

PG DEPARTMENT OF COMPUTER SCIENCE				CLASS: <i>IM.Sc.</i> Computer Science				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours/week	CIA	Ext	Total
I	Major Core Practical - 2	21P1DMP2	PYTHON PROGRAMMING LAB	2	4	40	60	100

Nature of Course				
Knowledge and skill			Employability oriented	✓
Skill oriented	✓		Entrepreneurship oriented	

Course Objectives

1. To interpret the use of procedural statements, conditional statements, loops and functional calls.
2. To develop programs using string operations, regular expression and handling files.
3. To build programs by using Lists, Tuples, Dictionaries, Classes and Objects.
4. To apply the concepts of inheritance, overloading and exception handling.
5. To demonstrate the use of Multiprocessor, Threading, Networking, Database and Graphics.

Unit	Content	Hrs	K-Level	CLO
I	1. Write a Python program to print all Prime numbers in an Interval. 2. Write a Python program to print N th Fibonacci number using recursion. 3. Write a program to calculate the total amount of money in the piggybank, given the coins of Rs.10, Rs.5, Rs.2 and Rs1. 4. Write a Python program to sort the given n numbers.	12	Up to K2	1
II	5. Write a Python program to implement any 5 string operations. 6. Write a Python program to extract date from the given string and validate the mobile number. 7. Write a Python program to read data from a file and calculate the percentage of vowels and consonants in the file. 8. Write a Python program to create a file and display its contents.	12	Up to K3	2
III	9. Write a Python Program to perform append, insert, pop, reverse, sort methods in list. 10. Write a Python program to add two matrices (using nested lists). 11. Write a Python program to perform repetition, membership, maximum and minimum operations in Tuple. 12. Write a Python program to perform union, intersection, difference, symmetric difference and enumerate operation in Sets. 13. Create a menu driven Python program with a dictionary for words and their meanings. Write functions to add a new entry (word:	12	Up to K3	3

	meaning), search for a particular word and retrieve meaning, for given meaning find words with the same meaning, remove an entry, display all words sorted alphabetically.			
IV	<p>14. Write a python program that has a class person storing name, DOB. The program should subtract DOB from current date to find whether the person is eligible to vote or not.</p> <p>15. Write a Python program that has classes such as student, course and department. Enroll a student in a course of a particular department. (Use inheritance)</p> <p>16. Write a Python program that overloads the + operator to add two objects of class Matrix.</p> <p>17. Write a Python program that opens a file and writes data to it. Handle exceptions that can be generated during I/O operations.</p>	12	Up to K4	4
V	<p>18. Write a python program to create a socket to establish connection to client and server.</p> <p>19. Write a Python program to create student database in MySQL, insert, update and display the records.</p> <p>20. Write a Python program to draw line, circle, triangle, square and rectangle with different colors.</p>	12	Up to K4	5

Books for Study

1. Python Programming: Using Problem Solving Approach by Reema Thareja, 2017, Oxford University Press.
2. Programming in Python: A Complete Introduction to the Python Language by Mark Summerfield, 2018 second edition, Pearson Education.

Books for Reference

1. Python for Programmers by Paul Deitel& Harvey Deitel, first edition 2020, Pearson Education Inc.
2. Core Python Programming by R. Nageswara Rao, Second edition 2018, Dreamtech.
3. "Programming and Problem Solving with Python", by Ashok Namdev Kamthane, Amit Ashok Kamthane, McGraw Hill Education India, 2018.

Web Resources

1. <https://realpython.com/python-csv/>
2. <https://docs.python.org/3/>
3. <https://learnpython.org>

Rationale for Nature of the course

- Develop wide variety of applications including web applications, software and Game development, network programming, GUI, scientific and numeric applications.

Activities on Skill Oriented

- Implement Programming
- Mini Projects

Activities on Employability Oriented

- Software Development
- Data Analysis

Pedagogy

Projector Demonstration and Practical sessions.

Course Designer(s) Name

1. Mrs. K. R. Ramadevi
2. Mrs. S. Rajalakshmi

Lesson Plan

UNIT	Topics to be covered	Hours	Mode
I	Write a Python program to print all Prime numbers, N th Fibonacci number	6	Demo &
	Write a program to calculate the total amount of money in the piggybank, given the coins of Rs.10, Rs.5, Rs.2 and Rs1. Write a Python program to sort the given n numbers.	6	Practical Session
II	Write a Python program to implement any 5 string operations.	6	Demo &
	Write a Python program to extract date from the given string and validate the mobile number. Write a Python program to read data from a file and calculate the percentage of vowels and consonants in the file. Write a Python program to create a file and display its contents.	6	Practical Session
III	Write a Python Program to perform append, insert, pop, reverse, sort methods in list.	6	Demo &
	Write a Python program to add two matrices (using nested lists). Write a Python program to perform repetition, membership, maximum and minimum operations in Tuple. Write a Python program to perform union, intersection, difference, symmetric difference and enumerate operation in Sets, Create a menu driven Python program	6	Practical Session
IV	Write a python program to use class, inheritance.	6	Demo &
	Write a Python program that overloads the + operator to add two objects of class Matrix, I/O operations.	6	Practical Session
V	Write a Python program to create two threads to keep a count of numbers of even numbers entered by the user.	6	Demo &
	Write a Python program to create student database in MySQL, insert, update and display the records.	6	Practical Session

Course Learning Outcomes

On the completion of the course, the students will be able to

CLOs	COURSE LEARNING OUTCOMES	K - Level
CLO 1	Apply the basics, control statements and modules in Python.	Up to K2
CLO 2	Demonstrate various string operations and File handling methods.	Up to K3
CLO 3	Use different Data Structures and implement classes and objects	Up to K3
CLO 4	Implement the concepts of Object-Oriented Programming.	Up to K4
CLO 5	Utilize Standard libraries to perform Multithreading, Networking, Databases and Graphics.	Up to K4

Mapping of CLOs with POs

CLOs / POs	PO1	PO2	PO3	PO4	PO5	PO6
CLO 1	2	2	1	2	2	1
CLO 2	2	3	2	2	2	2
CLO 3	2	3	3	2	1	1
CLO 4	2	3	3	2	2	2
CLO 5	2	2	2	2	2	1

(3– Advanced Application, 2 – Intermediate Level, 1- Basic Level)