Lecture Delivery Plan (Blowup or LDP)

Accredited with A+ Grade by NAAC
12-B Status from UGC

Course: B.Tech (CSE All Branch) | **Year:** 1st Year | **Sem:** 1st Semester(Odd)

Subject Name & Code: Python PROGRAMMING **BCSG 1001** **Session:** 2023-24

Week/Hrs: 3Lectures/Week

Name of Faculty: Mohd Amir Khan **GLA118309**

Prerequisite: There are no prerequisites for Python Programming still, it helps to have Basic Compputer knowledge before starting the course because anyone starting to learn computer programming needs basic computer skills. Python is a cross-platform language, so whether you use a macOS, Windows, or even Linux makes no difference.

Course Description:

Python course is a comprehensive, introductory program designed to develop proficiency in the Python programming language. It covers the fundamental concepts of Python syntax and usage, basic data structures, input/output operations, and more. The course provides an introduction to the Python language, development environment, text editors, and libraries. It also focuses on developing algorithms and data structures and introducing object-oriented programming as a way of dealing with large applications. Finally, the course covers debugging, optimization, and profiling of Python code. This course is designed to give students a solid foundation in the Python language and the development of powerful and efficient applications

Course Outcomes

After completion of course, the student will be able to:

- Understand to solve problems with smaller Lines of Code using Python as compared to other programming languages
- Use Object-Oriented Programming concepts while programming in Python
- Build basic programs using fundamental programming constructs like variables, conditional logic, looping, and functions
- Use in-built packages defined in Python
- Gain knowledge of Python visualization libraries
- Create a plot of retrieved data
- Advance searching operations with String using regular expression
- Uninterrupted flow of application in python with Exception Handling

Course Requirements:

Students are required to attend lectures and labs. Lecture handouts and lab notes will be available before/after the class. Students are expected to participate in class discussions. In the event of illness or emergency, contact your instructor IN ADVANCE to determine whether special arrangements are possible.

Projects:

I will announce projects usually based on the chapters/materials covered in class. Due dates will be specified accordingly. Projects must be submitted as specified to be considered on-time. Late assignments are accepted with the following penalties: -10% if submitted the next day it is due, and -10% for each day late after that. Only GLA officials e-mail submissions accepted.

Lect No	Module	Topic	Pre Reading Material	Subtopics	Post Reading Material Sub Topics	Learning Methodology (Activity Name)	Learning Outcomes(Chapter wise)	Instructor
1		Overview of the basic programming	http://surl.li/jjpbr	Computer basics and its real uses	Computing Devices which work on input-process-output	Class Participation PPT + Chalk & Board	Identify, analyze, develop, implement, verify and document the requirements for a Programming environment.	Mohd Amir Khan
2			http://surl.li/jjuhr	How computer execute the Applications	How Python Execute the Code and IDLE	Class Participation PPT + Chalk & Board	Understanding foundation concepts of information and information processing in computer systems: a matter of information, data representation, coding systems	
3		Computer Algorithm and Flow chart	http://surl.li/jjunc	The computer problems and its solutions.	Examples of Computer Algorithms like: tower of hanoi, GCD etc.	Class Participation and Ask Questions	In Algorithm the problem is broken down into smaller pieces or steps hence, it is easier for the programmer to convert it into an actual program	Mohd Amir Khan
4				Pseudo Code and Flow Chart	Pseudo codefive components. • Variables: • Assignment: • Input/output: • Selection: • Repetition:	Class Participation and Ask Questions	Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it	
5		Introduction to the Python.	http://surl.li/jjynq	Python possible applications, What is the Object in Python?	Python in Web development Data science (including machine learning) Scripting (task automation, such as text processing or simulation of typical user actions)	Projector and BOARD	eveloping websites and software, task automation, data analysis, and data visualization	Mohd Amir Khan
6		Operators in Python	http://surl.li/jknqc	logical Operators and bitwise operators	Short-Circuit Evaluation	Class Participation PPT + Chalk & Board	manipulate individual data items and return a result	Mohd Amir Khan
7		Flow Control Statements	http://surl.li/jkgqx	if-else and its combinations arrangements	if-else in a single lines and scope of blocks	Class Participation PPT + Chalk & Board	allow you to deploy the flow of execution in your code	Mohd Amir Khan
8				Control Statements in Python Control Flow Expression	Nested if else	Class Participation PPT + Chalk & Board		Mohd Amir Khan
9	**Module 1**	Looping	http://surl.li/jkgqx	repetition of statements	patterns printing	Class Participation and Assignments	Code reusability Using loops, able to don't write the same code again and again. Using loops, we can traverse over the elements of data structures (array or linked lists).	Mohd Amir Khan
10				nested loop Break statement Continue statement Pass statement	Output based questions with else clause	Class Participation and Assignments		Mohd Amir Khan

11		Live Coding Session	Printed Sheet (Hard Copy)	Different mode of execution of Python Program The Hello World program, Basic mathematical formulas like: Volume of cylinder, etc	Water tank Problem Mathematical Control Structure based Proglem	Class Participation and Quiz	Flow in a coding	Mohd Amir Khan
12		Data Structure in Python	http://surl.li/jkpfl http://surl.li/jkpfr	Numbers in Python int, float, complex Number System in Computer	Practice Sheet4	Class Participation and Quiz	help us to process the data easily. Each data structure provides a particular way of organizing data so it can be accessed efficiently, depending on your use case	Mohd Amir Khan
13				Overview of All the Data Types with basic operations	Practice Sheet5	Class Participation and Assignments		Mohd Amir Khan
14				String in Python	Practice Sheet6	Class Participation and Assignments		Mohd Amir Khan
15				List/Tuple in Python	Practice Sheet7	Class Participation and Assignments		Mohd Amir Khan
16		String Class in Python Methods in String	http://surl.li/jkpia	ASCII String and Unicode String Unicode String and string construct	String Methods	Class Participation and Quiz	Operations witrh String Advance searching operation in String	Mohd Amir Khan
17		Methods in List/Tuple	http://surl.li/jkpfl http://surl.li/jkpfr	Read List from user and String format specifiers, f'tag string Mutable vs Immutable Data Types	Contest based on Array	Class Participation and Quiz	Operations with Array	Mohd Amir Khan
18		List Class in Python	http://surl.li/jkpfl	Methods in a list: remove, insert, append, copy etc	Input list from user use of eval built-in functions	Class Participation and Quiz	Can Solve matrix Problem Advance data manipulation using Array	Mohd Amir Khan
19		Multi-Dimensional List	http://surl.li/jkpfr	List Comprehension	Matrix Mathematical Operations	Class Participation and Quiz		Mohd Amir Khan
20		Tuple class in Python	Immutable Data type	fixed object length Objects and tuple methods	List in a Tuple and vice a versa	Class Participation and Quiz		Mohd Amir Khan
21		Dict Class in Python	https://github.com/GLA-Python/python3.10.0/blob/main/Topicwise%20PDF/dict.pdf	key value Pairs in Dictionary and key data types methods in dictionary	Input Dictionary from user and problems solutions	Class Participation and Quiz	Json data handler Large amount of data with key value pare	Mohd Amir Khan
22		Sets in Python	python3.10.0/Topicwise PDF/set.pdf at main · GLA-Python/python3.10.0 · GitHub	Unique items Collections of immutable data types methods in sets	Initialization of the set and methametical operations	Class Participation and Quiz	efficiently remove duplicate values from a collection like a list and to perform common math operations like unions and intersections. Some of the challenges people often encounter are when to use the various data types.	Mohd Amir Khan
23		All Built-in Functions in Python	http://surl.li/jkprp	Standard input and output Built-in Functions	functions which work on Python collections or sequential Data	Class Participation and Assignments	They make the code shorter, cleaner, modular, and organized. Functions can be used anywhere in the program, making them reusable.	Mohd Amir Khan
24				higher order functions in python	return type of built-in functions	Class Participation and Assignments		Mohd Amir Khan
25		User Define Function in Python	http://surl.li/jkprp	Function Header and initialization	name of the kewords used in Python Function Definition	Class Participation PPT + Chalk & Board		Mohd Amir Khan
26				Type of Arguments and return type	Arbitrary parameters variable length arguments	Class Participation PPT + Chalk & Board		Mohd Amir Khan
27				Scope of Variable in Python Function	nonlocal scope in functions	Class Participation PPT + Chalk & Board		Mohd Amir Khan
28		Overview of All collections in Python with Function		Sequential data vs Collections Iteration with Sequential Data	Contest on Hackerrank	Class Participation and Quiz	Hands on Experience	Mohd Amir Khan
29	**Module 2**	Modules in Python	http://surl.li/jkpyk	Module basics and user define module with live Example	use of keyword import, as, from	Class Participation and Quiz	Reusability : Working with modules makes the code reusable. Simplicity: Module focuses on a small proportion of the problem, rather than focusing on the entire problem. Scoping: A separate namespace is defined by a module that helps to avoid collisions between identifiers	Mohd Amir Khan
30				numpy basics	ndarray based quiz and general question	Class Participation and Quiz		Mohd Amir Khan
31				numpy module functions	Contest based on numpy	Class Participation and Quiz		Mohd Amir Khan
32				math module, random module	Game Questions based on Random	Class Participation and Quiz		Mohd Amir Khan
33		User define modules	user define Python file	import user define module	packages in Python	Class Participation and Quiz	Hands on Experience	Mohd Amir Khan

34		File Handling	http://surl.li/jkpzm	Use of Open function working with Text file	Difference between Binary File and Text File	Class Participation and Quiz	llows us to store data that can be accessed by our code for various purposes like reading, writing, modifying and deleting data from files. It also allows us to treat a file as an object so that all these operations can be performed on the file	Mohd Amir Khan
35				Reading/Writing/Append functions in file handling	How to Edit the Text file	Class Participation and Quiz		Mohd Amir Khan
36		Exception Handling	http://surl.li/jkqfp	How Excepptions Handle. Basic Structure of Exception Handling and their Types	use of keyword finally, try, else, except	Class Participation and Quiz	Ensures the Continuity of the Program. ... Enhances the Robustness of the Program. ... Improves the Readability & Maintainability of the Code. ... Allows for more Accurate Error Reporting. ... Facilitates Debugging and Troubleshooting.	Mohd Amir Khan
37				All Buit-in Exceptions	Name of Exceptions during the sample programs	Class Participation and Quiz		Mohd Amir Khan
38		Regular Expression in Python	http://surl.li/jkqkd	Introduction, Regex Functions in Python3, Meta characters	grouping of similar patterns	Class Participation and Quiz	Regular expressions are useful in search and replace operations matching (Does this (entire) string match this pattern?) searching (Is this pattern found within this string?)	Mohd Amir Khan
39				Function search, match, find and regex object	find the perticular word in a raw data	Class Participation and Quiz		Mohd Amir Khan
40		Project for beginner	http://surl.li/jkqlm	Guess the number Tic-Tac-Toe	python real Application	Class Participation PPT	real use of Python Application Flow Hands on Experience	Mohd Amir Khan

References

1. https://exercism.io
2. https://hyperskill.org
3. https://github.com/GLA-Python/learn-python39
4. https://www.python.org/