B.Sc. Part – III Computer Science (Optional) (Semester – V)
Course Code: DSE-E24 Computer Science Paper –XII
Course Title: Basics of Python
Total Contact Hours: 36 Hrs (45 Lectures of 48 Min.)
Teaching Scheme: Theory – 03 Lect. / Week

Credits: 02 **Total Marks: 50**

Course Outcomes:

After successful completion of this course, students will able to:

1) understand why Python is a useful scripting language for developers.
2) learn how to write loops and decision statements in Python.
3) learn how to use lists, tuples and dictionaries in Python programs.
4) use of functions and modules in Python programs.

Unit – 1: Python Preliminaries **(18 Hrs.)**

Introduction to Python: History, Features, Working with Python, Basic Syntax, Keywords, Variable and Data Types, Operators, Input - output functions.

Conditional Statements & Looping: If, If-else, Nested if-else, For, While, Nested loops.

Control Statements: Break, Continue, Pass.

String Manipulation: Accessing Strings, Basic Operations, String slices, Function and Methods.

Unit – 2: Basic Data Structures, Functions and Modules in Python **(18 Hrs.)**

Basic Data Structures: List - Accessing list, Operations, Working with lists, Function and Methods, **Tuple -** Accessing tuples, Operations, Working, Functions and Methods, **Dictionaries -** Accessing values in dictionaries, Working with dictionaries, Properties, Functions.

Functions: Defining a function, Calling a function, Types of functions, Function Arguments, Anonymous functions, Global and local variables.

Modules: Importing module, Math module, Random module, Packages, Composition

Reference Books –

1. Practical Programming: An introduction to Computer Science Using Python, second edition, Paul Gries, Jennifer Campbell, Jason Montojo, The Pragmatic Bookshelf.
2. Python for Informatics: Exploring Information, Charles Severance
3. Learning Python, Fourth Edition, Mark Lutz, O'Reilly publication
4. Introduction to Python for Computational Science and Engineering (A beginner's guide), Hans Fangohr
5. John V Guttag. "Introduction to Computation and Programming Using Python", Prentice Hall of India
6. R. Nageswara Rao, "Core Python Programming", Dreamtech
7. "Glimpses of Python Programming Development" by Budake R. D.