Semester Lecture Plan

Name of the college: Government College of Arts, Science and Commerce, Sanquelim Goa

Name of Faculty: Shubha Kamat	**Subject:** Computer Science	

Paper code: CSC221 Introduction to Python Programming	**Program/Course:SYBSc**	**Division: A**

Academic year: 2025- 2026	**Semester: IV**	**Total Lectures: 45**

Course Objectives:
1. To introduce programming concepts using Python.
2. To understand and apply fundamental concepts of Python programming to solve basic computational problems.
3. To demonstrate proficiency in utilising advanced python features like object oriented programming, file handling,exception handling,and integrating python libraries for real world applications.

Course Learning Outcome:
1. Recall and apply Fundamental Python constructs in programming tasks.
2. Understand the foundational concepts of scientific computing including use of libraries for mathematical operations and data analysis.
3. Apply Python programming skills to solve scientific problems, Utilising libraries for scientific computation and analysis.
4. Analyse scientific problems, applying Higher Order Thinking questions and real world applications to develop effective problem solving skills.

Month	Lectures From:	Lectures To:	No. of lectures allotted	Topic, Subtopic to be covered	Learning outcome	ICT Tools	Reference books
December	1/12/2025	6/12/2025	3	Python interpreter, Python Shell, Operators,Variable and assignment statements, script mode,	CO1	/Power point presentation	
	8/12/2025	13/12/2025	3	Functions,Modules,Command line Arguments, Control structures- if condition	CO1	/Power point presentation	

Month	From	To	No.	Topic	CO	Teaching Method	Remarks
				statements, Loops, break, Continue and Pass statements,			
	15/12/2025	23/12/2025	3	Data types: Boolean, Numbers,coercing integers to floats and vice versa, numerical operations.	CO1	/Power point presentation	-----do-------
January	2/1/2026	10/1/2026	3	Lists, tuples, sets, Dictionaries	CO1	/Power point presentation	-----do-------
	12/1/2026	17/1/2026	3	Strings, Formatting strings, Unicode, docString, Packages, scope,recursion	CO2	/Power point presentation	-----do-------
	19/1/2026	24/1/2026	3	Object oriented concepts, Class, Object,abstract data Types	CO2,CO4	/Power point presentation	-----do-------
	26/1/2026	31/1/2026	3	Polymorphism, encapsulation,	CO2,CO4	/Power point presentation	-----do-------
February	2/2/2026	7/2/2026	3	Modifier,accessor methods, static method, adding methods dynamically	CO2	/Power point presentation	-----do-------
	9/2/2026	14/2/2026	3	Composition,. inheritance	CO2.CO4	/Power point presentation	-----do-------
	16/2/2026	21/2/2026	3	Builtin functions for classes.	CO2.CO3	/Power point presentation	-----do-------
	23/2/2026	28/2/2026	3	File Handling	CO2,CO3	/Power point presentation	-----do-------
March	2/3/2026	7/3/2026	3	Exception Handling	CO2,CO3	/Power point presentation	-----do-------
	9/3/2026	14/3/2026	3	Applications of Python, use of Python libraries such as Matplotlib,	CO2, CO3	/Power point presentation	-----do-------
	16/3/2026	21/3/2026	3	Pandas	CO4	/Power point presentation	-----do-------
	23/3/2026	28/3/2026	3	Using databases with Python	CO4	/Power point presentation	-----do-------
	30/3/2026	31/3/2026	1	Revision		/Power point presentation	-----do-------

Week	Content
1 and 2	* Function to return sum of digits of a number * Function returning True or False after tesing given number is Palindrome or not * Function that takes radius as argument and calculates area and circumference
3 and 4	* Perform different actions on a list ➥ Even valued elements ➥ Odd valued elements ➥ Sum and average of elements of an array ➥ Calculate maximum/ minimum element ➥ Removing Duplicates ➥ Printing array in reverse order * Function generating list ➥ With values are squares of numbers from 1-20 ➥ Print all except first five elements
5 and 6	* Program to accept lines and Printing ➥ with all characters capital. ➥ Total number of letters and digits ➥ Frequency of each letter using Dictionary. * With array of integers, find two numbers, that they add up to a specific target number.
7, 8 and 9	* Recursive function for multiplication of two positive numbers,using successive addition. * From a list of strings, return count of strings with length 2 or more and first and last characters are same.
10 and 11	* Exercises on Object oriented principles like base class Vehicle
12 and 13	* Excercises on file handling like ➥ File Copying ➥ Counting number of vowels in the file
14 and 15	* Excercises on file handling like ➥ Counting alphabets,blank spaces,lowercase letters,Uppercase letters Number of words starting with vowel, number of occurrence of word" beautiful" ➥ Creating third file with price per unt weight taking two files weight and price