

MAULANA ABUL KALAM AZAD UNIVERSITY OF
TECHNOLOGY, WEST BENGAL

MBA PROGRAMME

BA 405: DATA ANALYTICS USING PYTHON

MODULE I:

1. **Python Basics:** Python variables, expressions, statements Variables, Keywords, Operators & operands, Expressions, Statements, Order of operations, String operations, Comments, Keyboard input. [4L]
2. **Conditions & Iterations:** Conditions, Modulus operator, Boolean expression, Logical operators, if, if else, if-elif-else, Nested conditions, Iteration - while, for, break, continue, Nested loop. [4L]
3. **Functions:** Type conversion function, Math functions, Composition of functions, defining own function, parameters, arguments, Importing functions. [4L]
4. **Recursion:** Python recursion, Examples of recursive functions, Recursion error, Advantages & disadvantages of recursion.
Strings: Strings Accessing values in string, Updating strings, Slicing strings, String methods – upper(), find(), lower(), capitalize(), count(), join(), len(), isalnum(), isalpha(), isdigit(), islower(), isnumeric(), isspace(), isupper() max(), min(), replace(), split().
List: Introduction, Traversal, operations, Slice, Methods, Delete element, Difference between lists and strings, Example program, Dictionaries - idea of dictionaries
Tuples: idea of lists & tuples, Brief idea of dictionaries & tuples [8L]

MODULE II:

5. **Object-Oriented Programming with Python:** Concepts, Creating class, Instance objects, Accessing attributes, built in class attributes, destroying objects, Inheritance, Overloading, Overriding, Data hiding [4L]
6. **Python Exceptions:** Exception handling, except clause, User Defined Exceptions
Regular expression- Match function, Search function, Matching VS Searching, Modifiers, Patterns [4L]

7. **File Operations in Python:** create, open, read, write, append, close files; Stack and Queue, Stacks and Queues using lists [4L]
8. **NumPy, SciPy, SymPy:** basic concepts
Pandas: Object creation, Viewing data, Selection, Missing data, Operations, Merge, Grouping, Reshaping, Time series, Categoricals, Plotting, Getting data in/out from CSV, Excel. [6L]
9. **Case Studies** [2L]

Suggested Readings:

1. Python Programming - By Anurag Gupta, G Biswas – McGraw Hill Education
2. Learn Python The Hard Way, Zed A. Shaw, ADDISON-WESLEY
3. Learning Python, Mark Lutz, O'REILY
4. Programming In Python, Dr. Pooja Sharma, BPB
5. Python Programming - Using Problem Solving Approach, Reema Thareja, OUP