 in Formative Assessment cumulatively (A1+A2+A3+A4) □
- **Y** : 80% of marks obtained out of total marks 100 in Course-end Summative Assessment (A5)

Gradation Scheme: □

- 90 – 100 : O : Outstanding □
- 80 – 89 : E: Excellent □
- 70 – 79 : A: Very Good □
- 60 – 69 : B : Good □
- 50 – 59 : C: Average
- 40 – 49: D: Poor
- Below 40: F: Fail

Eligibility for Certification: □

- Attendance & active participation in at least class lectures/interactions □
- Successful completion of the campaign of all the four module activities/assignments as part of Formative Assessment [A1,A2,A3 & A4] □
- Obtaining minimum Grade D as per the formula for computation of Final Score stated above

NB: A candidate must satisfy all the criteria mentioned in order to receive the course completion certificate