| Course code: Course Title | Course Structure | | | Pre-Requisite |
|---|---|---|---|---|
| | L | T | P | |
| MC103: Python Programming | 0 | 0 | 4 | Basic Computer Knowledge |

**Course Objective:** The objective of the course is to introduce fundamentals of programming using Python and understand the concepts of program.

| S. No. | Course Outcomes (CO) |
|---|---|
| CO1 | Describe the basic concepts like operators, functions, arguments, and iterations in Python. |

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| **CO2** | Describe the concepts of strings, lists, tuples and dictionaries in Python. |
| **CO3** | Design Python programs with error handling techniques. |
| **CO4** | Explain the concepts of File Handling and object oriented programming in Python. |

| S. No. | Contents |
|---|---|
| **UNIT 1** | Introduction to Python: Arithmetic Operators, Variables, Expressions and Statements in Python, Function Calls, Parameters and Arguments, Infinite Recursion and Stack Diagrams, Logical Operators, Conditional and Alternative Execution, Iterations in Python. |
| **UNIT 2** | Strings and Dictionaries in Python: Immutable Strings, String Methods and Comparison, Mutable Lists, List Operations and Methods, Concept of Dictionary and Looping, Reverse Lookup, Immutable Tuples, Tuples as Return Values, Concepts of Namespaces and scope. |
| **UNIT 3** | Error handling and Files in Python: Error handling using try and except, Create your own exceptions, Filenames and Paths, Persistence, Reading and Writing, Catching Exceptions, Attributes, Mutable Objects, Classes and Functions, Pure Functions, Modifiers, Classes and Methods, Inheritance. |

| List of Experiments | |
|---|---|
| **S.No.** | **Title** |
| **1** | WAP that creates variables of numeric data types and perform arithmetic operations on them in Python. |
| **2** | WAP to declare variables of string datatype and perform different operations on them. |
| **3** | WAP to create, insert and delete Lists in Python. |
| **4** | WAP to create, insert and delete Dictionaries in Python. |
| **5** | WAP to create, insert and delete Sets and Tuples in Python. |
| **6** | WAP to print Fibonacci series using for loop in Python. |
| **7** | Create a function search list which takes a list of values as arguments and search a particular number in the list. |

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| **8** | WAP for division of two numbers where denominator is 0. This will throw an exception. Now handle the exception using try and except. |
| **9** | WAP in Python that can create your own exceptions. |
| **10** | WAP to explain file handling in Python. |
| **11** | WAP to demonstrate objects and classes in Python. |

**REFERENCES**

| S.No. | Name of Books/Authors/Publishers | Year of Publication / Reprint |
|---|---|---|
| **1** | Intro to Python for Computer Science and Data Science; P. Deitel, H. Deitel, Pearson Education, 1st edition. | 2022 |
| **2** | Python Crash Course A Hands-On, Project-Based Introduction to Programming; E. Matthes, No Starch Press, 3rd edition. | 2023 |
| **3** | Python: The Complete Reference; Martin C. Brown, McGraw Hill Education, 4th edition. | 2018 |