MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL
(Formerly West Bengal University of Technology)
Syllabus of BCA
(Effective from 2023-24 Academic Sessions)

SEMESTER: III

DEFINITION OF CREDIT

1 HR LECTURE PER WEEK	1 CREDIT
1 HR TUTORIAL PER WEEK	1CREDIT
2 HR PRACTICAL PER WEEK	1 CREDIT

SUBJECT NUMBERING SCHEME:

CODE FOR THE DEPT. OFFERING SUBJECT	SUBJECT TYPE	SEM	SUBJECT CODE

C	CORE MAJOR

SUBJECT NAME: Python Programming **Credit: 3L + 2P**
SUBJECT CODE: BCAC301

COURSE OBJECTIVE:

The course objectives of a Python programming course typically aim to equip students with the fundamental knowledge and skills needed to understand and utilize Python as a programming language effectively. students should have a solid foundation in Python programming, enabling them to write Python code independently, understand and contribute to Python-based projects, and pursue further specialization in specific areas of Python development.

COURSE OUTCOME	
CO1	Will gain a solid understanding of Python programming fundamentals, including syntax, data types, control structures, and functions.
CO2	Will learn techniques for acquiring, cleaning, and analyzing data

CO3	Will be able to design and implement modular programs using functions and modules to improve code reusability and maintainability.
CO4	Will be capable of reading from and writing to files, as well as handling different file formats for data input and output operations.
CO5	Will understand the principles of object-oriented programming and be able to create classes, objects, and inheritance hierarchies to model real-world entities and solve problems.

DETAILED SYLLABUS:

Module No:	**NAME OF THE TOPIC**	**HOURS**	**MARKS**
M1	**INTRODUCTION:** Features of Python, Execution of Python Program, Viewing the byte code, Python Virtual machine, Frozen binaries, Memory management of Python, Compare between C and Python, Comapre between Java and Python	**3**	**5**
M2	**Python Fundaments**: python character set, Tokens (Keywords, Identifiers, Literals, Operators, Punctuations), Comments in Python (Single line and Multi line), Variables and assignments (Creating a variables, Multiple assignments)	**3**	**4**
M3	**Data Handling and Flow Control:** Data Types, Mutable and Immutable types, Operators, Negative Number artithmetic in Python, Evaluation of Expression, Type casting Flow Control: if statement, if..else, if..elif..else statement, range function,while loop, for loop, nested loop, break statement, Continue statement, return statement	**6**	**6**

M4	**String and Character:** Introduction, Traversing the string,String concatenation and replication, Membership operator, comparision operator, determine unicode value of single character, slicing, built in functions (len(), capitalize(), count(), find(), index(),isalpha(), isalnum(), isdigit(), isspace(), islower(),lower(), upper(), strip(0, lstrip(), rstrip(), join(), title(), split(), partition(), endswith(), startswith(), replace()	**5**	**5**
M5	Functions: Differenece Function and method,define a function, Calling a function, Return results from function, Return multiple values from function, Formal and Actual arguments, Positional arguments, Default arguments, Keyword arguments, Variable length arguments Local and Global variable, Recursive function, using Lambdas with filter(), lambdas with map()	**4**	**5**
M6	**Lists**: Creation of list,empty list, nested list, use of list(), Accessing list, length of list, indexing and slicing of list, Traverse the list, Compare the list, Joining the list, Replication of list, Making the true copy of list, index(0, append() and extend(), insert(), pop(), popitem(), del and clear(), count(), reverse(), sort and sorted, two dimensional list	**6**	**10**
M7	Tuples: Creation of tuple (empty tuple, single element, create tuple from existing sequence, nested tuple), Accessing tuples, Traverse tuple, join , len(), max(), min()	**3**	**5**

M8	Dictionary: Creating dictionary empty dictionary, add key:value pair in dictionary, use of dict(), specify value pair separately in sequence, Add ewlements to dictionary, Check existence of a key in dictionary, get(), items(), keys(), values(), len(), fromkeys(), extens/ update dictionary with new value, making shallow copy of dictionary, delete elemnts from dictionary(clera(), pop(), poitem(), del) , max(), min(), sum()	**6**	**10**
M9	Text file: opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a file	**3**	**5**
M10	Class and Object: Features of OOPs Programming, Creation of class, self cvariable, Constructor, types of variable, namespace, types of methods(Instance method, class methos, static method) Inheritance: Constructor in inheritance, super(), Types of inheritance, Method of resolution order, Ploymorphism, operator and method overloading, abstract class and interface	**6**	**15**
	INTERNAL EXAMINATION	**3**	**30**
	TOTAL	**48**	**100**