GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Bachelor of Vocation (B.Voc.), 4th Semester
Branch: Information Technology
Subject Name: Python Programming Lab
Subject Code: 1140505

Type of subject: Practical

Prerequisite: Basics Programming

Rationale: Python is a modern language useful for writing compact codes specifically for programming in the area of Server-side Web development, Data Analytics, AI and scientific computing as well as production tools and game programming. This course covers the basics and advanced Python programming to harness its potential for modern computing requirements.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA(M)	ESE(V)	PA(I)	
0	0	2	2	0	0	30	20	50

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

Contents:

Sr. No.	Practical / Hands on Exercise	Hrs.
1	Install and configure the Python environment. Run basic Python commands to verify the Python environment.	2
2	Write a program to read your name, contact number, email, and birthdate and print those details on the screen.	2
3	a. Write a program to read the marks and assign a grade to a student. (Using conditional statements)	2
	b. Write a program to read n numbers from users and calculate the average of those n numbers using loop.	
4	Write a program to perform the below operations on the list: Create a list, Add/Remove an item to/from a list, Get the number of elements in the list, Access elements of the list using the index, Sort the list, Reverse the list.	2
5	Write a program to read n numbers from a user and print: Number of positive numbers, Number of negative numbers, Number of zeros, Number of odd numbers, Number of even numbers, Average of all numbers.	2
6	Write a program to perform below operations on tuple: Create a tuple with different data types, Print tuple items, Convert tuple into a list, Remove data items from a list, Convert list into a tuple, Print tuple items.	2

7	Write a program to perform below operations on set: Create two different sets with the data, Print set items, Add/remove items in/from a set, Perform operations on sets: union, intersection, difference, symmetric difference, check subset of another set.	2
8	Write a program to perform below operations on dictionary: Create a dictionary, Print dictionary items, Add/remove key-value pair in/from a dictionary, Check whether a key exists in a dictionary, Iterate through a dictionary, Concatenate multiple dictionaries	2
9	Write a program that defines a function to return a new list by eliminating the duplicate values in the list.	2
10	Create a user defined module with simple functions for: addition, subtraction, multiplication, division, modulo, square, factorial. Write a program to import the module and access functions defined in the module.	2
11	Write a program to check whether a given string is palindrome or not.	2
12	To demonstrate a date format and print the same date in various format.	2
13	Write a program to perform the below operations on files: Create a text file and write a string to it, Read an entire text file, Read a text file line by line, Write a string to a file, Write a list of strings to a file, Count the number of lines, words in a file.	2
14	Write a program that reads a text file and counts the occurrences of each alphabet in the file. The program should prompt the user to enter the filename.	2
	Total	**28**

Reference Books:

1. Python for data science for dummies.
2. 2nd Edition, John Paul Mueller, Luca Massaron, Wiley.
3. Programming through Python, M. T. Savaliya, R. K. Maurya, G. M. Magar, STAREDU Solutions.
4. Pandas for everyone: Python Data Analysis, Daniel Y. Chen, Pearson.
5. Introducing Data Science: Big Data, Machine Learning, and More, Using Python Tools, Davy Cielen, Arno D.B. Meysman, et al., Mining.
6. Applied Data Science with Python and Jupyter: Use powerful industry-standard tools to unlock new, actionable insights from your data, Packt.
7. Data Analytics, Anil Maheshwari, McGrawHill.
8. Data Science from Scratch: First Principles with Python, Joel Grus, SPD.
9. Star Data Science Specialist, STAR CERTIFICATION.

Course Outcomes:

Sr. No.	CO Statement	Marks % Weightage
CO-1	Develop programs to solve the given simple computational problems.	12
CO-2	Apply control flow structures to solve the given problems.	14
CO-3	Implement data structures lists, tuples, sets and dictionaries to solve the given problems.	21
CO-4	Apply modular programming approach to solve given problems using user-defined functions.	21
CO-5	Perform string manipulation operations to solve a given problem.	20
CO-6	Perform file operations to solve a given problem.	12

List of Open-Source Software/learning website:
Students must refer to the following sites to enhance their learning ability.
Web Resources: -

1. www.anaconda.com
2. www.python.org
3. www.w3schools.com
4. https://www.learnpython.org/