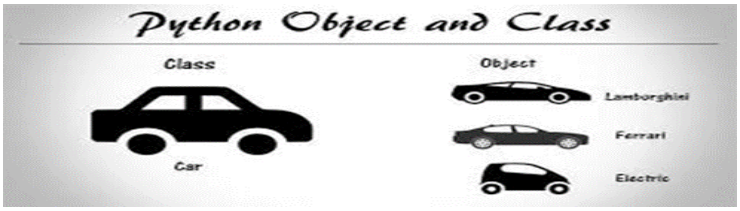
Python Programming Lab	
Course Code: ISL56	**Credits: 0:0:1**
Prerequisites: NIL	**Contact Hours: 14**
Course Coordinator: Prof. Kusuma S	

Session	List of Experiments
1	**BASIC OPERATORS:** Write a Python program to compute 1. Euclidean distance between two point. 2. Calculate the electricity bill. for example, electricity charges and rates. 1 - 100 unit - 1.5 ₹/unit + additional charges=25.00₹ 101-200 unit - 2.5₹/unit+ additional charges=50.00₹ 201-300 unit - 4₹/unit + additional charges=5.00₹ 300 - 350 unit - 7₹/unit + additional charges=100.00₹ above 300 - fixed charge 1500₹
2.	**CONTROL STRUCTURES:** 1. Read your email id and write a program to display the no of vowels, consonants, digits and white spaces in it using if…elif…else statement. 2. Find the sum of all the primes below two million.
3.	**LIST:** 1. Read a list of numbers and print the numbers divisible by x but not by y (Assume x = 4 and y = 5). 2. Read a list of numbers and print the sum of odd integers and even integers from the list.(Ex: [23, 10, 15, 14, 63], odd numbers sum = 101, even numbers sum = 24) 3. Read a list of numbers and print numbers present in odd index position. (Ex: [10, 25, 30, 47, 56, 84, 96], The numbers in odd index position: 25 47 84). 4. Read a list of numbers and remove the duplicate numbers from it. (Ex: Enter a list with duplicate elements: 10 20 40 10 50 30 20 10 80, The unique list is: [10, 20, 30, 40, 50, 80])

4.	**TUPLES:** 1. Given a list of tuples. Write a program to find tuples which have all elements divisible by K from a list of tuples. test_list = [(6, 24, 12), (60, 12, 6), (12, 18, 21)], K = 6, Output: [(6, 24, 12), (60, 12, 6)] 2. Given a list of tuples. Write a program to filter all uppercase characters' tuples from given list of tuples. (Input: test_list = [("GFG", "IS", "BEST"), ("GFg", "AVERAGE"), ("GfG",), ("Gfg", "CS")], Output: [(„GFG‟, „IS‟, „BEST‟)]). 3. Given a tuple and a list as input, write a program to count the occurrences of all items of the list in the tuple. (Input : tuple = ('a', 'a', 'c', 'b', 'd'), list = ['a', 'b'], Output : 3)
5.	**DICTIONARY:** 1. Write a program to do the following operations: ○ Create a empty dictionary with dict() method ○ Add elements one at a time ○ Update existing key‟s value ○ Access an element using a key and also get() method ○ Deleting a key value using del() method 2. Write a program to create a dictionary and apply the following methods: ○ pop() method ○ popitem() method ○ clear() method 3. Given a dictionary, write a program to find the sum of all items in the dictionary. 4. Write a program to merge two dictionaries using update() method.

6.	**OOPS:** a) Create a class called CAR, data members (model_name, color, price, top_speed) method: read above details using constructor (__int__) and without constructor. Display above detail  b) Write a python program to implement the following using Inheritance
7.	**OOPS:** Write python program class TIME member hour, minute, second add two TIME object by using operator overloading [by using __add__ () magic method] subtract add two TIME object by using operator overloading [by using __sub__ () magic method.

8.	**FILE HANDLING:** 1. Write a program to read a filename from the user, open the file (say firstFile.txt) and then perform the following operations: • Count the sentences in the file. • Count the words in the file. • Count the characters in the file. 2. Create a new file (Hello.txt) and copy the text to other file called target.txt. The target.txt file should store only lower case alphabets and display the number of lines copied. 3. Write a Python program to store N student‟s records containing name, roll number and branch. Print the given branch student‟s details only.
9.	**STRINGS:** 1. Given a string, write a program to check if the string is symmetrical and palindrome or not. A string is said to be symmetrical if both the halves of the string are the same and a string is said to be a palindrome string if one half of the string is the reverse of the other half or if a string appears same when read forward or backward. 2. Write a program to read a string and count the number of vowel letters and print all letters except 'e' and 's'. 3. Write a program to read a line of text and remove the initial word from given text. (Hint: Use split() method, Input : India is my country. Output : is my country) 4. Write a program to read a string and count how many times each letter appears. (Histogram).
	PART B
1.	Python statistics module for given data set (label x, label y) (.csv or .xlsx file formats) i. Scatter all point graph by matplotlib ii. Calculates the mean (average) of the given data set iii. Calculates the median (middle value) of the given data. iv. Calculates the standard deviation. v. Calculates the variance. vi. Calculate slop btw points vii. Draw regression line

2.	Data visualization with using python (Pandas, matplotlib, Seaborn) Tips database(tips.csv) is the record of the tip given by the customers in a restaurant for two and a half months in the early 1990s. It contains 6 columns such as total_bill, tip, sex, smoker, day, time, size. • reading the database and display the top 10 rows (using pandas) • Scatter Plot (day vs tip) • Line Chart (day against tip) • Bar chart with day against tip • histogram of total_bills
3.	Write Python program result analysis with data visualization on (Pandas, Matplotlib Seaborn) • Read data from the given result file (.csv format or excel format) • Count the number of pass, and fail each subject and the overall result analyze [by using list and dictionary data type] • Visualize output (Scatter Plot, Line Chart, Bar Chart, Histogram, etc)

total_bill	tip	sex	smoker	day	time	size
0	16.99	1.01	Female	No	Sun	Dinner	2
1	10.34	1.66	Male	No	Sun	Dinner	3
2	21.01	3.50	Male	No	Sun	Dinner	3
3	23.68	3.31	Male	No	Sun	Dinner	2
4	24.59	3.61	Female	No	Sun	Dinner	4
5	25.29	4.71	Male	No	Sun	Dinner	4
6	8.77	2.00	Male	No	Sun	Dinner	2
7	26.88	3.12	Male	No	Sun	Dinner	4
8	15.04	1.96	Male	No	Sun	Dinner	2
9	14.78	3.23	Male	No	Sun	Dinner	2

Course outcomes:

At the end of the course, the student will be able to:

- Use internal and external Python libraries, data structures, and functions inherent to Python in-order to handle data. (PO-1, 2, 5, 6, 9,10,12) (PSO-1, 2, 3)
- Identify object-oriented programming constructs for developing large, modular and Apply reusable real-time programs. (PO-1, 2, 5, 6, 9,10,12) (PSO-1, 2, 3)
- Apply Python as a scripting language to analyze huge datasets, and apply data science related statistics to datasets. (PO-1, 2, 5, 6, 9,10, 12) (PSO-1, 2, 3)

Semester End Examination (SEE): 50 Marks **Note:** Execute one full question from part A and question part B		
	Part A (25 Marks)	**Part B (25 Marks)**
Procedure Write Up	5	5
Execution	16	16
Viva	4	4