FACULTY OF COMPUTER APPLICATIONS
Bachelor of Computer Applications

- **Sem.**   : 4
- **Subject Code**   : 05BC3405
- **Subject**   : Python Programming
- **Course Objectives**   :

  1. To be familiarized with the basics of Python Programming
  2. To understand Functions and modules in python
  3. To implement the concepts of File Handling in Python
  4. To learn the concepts of Object-Oriented Programming in Python
  5. To be able to visualize the data in Python.

- **Prerequisites**: OOP concepts, Basic understanding of any Programming Language

Unit No	Topics Covered	No of lectures required
1	**Basics of Python:** • Features of Python • Installing Python • What is IDLE and its basics • Python Built-in Data Types (Numbers, Lists, Tuples, Strings, Dictionaries, Sets, File Objects, etc.) • Indentation and Block Structuring • Comments • Variables and assignments • Getting input from user • Built-in Operators • Control Flow (if-else-if, while, for loop, statement blocks, writing simple programs using all above) • List, Tuples, Dictionary, Strings in Python	8
2	**Functions& Modules:** • Function basics, positional parameters, passing	5

	arguments by parameter name, variable length arguments • Local, nonlocal and global variables • Assigning functions to variables • Lambda expressions / Lambda Functions • Basics of modules • Import statement (different ways of importing module) • Library and third-party modules	
3	**File handling:** • Introduction to Files • Type of Files • Path and path names, absolute and relative path • Manipulating path names • Useful constants and functions • Import files	7
4	**Classes and Object-oriented Programming:** • Basics of Object-Oriented Programming with features • Defining class • Instance variables, methods • Class variables, methods • Static methods and class methods	6
5	**Visualization** • Line Plot, • Bar Plot, • Pie Chart, • Box plot, • Scatter Plot	5

Course Outcomes:

1. Describe basics of Python Programming
2. Design a Python Program using Functions & Modules
3. Develop understanding of File Handling in Python
4. Build their ability to develop Python Programs using Object-Oriented concepts
5. Visualization of various graphs to get insight of the data.

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Course Outcomes – Program Outcomes Mapping Table :

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H							
CO2	H	M					M	
CO3	L	M		M			H	
CO4		H	H			M	H	M
CO5							L	H

Text Book   :

1. **Core Python Programming, Wesley J. Chun, Prentice Hall. Second Edition**
2. **R Nageswara Rao, Core Python Programming, Dreamtech Press, Second Edition**

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Reference Books   :

1. **Python Programming for Absolute Beginners, Michael Dawson, Premier Press, First Edition**
2. **Head First Python, Paul Berry, O'REILLY , First Edition**
3. **The Quick Python Book, Vernon L. Ceder, Manning, First Edition**

Web References :

1. **https://docs.python.org/3/tutorial/**
2. **https://www.tutorialspoint.com/python/index.htm**

App References :

1. **Learn Python Programming Tutorial**
2. **Learn Python**

Syllabus Coverage from text /reference book & web/app reference:

Unit #	Chapter Numbers
1	Text Book 1 - 1,2,3,4,5,6,7,8
2	Text Book 1 - 9,10
3	Text Book 1 - 12,13,14
4	Text Book 1 – 15
5	Text Book 2 – 18

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PRACTICALS

No	List of Practicals
Unit-1	
1	Write a simple Python Program to INPUT two variables and print Addition, Subtraction, Multiplication and Division of both numbers.
2	Write a program to input 2 number and an arithmetic operator. Display the result accordingly.
3	Write a program to input Principal Amount, Rate and Year and display Simple Interest.
4	Write a program to input Principal Amount, Rate and Year and display Compound Interest
5	Write a program to input radius of a circle, and print area of that circle.
Unit-2	
6	Write a program to input a number and print whether it is Even or Odd Number.
7	Write a program to input age of person and display message as follows - If age < 12 print You are Kid - If age between 12 to 17 print You are teenager - If age between 18 to 60 print you are Adult If age > 60 print You are Senior Citizen
8	Write a Python Program to input marks of 4 subjects and display Total, Percentage, Result and Grade. If student is fail (<40) in any subject then Result should be displayed as "FAIL" and Grade should be displayed as "With Held**"

9	Write a program to input a number and display Table of that number.
10	Write a program to print all numbers which are divisible by 7 between 1 to 200.
Unit-3	
11	Write a program to input a number and display Factorial of that number. For example, Factorial of 5 = 5 * 4 * 3 * 2 * 1 = 120.
12	Write a program to input a number and display whether number is prime or not.
13	Write a program which will find all such numbers which are divisible by 7 but are not a multiple of 5, between 2000 and 3200 (both included).
14	Write a program to print all prime numbers between 1 to 100.
15	Write a program to print factorial number using function
Unit-4	
16	Write a program to create list in such a way that it should add square roots of number between 1 to n in the list... At the end, the list shall be displayed. Example : [1, 4, 9, 16, 25, ...]
17	Write a program to create dictionary in such a way that it should add number as a key and square root of number as a value between 1 to n in the dictionary... At the end, the data shall be displayed. Example : {1:1, 2:4, 3:9, 4:16, 5:25, ...}
18	Write a program which accepts a sequence of comma-separated numbers from console and generate a list and a tuple which contains every number.

19	Write a Python Program to create a function which accepts 3 arguments. (2 numbers and one arithmetic operator). Display answer accordingly
20	Write a program to read names from keyboard and store into text file
21	Write a program to read any text file line by line
22	Write a program to read text file having number and display all numbers with total and average at the last. (Manually prepare a file having some numbers and then read it)
23	Write a program to compute the frequency of the words from the input. The output should output after sorting the key alphanumerically. Suppose the following input is supplied to the program: "Hello There this is Python. Python is good" Then output shall be as follows : Hello : 1 There : 1 This : 1 is : 2 Python : 2 Good : 1
24	Write a Python Program that creates a class with function overloading
25	Demo for import module in python
Unit-5	
26	Python program of Barplot with all parameters of a sample data
27	Python program of Pie-chart with all parameters of a sample data.
28	Python program of Line plot with all parameters of a sample data.
29	Python program of Box Plot with all parameters of a sample data.

30	Python program of Scatter Plot with all parameters of a sample data.