

Shri Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE (AUTONOMOUS), KOLHAPUR
B. Sc. Part – II (Computer science Entire) CBCS Syllabus with effect from June, 2019
Semester: IV Skill Enhancement course-II
Python Programming
Theory: 30 Hours (38 Lectures) credits -2

Course Outcome:

1. To understand why Python is a useful scripting language for developers.
2. To learn how to install Python, start the Python shell
3. To define the structure and components of a Python program.
4. To learn to perform basic calculations, print text on the screen and perform simple control flow operations using if statements and for loops
5. To learn how to use lists, tuples, and dictionaries in Python programs
6. To learn how to reuse code with functions

Unit I: Introduction to Python and Basic Concepts in python

- **Introduction to python:** What is python? , Applications of Python, Why Python? Installation of python, First program in Python, Comments and Docstrings in Python Variable and data types, Operators in python
- **File Handling :** working with open, read, write, append modes of file
- **Conditional Statements:** Indentation in python, if, if-else, nested if-else statements

Unit II: Looping Statements, Control statements, String Manipulations

- **Looping Statements:** for loop, while loop , Nested loops
- **Control Statements:** break, continue and pass
- **String Manipulations:** Accessing strings, Basic operations, String slices, Functions and methods

Unit III: Python collection

- **Python collections :** list, Tuple, set and dictionary
List: Introduction, Accessing lists, change item value in list, loop through list, methods
Tuple: Introduction, Accessing tuples, change item value in tuple , loop through tuple and methods of tuple
Set: introduction and methods of set
Dictionary: Introduction, Accessing values in dictionaries, properties, Change value in dictionary, loop through dictionary and methods of dictionary.

Unit IV: Functions, Data visualization in python

- **Functions:** Defining a function, Calling a function, Function arguments, Default parameter value, Anonymous function : Lambda function(why use lambda, syntax and examples of lambda).
- **Data visualization in python:** Pandas packages (NumPy and matplotlib libraries)

References:

1. Mark Lutz, Learning Python, 5th Edition, O'reilly .2013
2. Charles Dierbach, Introduction to computer science using python, Wiley.2015
3. Harsh Bhasin, Python for Beginners,New age international publishers.
4. Dr.R.Negeswara Rao, Core python programming,Dreamtech.2018
5. Ajay Ohri, Python for R users, Wiley.2018
6. Laura Cassell and Alan Gauld,Python Projects,Wrox.2018

Lab course:

1. Hello world program in python
2. Python Program to Check Whether a Given Year is a Leap Year
3. Python Program to Check Whether a Number is Positive or Negative
4. Python Program to Take in the Marks of 5 Subjects and Display the Grade
5. Print "1" if a is equal to b, print "2" if a is greater than b, otherwise print "3".Print "Hello" if a is equal to b, and c is equal to d.
6. Python Program to Read a Number n And Print the Series "1+2+.....+n= "
7. Python Program to Check if a Number is a Palindrome
8. Python Program to Count the Number of Digits in a Number
9. Python Program to Find the Sum of Digits in a Number
10. Python Program to Print Odd Numbers Within a Given Range
11. Python Program to Find the Factorial of a Number
12. Python Program to check the number is prime or not
13. Python program to print hello world message using function
14. Python Program to Make a Simple Calculator using function
15. Python program to demonstrate lambda function
16. Write a Python programming to display a bar chart of the popularity of programming Languages.
Sample data:
Programming languages: Java, Python, PHP, JavaScript, C#, C++
Popularity: 22.2, 17.6, 8.8, 8, 7.7, 6.7
17. Write a Python program to draw a scatter plot comparing two subject marks of Mathematics and Science. Use marks of 10 students.
Test Data:
math_marks = [88, 92, 80, 89, 100, 80, 60, 100, 80, 34]
science_marks = [35, 79, 79, 48, 100, 88, 32, 45, 20, 30]
marks_range = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]
18. Write a Python programming to create a pie chart with a title of the popularity of programming Languages.
Sample data:
Programming languages: Java, Python, PHP, JavaScript, C#, C++
Popularity : 22.2, 17.6, 8.8, 8, 7.7, 6.7

