| BMC301: Python Programming | | |
|---|---|---|
| **Course Outcome (CO)** | | **Bloom's Knowledge Level (KL)** |
| **At the end of course, the student will be able to** | | |
| CO 1 | Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements. | $K_1$, $K_2$ |
| CO 2 | Express proficiency in the handling of strings and functions | $K_1$, $K_2$ |
| CO 3 | Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets. | $K_3$ |
| CO 4 | Use OO concepts while programming in Python | $K_1$, $K_2$ |
| CO 5 | Work with Python using GUI. | $K_4$ |
| **DETAILED SYLLABUS** | | **3-0-0** |
| **Unit** | **Topic** | **Proposed Lecture** |
| **I** | **Introduction to Python:** Introduction and Basics; Setting up path Python Data Variables & Operators: Data Variables and its types, id() and type() functions, Coding Standards,<br>**Input-Output:** Printing on screen, Reading data from keyboard;<br>**Control Structures:** if-else, elif, Nested if, Iteration Control structures, Break, Continue & Pass. | **08** |
| **II** | **String Manipulation:** Accessing Strings, Basic Operations, String slices, Function and Methods.<br>**Lists:** Introduction, Accessing list, Operations, Working with lists, Function and Methods.<br>**Tuple:** Introduction, accessing tuples, Operations, Working, Functions and Methods. | **08** |
| **III** | **Dictionaries:** Introduction, accessing values in dictionaries, Working with dictionaries, Properties, Functions.<br>**Functions:** Defining & Calling a function, Passing arguments to functions – Mutable & Immutable Data Types, Different types of arguments, Recursion, Scope of variables; | **08** |
| **IV** | **Modules and Packages:** User-defined modules and Standard Library: random, numpy, scipy, sys, Math Module, String Module, List Module, Date & Time Module, Regular Expressions: match, search, replace;<br>**File Handling:** Introduction, File Types, Creating, Opening, Closing, Renaming, Accessing and deleting files, File pointers, File Modes, Binary files. | **08** |
| **V** | **Exception Handling:** Exception, Exception Handling, Except clause, Try? finally clause, User Defined Exceptions.<br>Basics of Python for Data Analysis, Introduction to series and dataframes. | **08** |

**Suggested Readings:**


1. Basin H., "Python for Beginners", New Age International Publishers.
2. Ramalho L., "Fluent Python", SPD.
3. Severance C., "Python for Everybody", SPD.
4. Brown M. C., "The Complete Reference", Mc Graw Hill.
5. Kanetkar Y. and Kanetkar A., "Let Us Python", Bpb.
6. Lutz M., "Learning Python", SPD.

| BMC351: Python Programming Lab | | |
|---|---|---|
| **Course Outcome ( CO)** | | **Bloom's Knowledge Level (KL)** |
| **At the end of course, the student will be able to understand** | | |
| CO 1 | Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements. | K1, K2 |
| CO 2 | Express proficiency in the handling of strings and functions | K1, K2 |
| CO 3 | Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets. | K3 |
| CO 4 | Use OO concepts while programming in Python | K1, K2 |
| CO 5 | Work with Python using GUI. | K4 |

Programs based on the concepts of:

1. Building Python Modules
2. Obtaining user Data
3. Printing desired output

Programs based on the concepts of:

1. Conditional if statements
2. Nested if statements
3. Using else if and elif

Programs based on the concepts of Iteration using different kinds of loops Usage of Data Structures:

1. Strings
2. Lists
3. Tuples
4. Sets
5. Dictionary

Program based on the concepts of User-defined modules and Standard Library (random, numpy, scipy, sys, Math Module, String Module, List Module).

Program based on Input Output.

Program based on exception Handling.

Program based on Simple Data Analysis

Program based on Pandas.

**Note: The Instructor may add/delete/modify/tune experiments, wherever he/she feels in a justified manner.**