2nd SEMESTER
COMPUTER APPLICATIONS
(JUNIOR SOFTWARE DEVELOPER)
SKILL ENHANCEMENT COURSE (SEC)

JSD222S: PROGRAMMING WITH PYTHON

CREDITS: THEORY: 2, PRACTICAL: 2

THEORY (2 CREDITS)

UNIT 1 (15 LECTURES)

Introduction to the Python language and Interpreter. Basic features and the Print() method. Basic Syntax, Shell and Scripting. Variables and Basic Data types. Operators in Python. Decision Control Structures. If, if-else, if-elif ladder, nested if.

Looping structures in Python. While loop and loop exit statements, break, continue and pass Range function and for loop. Nested loops

UNIT 2 (15 LECTURES)

Basic data structures in Python, Lists and various methods to manipulate lists. List Slicing. Some basic statistical methods on lists. sort() and reverse() methods. List Comprehension.

Dictionary and tuples and various manipulation methods. Strings in Python. String Slicing. String manipulation methods.

Files in Python. File opening and closing. File modes and types of files. With clause for file opening. Directory and file navigation methods in os-package. Functions in python

Defining a function, calling a function, Types of functions, Function Arguments, Global and local variables

Reference Books:

1. 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-PROGRAMMING WITH PYTHON

1. Write basic programs to demonstrate the use of decision control structures in python
2. Write a program in Python to check f a number is positive, print an appropriate message
3. Write a program to prompt the user for hours and rate per hour to compute gross pay. Take into account that the factory gives the employee 1.5 times the hourly rate for hours worked above 40 hours.
4. Write basic programs to demonstrate the use of looping structures in python
5. Write a program to demonstrate continue, break and exit statement
6. Write a program to demonstrate lists in python, iterate through the list and find sum of elements
7. Write a program in python to demonstrate various methods of *list* data structure
8. Write a Python program to multiply all the items in a list
9. Write a Python program to get the largest number from a list
10. Write a Python program to get the smallest number from a list
11. Write a program to demonstrate sort(), reverse() methods
12. Write a Python program to remove duplicates from a list
13. Write a program to demonstrate *List Comprehensions*
14. Write a program which demonstrates
    - Tuple having integers, tuple with mixed data types, nested tuple
    - Accessing tuple elements through indexing
    - Negative indexing
    - Slicing
    - Deleting a tuple
    - Iteration through tuple
15. Write basic programs to *open a file, write on a file, reading a file, closing a file*
16. Write a program to prompt for a file name, and then read through the file line-by-line
17. Write a Python program to read first n lines of a file
18. Write a Python program to read last n lines of a file
19. Write a Python program to count the number of lines in a text file
20. Write a Python program to count the frequency of words in a file
21. Write a Python program to write a list to a file
22. Write a Python program to copy the contents of a file to another file
23. Write a Python program to append text to a file and display the text
24. Write a Python program to create a tuple
25. Write a Python program to create a tuple with different data types
26. Write a Python program to create a tuple with numbers and print one item
27. Write a Python program to unpack a tuple in several variables
28. Write a Python program to add an item in a tuple
29. Write a program to create a function that takes two arguments, name and age, and print their value.
30. Write a program to create function func1() to accept a variable length of arguments and print their value.