Course Code	Course Title	L	T	P	C
PMCA602L	Python Programming	2	0	0	2
Pre-requisite	NIL	Syllabus version			
		1.0			

Course Objectives:

1. Understand the basics of python programming constructs and data structures.
2. Learn to develop user-defined functions and handle exceptions.
3. Apply object-oriented techniques using python and handle unstructured data.

Course Outcomes:

1. Develop solutions using the basic programming constructs and data structures in python
2. Demonstrate applications with user-defined functions and applying exception-handling mechanisms
3. Apply object-oriented programming constructs in designing complex real-world problems
4. Examine and visualize the data sets using python packages

Module:1	Python Programming Fundamentals	4 hours

Variables and Simple Data Types - Naming and Using Variables, Numbers, Comments - User Input, Output Statements - Control Flow Statements - If Statements, While Loops, For Loops

Module:2	Working with Specialized Data Structures	4 hours

Working with Lists - Changing, Adding, and Removing Elements - Organizing a List, Looping through Entire Lists, Working with Part of a List - Tuples - Defining a Tuple, Looping through all Values in a Tuple, Writing over a Tuple - Dictionaries - Working with Dictionaries, Looping through a Dictionary

Module:3	Strings and Regular Expression	4 hours

Strings - Basic String Operations, Indexing, and Slicing - String Methods - Regular Expressions - Using Special Characters - Regular Expression Methods

Module:4	Functions	4 hours

Defining a Function, Passing Arguments, Return Values, Passing a List, Passing an Arbitrary Number of Arguments, Storing your Functions in Modules

Module:5	Files and Exceptions	4 hours

Files - Reading from a File, Writing to a File - Exceptions - Handling the ZeroDivisionError Exception, Using try - except Blocks, Using Exceptions to Prevent Crashes, The else Block, Handling the FileNotFoundError Exception

Module:6	Object Oriented Programming	4 hours

Classes - Creating and using a Class, Working with Classes and Instances, Encapsulation - Using Private Instance Variables and Methods, Inheritance, Polymorphism - Importing Classes

Module:7	Introduction to Data Science and Visualization	4 hours

Storing Data - Using JSON, Saving and Reading User - GeneratedData - Packages - NumPy, Matplotlib, Pandas

Module:8	Contemporary Issues	2 hours

Guest Lecture from Industry and R & D Organizations

	Total Lecture Hours:	30 hours

Text Book(s)

1. Eric Matthes, "Python Crash Course: A Hands-on, Project-Based Introduction to Programming", 2019, 2nd Edition, No Starch Press, San Francisco.

2.	Gowrishankar S and Veena A, "Introduction to Python Programming", 2019, 1st Edition, CRC Press, Taylor & Francis Group, Boca Raton, FL.		
Reference Books			
1.	Mark Lutz, "Learning Python Powerful Object Oriented Programming", 2018, 5th Edition, O'Reilly Media.		
2.	John Hunt, "A Beginner's Guide to Python 3 Programming", 2020, 2nd Edition, Springer Nature, Switzerland.		
Mode of Evaluation: CAT, Written Assignment, Quiz, FAT and Seminar			
Recommended by Board of Studies	04-05-2023		
Approved by Academic Council	No. 70	Date	04-05-2023