6th SEMESTER
COMPUTER APPLICATIONS
(JUNIOR SOFTWARE DEVELOPER)
SKILL ENHANCEMENT COURSE (SEC)

JSD620S ADVANCED PROGRAMMING WITH PYTHON

CREDITS: THEORY: 2, PRACTICAL: 2
MAX MARKS: THEORY: 30, PRACTICAL: 30
MIN MARKS: THEORY: 12, PRACTICAL: 12

THEORY (2 CREDITS)

UNIT 1 – (15 LECTURES)

List, set and dictionary Comprehension. List comprehension with for loop, single if, if-else and multiple if conditions. Range and zip functions with for loop.
Understanding Modules and Packages in Python. Main function in Python and command line arguments

Lambda Functions. Passing functions as arguments to functions.
Map and filter in python.
Iterators and Generators in Python. The itertools package. Object Oriented Programming in Python. Classes and objects. Attributes, Inheritance, Overloading, Overriding, Data hiding, abstract classes
Exception Handling in Python. Except clause, Try, finally clause. User Defined Exceptions

UNIT 2 – (15 LECTURES)

Multithreading, Networks, and Client/Server Programming; introduction to HTML, interacting with remote HTML server, running html-based queries, downloading pages; CGI programming, programming a simple CGI form. The Django package – an Introduction. Introduction to scientific packages. Numpy, Pandas, Matplotlib, Seaborn. Graphical user interfaces; event-driven programming paradigm; tkinter module, creating simple GUI; buttons, labels, entry fields, dialogs; widget attributes - sizes, fonts, colors layouts, nested frames

REFERENCE BOOKS:

1. Kenneth A. Lambert, The Fundamentals of Python: First Programs, Cengage Learning,
2. David Beazley, Brian K. Jones "Python Cookbook", 3rd Edition. O'Reilly Publications
3. Jake VanderPlas "Python Data Science Handbook" O'Reilly Publications
4. David Beazley, "Python Essential Reference (4th Edition) " Addison Wesley

PRACTICALS (2 CREDITS)
LAB SHEET-ADVANCED PYTHON PROGRAMING
1. Write a python program to create a list and append elements to it.
2. Write a python Program to Subtract a List from Another List.
3. Write Python Program to count the number of times an item appears in the list.
4. Write a program in python to create a list of even number between the given numbers using range().
5. Write a python program to select some particular elements from a sequence of element using lambda.
6. Write a NumPy program to compute the multiplication of two given matrixes.
7. Write a NumPy program to concatenate element-wise two arrays of string.
8. Write a Pandas program to create and display a one-dimensional array-like object containing an array of data using Pandas module.
9. Write a Pandas program to get the powers of an array values element-wise.
10. Write a Python program to draw a line using given axis values with suitable label in the x axis, y axis and a title.
11. Write a Python programming to display a horizontal bar chart of the popularity of programming Languages.
12. Write a python program to Plotting a Distplot without the Histogram using seaborn.
13. Write Python program to demonstrate Multiple Inheritance.
14. Program to demonstrate the Overriding of the Base Class method in the Derived Class
15. Write Python Program to Demonstrate Multiple Inheritance with Method Overriding
16. Write Python program to overload "+", "-" and "*" operators by providing the methods __add__, __sub__ and __mul__.
17. Write a Python program to demonstrate the use of super() function.
18. Write a program to Create python threads using function.
19. Write a program to Create python threads using class.
20. Write a python program to create a window with a button, label and entry field.
21. Write a python program to create the window with the selection widgets: Radiobutton, Checkbutton, Listbox and Combobox.
22. Write a program to create a digital clock with Tkinter to display the time.
23. Write a program to create a to-do list presented with Graphical User Interface(GUI) and Tkinter module.