PYTHON PROGRAMMING (Minors)

Course Objectives:

The aim of Python Programming Lab is,

- 1. To learn about Python programming language syntax, semantics, and the runtime environment
- 2. To be familiarized with universal computer programming concepts like data types
- 3. To be familiarized with general computer programming concepts like conditional execution, loops & functions
- 4. To be familiarized with data structures and object-oriented programming
- 5. To acquire exception handling skills in Python

Course Outcomes:

By the end of this lab, the student is able to

- 1. Write, Test and Debug Python Programs
- 2. Develop essential programs in computer programming concepts like data types
- 3. Solve coding tasks related conditional execution, loops
- 4. Use functions and represent Compound data using Lists, Tuples and Dictionaries etc. and solve coding tasks related to the techniques used in object-oriented programming
- 5. Handle different kinds of exceptions

UNIT I

Introduction: History of Python, Need of Python Programming, Applications Basics of Python Programming Using the REPL(Shell), Running Python Scripts, Variables, Assignment, Keywords, Input-Output, Indentation.

UNIT II

Types, Operators and Expressions: Types - Integers, Strings, Booleans; Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Expressions and order of evaluations Control Flow- if, if-elif-else, for, while, break, continue, pass

IINIT III

Data Structures Lists - Operations, Slicing, Methods; Tuples, Sets, Dictionaries, Sequences. Comprehensions.

UNIT IV

Functions: Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Fruitful Functions(Function Returning Values), Scope of the Variables in a Function - Global and Local Variables.

Modules: Creating modules, import statement, from. Import statement, name spacing, Python packages Introduction to PIP, Installing Packages via PIP, Using Python Packages

UNIT V

Object Oriented Programming OOP in Python: Classes, 'self variable', Methods, Constructor Method, Inheritance, Overriding Methods, Data hiding, Error and Exceptions: Difference between an error and Exception, Handling Exception, try except block, Raising Exceptions, User Defined Exceptions

Text Books:

- 1. Python Programming: A Modern Approach, Vamsi Kurama, Pearson
- 2. Learning Python, Mark Lutz, Orielly

Reference Books:

- 1. Think Python, Allen Downey, Green Tea Press
- 2. Core Python Programming, W.Chun, Pearson. 3. Introduction to Python, Kenneth A. Lambert, Cengage