Program: B.Sc. Computer Science					Semester: I
Open Elective: Python Programming					Course Code:
Teaching Scheme				Evaluation Scheme	
Lecture (Hours per week)	**Practical (Hours per week)**	**Tutorial (Hours per week)**	**Credit**	**Continuous Assessment (CA) (Marks - 20)**	**Semester End Examinations (SEE) (Marks- 30 in Question Paper)**
2	0	0	2	40%	60%

Learning Objectives:

- To introduce various concepts of programming to the students using Python.
- To learn the syntax of writing various commands of Python
- To develop logic for Problem Solving with the help of Python
- To learn about the basic constructs of programming such as data, operations, conditions, loops, functions etc.

Course Outcomes:

After completion of the course, learners would be able to:

CO1: gain knowledge of basics of python programming
CO2: identify appropriate programming constructs for developing the logic
CO3: implement the concepts of python programming in problem solving
CO4: apply the programming skills using syntactically simple language

Outline of Syllabus: (per session plan)

Module	Description	No of Hours
1	Basic Programming Concepts of Python	10
2	Programming Constructs of Python	10
3	Functions in Python	10
	Total	**30**

Unit	Topic	No. of Hours/Credits 30/2
Module 1	**Basic Programming Concepts of Python**	**10**
	Installation and Working with Python Understanding Python variables Python basic Operators, Python Data Types	**05**
	Declaring and using Numeric data types: int, float, string data type and string operations Defining list and list slicing, Use of Tuple data type	**05**
Module 2	**Programming Constructs of Python**	**10**
	Conditional blocks using if, else and elif	**02**
	Simple for loops in python For loop using ranges, string, list and dictionaries	**03**
	Use of while loops in python Loop manipulation using pass, continue, break Building blocks of python programs	**03**
	Understanding string in built methods List manipulation using in built methods Dictionary manipulation.	**02**
Module 3	**Functions in Python**	**10**
	Dictionaries and Methods related to dictionaries. User Defined Functions - Advantages of functions, function parameters, formal parameters, actual parameters, global and local variables. Programming using functions Anonymous functions. List comprehensions.	**05**
	Python Object Oriented Programming – Oops Concept of class, object and instances Constructor, class attributes and destructors using the built-in dir() function, Programming using Oops concept	**05**

Essential Reading:

1. Magnus Lie Hetland, Beginning Python: From Novice to Professional, Apress
2. Paul Gries, et al., Practical Programming: An Introduction to Computer Science Using Python 3, Pragmatic Bookshelf, 2/E 2014

Reference books

1. Charles Dierbach, Introduction to Computer Science using Python, Wiley, 2013
2. Adesh Pandey, Programming Languages – Principles and Paradigms, Narosa, 2008