UOE022: Python Programming							
University Open Elective-II (CSE & AIML)							
Lect.	Tut.	Pract.	Credits	Evaluation Scheme			
				Component	Exam	Weightage	Pass %
2	-	-	2	Theory & Practical	FA	50	40
					SA	50	40

Course Description:

This course introduces computer programming using the Python programming language. Emphasis is placed on common algorithms and programming principles utilizing the standard library distributed with Python

Prerequisite: Object Oriented Programming concepts

Course Outcomes: After the end of this course students will be able to

CO1 **Understand**[2]Python programming environment.

CO2 **Write**[3]compile and debug programs in Python language.

CO3 **Explain**[2]different Data Structures used in Python.

CO4 **Rectify**[3]possible errors during program execution.

Syllabus (Theory)

Units	Description	Hours
I	**Overview and Environment of Python**: An Overview of Python, what is Python? Interpreted languages, Advantages and disadvantages, Downloading and installing, which version of Python, where to find documentation, The Python Environment, Structure of a Python script, Using the interpreter interactively as calculator, Math operators and expressions.	7
II.	**Getting Started with Python** Using List, Tuple, Set, Dictionary and Operations on them, String and String operations, reading different types of data from the keyboard, writing simple code using editor like Pycharm, Jupyter. Control Statements if, if-else statement, significance of Indenting, the if and elif statements, for loop, while loops, for each loop for list, tuple, set, dictionary, the range () function in loop, File handling (open, close, read, write and append data using file), Error handling	**7**

III.	**Functions and Array** Function: Introduction to function, passing value to the function, Returning value from function, Default, keyword, Arbitrary parameters, Multiple functions, Function call within function. Array: What is NumPy? 1D and 2D Array using NumPy, Operations on array, Array slicing, list, tuple, string slicing	**7**	**Text books:** . Budd, "Exploring Python", Tata McGraw Hill, 1st Ed, 2011 l
IV.	**Implementation of Searching and Sorting** Searching: Importance of searching, Sequential, Binary search algorithms Sorting: Selection Sort, Insertion Sort, Merge sort, Shell sort, Radix sort	**7**	
V.	**Implementation of Stack and Queue** Definition, operation on stack: push and pop, operation on queue: insert and delete, implementation using array.	**7**	
VI.	**OOPS Concepts using Python** OOPS concepts, access specifiers, member methods, constructor, destructor, method overloading, Inheritance, method overriding	**7**	

len Downey, Jeffrey Elkner, Chris Meyers, "How to think like a computer scientist: learning with Python", 1st Edition, 2012

References:

1. Allen B.Downey, "Think python: How to Think like a computer Scientist" 2nd edition,Green Tea Press,2015