BCSC 0061: COMPUTER PROGRAMMING- I

Course Objectives: *The course is designed to provide an introduction to the Computer Programming language using Python. Learning Python basics helps develop your problem-solving skills and logical thinking*

Credits: 02 **L–T–P-J: 2–0–0-0**

Module No.	Content	Hours
I	**Introduction:** History of Python, Features, Python Interpreters and coding standards. **Working with Python:** Basic Syntax, Variable, Identifiers, Data Types and Operators. **Input-Output:** Printing on screen, Reading data from keyboard, Inbuilt-Functions. **Control Structures:** Simple if, if-else, elif, Nested if, Iteration Control structures-break, continue & pass. **String Manipulation:** String Literals, Basic Operations, String slices and String Methods. **Lists:** Introduction, Accessing List, Operations, List Methods, List Comprehensions and nested list. **Tuple:** Introduction, Accessing tuples, Operations, Functions and Methods. **Sets:** Introduction, Methods, and Operations. **Dictionary:** Introduction, accessing values in dictionaries, working with dictionaries, Properties and methods and dictionary Comprehensions.	**16**
II	**Functions:** Defining & Calling a function, Passing arguments to functions – Mutable & Immutable Data Types, Different types of arguments, Scope of Variables local, global, and nonlocal, Anonymous functions. **Modules and Packages:** Standard Modules- random, math, string, date, time, os, sys. **Exception Handling:** Introduction, try-except, use of else clause, try and finally clause. **Python File Handling:** Create, Open, Append, Read, Write. **Regular Expressions**: Introduction, Regex Functions in Python3, Meta characters, sets and match objects. **Database Programming (Python):** Introduction to Databases. Understanding databases and their importance. Introduction to relational databases and SQL. Installing and setting up SQLite Basic SQL commands: CREATE, INSERT, SELECT, UPDATE, DELETE.	**16**

Text Books:

- Paul Barry: "Head First Python "O'Reilly Media, Inc.".
- Python Data Science Handbook: Essential Tools for Working with Data

Reference Books:

- Bret Slatkin: "Effective Python: 59 Specific ways to write better Python", Addison Wesley, 2015.

Outcome: Upon completion of this course, the students will be able to:

CO1: Understand to solve problems with Code using Python as compared to other programming languages.
CO2: Apply the concepts of control structures and string manipulations of python programming.
CO3: Use in-built packages defined in Python.
CO4: Experiment user-defined functions and access built-in functions.
CO5: Develop the programs using the concept of File Handling.
CO6: Develop the programs using the concept of Exceptional Handling.