

COURSE TITLE	PYTHON PROGRAMMING
COURSE CODE	05CA0301
COURSE CREDITS	4

Objective:

- 1 Understand the fundamental concepts, syntax, and features of the Python programming language.
- 2 Demonstrate the ability to manually trace and execute simple Python programs, interpreting input/output flow and changes in variable states.
- 3 Apply procedural and object-oriented programming paradigms to solve real-world problems using Python.

Course Outcomes: After completion of this course, student will be able to:

- 1 Describe the versatility and applications of Python in various domains.
- 2 Implement conditional statements and looping constructs to control the flow of Python programs.
- 3 Demonstrate the ability to perform file operations and handle exceptions in Python effectively.

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	Introduction to Python Programming Introduction, History & Features of Python. , Installation of Python and IDE. Data Types in Python - Mutable and Immutable. Methods of Numeric Datatype. , Sequence methods and type-specific, methods of String, Tuple, List, Dictionary, and Set. , Operators, take input from the user in Python.	10
2	Control Statements & Functions in Python Control statements with decision-making and branching - If, If-else, if-elif-else., Decision making and looping - While loop, for loop, Nested Loops. , Functions in Python - Built-in functions, Date & Time Functions, and Math Functions., User-defined functions and their types, Recursion of functions.	10

Contents : Unit	Topics	Contact Hours
3	Files & Exception in Python What is operator, Explain Types of Operator , Simple if, if. Else, Nested if, Else...if leader, switch, W, uthile loop, do While, For loop, Go to, Break, Continue, Declaration of array, types of Array, How to accessing Array	12
4	OOP in Python Python with OOP. Using Class, Object., Inheritance with its types, and Polymorphism with function overloading and overriding., Understanding of the pass keyword and init () function which behaves like a constructor in python	13
Total Hours		45

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	Unit 1 Write a Python program to display the history and features of Python, Install Python and an IDE (PyCharm/VS Code) and run a simple Python script, Write a program demonstrating mutable (lists, sets, dictionaries) and immutable (integers, tuples, strings) data types, Implement numeric datatype methods (e.g., abs(), round(), pow(), divmod()), Demonstrate different sequence methods (append (), extend(), insert() for lists; count(), index() for tuples; string operations like slicing, concatenation, and repetition)	15
2	Unit 2 Write a Python program to take user input and check if a number is positive, negative, or zero, Create a program to print Fibonacci series using a while loop and a for loop, Create a program to print Fibonacci series using a while loop and a for loop, Write a Python script to demonstrate break, continue, and pass in loop structures, Implement built-in mathematical functions such as sqrt(), ceil(), floor(), factorial(), sin(), and cos()	15
3	Unit 3 Write a program to read data from a text file and display its contents, Implement a Python script to append data to an existing file, Write a program that demonstrates exception handling using try, except, finally, Create a Python script that demonstrates the use of raise for custom exception handling, Implement a program that copies contents from one file to another, Develop a Python program that reads a CSV file and displays the data in a structured format	15

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
4	Unit 4 Create a simple class Student with attributes like name and age, and display their values, Implement single and multiple inheritance with example classes, Demonstrate method overloading and method overriding with examples, Write a Python script to show how super () is used in inheritance, Implement a program using the __init__() constructor method, Create a class and use the pass keyword inside an empty method or class definition	15
Total Hours		60

Textbook :

- 1 Python Programming for Beginners, Anthony Adams, Python Programming, 2021
- 2 Python Fundamentals – A Practical Guide for Learning Python, Amas R, Independently Published, 2021

References:

- 1 A Practical Guide for Learning Python, A Practical Guide for Learning Python, Amas R, Independently Published, 2021
- 2 In-depth coverage of Python for intermediate and advanced users, In-depth coverage of Python for intermediate and advanced users, Mark Lutz, O'Reilly Media, 2013

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
20.00	30.00	25.00	15.00	10.00	0.00

Instructional Method:

- 1 Board Work
- 2 PPT
- 3 Demo

Supplementary Resources:

- 1 <https://docs.python.org/3/tutorial/index.html>
- 2 <https://www.learnpython.org/>
- 3 <https://pandas.pydata.org/docs/>

Supplementary Resources:

- 4 GeeksforGeeks Python Tutorials – <https://www.geeksforgeeks.org/python-programming-language/>
- 5 <https://flexiple.com/python/python-libraries>