P.B. SIDDHARTHA COLLEGE OF ARTS & SCIENCE
Siddhartha Nagar, Vijayawada – 520 010
Reaccredited at 'A+' level by NAAC
Autonomous & ISO 9001:2015 Certified

Title of the Course: PYTHON PROGRAMMING LAB
Semester   : III

Course Code	22MA3L1	Course Delivery Method	Blended Mode
Credits	3	CIA Marks	30
No. of Lecture Hours / Week	6	Semester End Exam Marks	70
Total Number of Lecture Hours	90	Total Marks	100
Year of Introduction : 2023-24	Year of offering : 2023-24	Year of Revision:	Percentage of Revision :

Course Objectives:

The objective of this course is to develop a various Decision Control Statements, Functions & Modules, Strings, Data Structures, Classes and Objects, Inheritance, Operator Overloading, Pandas, Error and Exception Handling, Handling Files, Databases.

Course Learning Outcomes: Upon successful completion of the course, the student will be able to

CO-NO	COURSE OUTCOME	BTL	PO	PSO
CO1	understand Basics of Python Programming, Decision Control Statements.	K3	1	1
CO2	know the concepts of Data Structures, Functions and Modules.	K3	3	1
CO3	know the concepts of Classes and Objects, Object Oriented Programming.	K3	1	1
CO4	apply Error and Exception Handling.	K3	5	2
CO5	implement Database Access and File Handling.	K3	5	2

CO-PO-PSO MATRIX										
	CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
22MA3L1	CO1	2							2	
	CO2			2					2	
	CO3			2					2	
	CO4							3		3
	CO5							3		3

LIST OF PROGRAMS:

1. Write a program to find total for given number of tens, number of fives, number of twos and number of ones. (CO1, K3)

2. Write a program to enter a number and display its hex and octal equivalent and its square root. (CO1, K3)

3. Write a program to read and print values of variables of different data types. (CO1, K3)

4. Write a program to calculate the distance between two points. (CO1, K3)

5. Write a program to calcuate area of troangle using Heron's formula. (CO1, K3)
   (Hint: Heron's formula is given as: area=sqrt(S*(S-a)*(S-b)*(S-c)))

6. Write a program to calculate the distance between two points. (CO1, K3)

7. Write a program to perform addition, subtraction, multiplication, division, integer division. (CO1, K3)

8. Write a program to find the greatest number from three numbers. (CO1, K3)

9. Write a program to calculate tax given the following conditions: (CO1, K3)
   If income is less than 1,50, 000 then no tax
   If taxable income is Rs.1,50,001 - Rs.300,000 then charge 10% tax
   If taxable income is Rs.3,00,001 - Rs.500,000 then charge 20% tax
   If taxable income is above Rs.5,00,001 then charge 30% tax

10. Write a program to calculate roots of quadratic equcation. (CO1, K3)

11. Write a program to enter the marks of a student in four subjects. Then calculate the total and aggregate, and display the grade obtained by the student. If the student scores an aggregate garter than 75%, then the grade is Distinction. If aggregate is 60>= and <75, then grade is First Division. If the aggregate is 50>= and <60, then the grade is Second Division. If aggregate is 40>= and <50, then the garde is Third Division. Else the grade is Fail. (CO1, L1)

12. Write a program to read the numbers until -1 is encountered. Find the average of positive numbers and negative numbers entered by the user. (CO1, K3)

13. Write a program to find whether the given number is an *Amstrong Number* or *not*. (CO1, K3)

14. Write a program to enter a Decimal Number. Calculate and display its Binary Equivalent. (CO1, K3)

15. Write a program to demonstrate List Operations. (CO2, K3)
    - Access List Items
    - Change Item Value
    - Appended Items
    - Remove Specified Item
    - Loop Through a List

- List Comprehension
- Sort List Alphanumerically
- Copy a List
- Join Two Lists
- List Methods

16. Write a program to demonstrate Tuple Operations.   (CO2, K3)
- Access Tuple Items
- Negative Indexing
- Range of Indexes
- Range of Negative Indexes
- Check if Item Exists
- Update Tuples
- Add Items
- Remove Items
- Unpacking a Tuple
- Using Asterisk*
- Loop Through a Tuple
- Loop Through the Index Numbers
- Using a While Loop:
- Python - Join Tuples
- Join Two Tuples
- Multiply Tuples

17. Write a program to demonstrate Set Operations.   (CO2, K3)
- Access Set Items
- Add Set Items
- Loop Sets
- Join Two Sets
- Keep ONLY the Duplicates
- Keep All, But NOT the Duplicates

18. Write a program to demonstrate Dictionary Operations.   (CO2, K3)
- Ordered or Unordered?
- Changeable
- Duplicates Not Allowed
- Accessing Items
- Change Values

- Update Dictionary
- Adding Items
- Remove Dictionary Items
- Loop Through a Dictionary
- Copy a Dictionary
- Nested Dictionaries

19. Write a program to enter a number and then calculate the *Sum of Its Digits*. (CO2, K3)

20. Write a program to print the *Reverse Number*. (CO2, K3)

21. Write a program to calculate GCD of two numbers. (CO2, K3)

22. Write a program that prompts users to enter numbers. (CO2,K3)

23. Write a program (CO2, K3)

(a) To calculate the factorial of number recursively.

(b) To calculate GCD using the recursive functions.

22. Write a program (CO2, K3)

(a)To calculate exp(x,y) using recursive functions.

(b) To print the Fibonacci Series using Recursion.

23. Write a program make a *Simple Calculator*. (CO2, K3)

24. Write a program that defines a function large in a module which will be used to find large of two values and called from a code in another module. (CO2, K3)

25. Write a program that demonstrate the use of method __init__ . (CO3, K3)

26. Write a program to illustrate the modification of instance variable. (CO3,K3)

27. Write a program for modifying a mutable type attribute. (CO3, K3)

28. Write a program to demonstrate the use of inheritance. (CO3, K3)

29. Write a Program to demonstrate Polymorphism. (CO3, K3)

30. Write a program to demonstrate Polymorphism using Function Overloading. (CO3, K3)

31. Write Program to demonstrate Method Overriding with arguments. (CO3, K3)

32. Write a python program to demonstrate multilevel inheritance. (CO3, K3)

33. Write a program to demonstrate Multipath Inheritance (or) Hybrid Inheritance. (CO3, K3)

34. Write a program to demonstrate Multi Level Inheritance (A person is teacher & having designation HOD) (CO3, K4)

35. Write a program to demonstrate *Multi-Path Inheritance*. (CO3, K4)

36. Write a program to illustrate the concept of Abstract Class. (CO3, K4)

37. Write a program to overload the + operator on a complex object. (CO3, K4)

38. Write a program to handle Divide by Zero Exception. (CO4, K4)

39. Write a program to handle Multiple Errors with One Except statement. (CO4, K4)

40. Write a program with Multiple Except Blocks. (CO4, K4)

41. Write a program to demonstrate else statement in exception handling.   (CO4, K4)

42. Write a python program to illustrate the try...catch...finally in exception handling. (CO4, K4)

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