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SARVAJANIK COLLEGE OF ENGINEERING AND TECHNOLOGY

BACHELOR OF TECHNOLOGY

B.Tech	1	Semester	1/2	Teaching Scheme				Evaluation Scheme	
Subject Name	Python Programming Lab			**L**	**T**	**P**	**Credits**	**CCE**	**SEE**
Subject Code	BTCO22102			-	-	**2**	1	25	25
Type of course	Engineering Science Course			CCE : Continuous and Comprehensive Evaluation SEE : Semester End Evaluation					
Prerequisite	No prerequisite								
Rationale	Python is a versatile beginner-friendly programming language. This syllabus provides a comprehensive introduction to Python, covering its history, key features, and applications. It builds a strong foundation by covering basic syntax, data types, control flow, functions, and essential libraries like NumPy, Pandas, and Matplotlib. Additionally, it introduces object-oriented programming concepts, making it suitable for both beginners and those looking to enhance their Python skills for data manipulation and automation. Its demand in academia and industry makes it an essential skill for programmers and researchers alike.								

Course Outcomes (COs): At the end of the course, students will be able to		Marks % Weightage
CO – 1	Identify the fundamental concepts of Python programming	10
CO – 2	Describe the role of control flow statements and functions	30
CO – 3	Illustrate built-in data structures such as arrays, lists, tuples, dictionaries, and sets.	35
CO – 4	Define the role of object-oriented programming principles in Python.	15
CO – 5	Demonstrate Python libraries such as NumPy, Pandas, and Matplotlib and their applications.	10

List of Laboratory Practical	
1	Write a Python program to swap two numbers.
2	Write a Python program to find the greatest of 3 numbers.
3	Write a Python program to convert days entered into months and days.
4	Write a Python program to find the roots of a Quadratic equation.
5	Write a Python program to evaluate the power function using a while loop.
6	Write a Python program to evaluate the factorial function using a while loop.

7	Write a Python program to evaluate the sum of integers between a and b entered by the user that is divisible by 3.
8	Write a Python program to print the list of odd numbers until the number is entered by the user.
9	Write a Python program to print the series of prime numbers until the number is entered by the user.
10	Insert a string '12.5#4.56#7.22' and the output should be the sum of the numbers separated by #.
11	Write a Python program to create a very simple pizza-ordering menu. At this pizzeria, there's only one kind of pizza you can order: cheese pizza with no toppings. Your choices are what size of pizza, and how many of them. You'll need to figure out the total price of the order. A small pizza costs Rs. 200, a medium Rs. 350, and a large Rs. 500.
12	Write a Python function to sum all the numbers in a list.
13	Write a Python function to multiply all the numbers in a list.
14	Write a Python function to calculate the factorial of a number (a non-negative integer). The function accepts the number as an argument.
15	Write a Python function that takes a number as a parameter and checks whether the number is prime or not.
16	Write a Python program to print the even numbers from a given list.
17	Write a Python function to create and print a list where the values are squares of numbers between 1 and 30 (both included).
18	Write a Python program that has a loop that prints out all the numbers in a List that are even
19	Write a Python program to create a list of the months in a year starting from January. Using a loop, print the months in reverse order from December to January. Is there a function that will help you do this easily?
20	Write a program that asks the user to enter 10 (positive) numbers. The program should then print the numbers in sorted order, from biggest to smallest.
21	Perform a list and also a tuple assignment using Python to assign the first 4 prime numbers 2,3,5 and 7 to a list called primes. Append the 5th prime number (11) to this list using the append() method. Print out the primes list. What difference do you observe while doing the same thing for Lists and Tuples?
22	Write a Python program to change the position of every n-th value with the (n+1)th in a list.
23	Write a Python program to get a list, sorted in increasing order by the last element in each tuple from a given list of non-empty tuples.
24	Write a Python program to remove duplicates from a list.
25	Write a Python program to check a list is empty or not.
26	Write a Python function that takes two lists and returns True if they have at least one common member.
27	Write a Python program to create a class and instantiate objects.

28	Implement a class with a constructor and demonstrate the use of the self-variable.
29	Demonstrate the use of instance variables, class variables, and namespaces in a Python class.
30	Implement instance methods, class methods, and static methods in a Python class.
31	Write a program to implement single and multilevel inheritance in Python.
32	Read and write data from a CSV file using Pandas.
33	Perform basic data analysis operations such as filtering, grouping, and sorting using Pandas.
34	Create different types of plots (line, bar, scatter, histogram) using Matplotlib.

Recommended Reference Books

1 Dr. R. Nageshwar Rao., Core Python Programming, DreamTech, Second Edition, 2018.

2 Kenneth A. Lambert, Fundamentals of Python- First Programs, CENGAGE Publication, Second Edition, 2019.

CO-PO-Mapping

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO – 1	1	1	1	1	1	-	-	-	-	-	-	2
CO – 2	1	1	1	1	1	-	-	1	-	-	-	2
CO – 3	2	1	2	1	1	-	-	1	-	-	-	2
CO – 4	2	1	2	1	1	-	-	1	-	-	-	2
CO – 5	2	1	2	2	2	-	-	1	-	-	1	2

List of Open Source/learning website/Other Details if any:

1. https://onlinecourses.nptel.ac.in/noc24_cs57/preview

List of Open Source Software:

1. Geany Editor
2. Jupyter Notebook
3. Anaconda
4. PyCharm