

**Course Name: Fundamental Course on Python (30hrs)**

**Date: 1st August, 2023– 14th August, 2023**

### **Curriculum/Course Outline:**

#### **Introduction to Programming**

The basic Model of computation, Algorithms, Programming Languages, compilation, testing & debugging and documentation. Introduction to Python, objects, expressions, variables, IDE

#### **Introduction to Python**

Python Introduction, Technical Strength of Python, Introduction to Python Interpreter and program execution, Using Comments, Literals, Constants, Python's Built-in Data types, Numbers (Integers, Floats, Complex Numbers, Real, Sets), **Operators** (Arithmetic, Relational, Logical, Bitwise operators and their precedence), Printing statements, Simple 'Python' programs, Accepting input from Console.

#### **Expressions and Python Statements**

Assignment statement, expressions, Conditional statements: if, if-else, if-elif-else; simple programs

#### **Control Flow Statement**

Notion of iterative computation and control flow –range function, While Statement, For loop, break statement, Continue Statement, Pass statement, else, assert

#### **Functions- User Defined**

Top-down approach of problem solving, Modular programming and functions, Function parameters, Local variables, the Return statement, global statement, Default argument values

## **In built Data Structures**

Lists, tuples and dictionary, (Slicing, Indexing, Concatenation, other operations on Sequence datatype), concept of mutability, Examples to include finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary

## **In-Built Functions**

Library function-input(), eval(),print(), String Functions: count(), find(), rfind(), capitalize(), title(), lower(), upper(), swapcase(), islower(), isupper(), istitle(), replace(), strip(), lstrip(),rstrip(), aplit(), partition(), join(), isspace(), isalpha(), isdigit(), isalnum(), startswith(), endswith(), encode(), decode(), String: Slicing, Membership, Pattern Matching, Numeric Functions: eval(), max(), min(), pow(), round(), int(), random(), ceil(), floor(), sqrt()

### **Schedule of Add on Course:**

| Date                          | Resource Person   |
|-------------------------------|-------------------|
| 1 <sup>st</sup> August, 2023  | Mr. Parveen Kumar |
| 2 <sup>nd</sup> August, 2023  | Mr. Parveen Kumar |
| 3 <sup>rd</sup> August, 2023  | Mr. Sushil Kumar  |
| 4 <sup>th</sup> August, 2023  | Mr. Sushil Kumar  |
| 5 <sup>th</sup> August, 2023  | Dr. Neelam Dabas  |
| 6 <sup>th</sup> August, 2023  | Holiday           |
| 7 <sup>th</sup> August, 2023  | Dr. Neelam Dabas  |
| 8 <sup>th</sup> August, 2023  | Dr. Neelam Dabas  |
| 9 <sup>th</sup> August, 2023  | Dr. Pranav Dass   |
| 10 <sup>th</sup> August, 2023 | Dr. Pranav Dass   |
| 11 <sup>th</sup> August, 2023 | Dr. Pranav Dass   |
| 12 <sup>th</sup> August, 2023 | Dr. Leena Singh   |

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|-------------------------------|-----------------|
| 13 <sup>th</sup> August, 2023 | Holiday         |
| 14 <sup>th</sup> August, 2023 | Dr. Leena Singh |
| 17 <sup>th</sup> August, 2023 | Test            |

The Department of Computer Science and IQAC, Shyam Lal College organized a 30hour Add on Course on “Fundamental Course on Python” from 1<sup>st</sup> August, 2023 to 14<sup>th</sup> August, 2023. 29 students registered in the Add on course. This online add on course started with the inaugural session, which was held on 1<sup>st</sup> August, 2023 on Google Meet. The session was started by Dr. Neelam Dabas, TIC Department of Computer science. She welcomed Prof. Rabi Narayan Kar, Principal SLC. Principal Sir talked about the importance of Python in today's time. Dr. Neelam also thanked principal sir for his continuous support and encouragement. She added that this add on course is also the inspiration and motivation of our principal sir. She also welcomed other resource persons, Mr. Sushil Kumar, Dr. Pranav Dass, Dr. Leena Singh and Mr. Parveen Kumar, the faculties from Department of Computer Science, Shyam Lal College. After inaugural, the first session was started by Mr. Parveen Kumar. He started with the basic Model of computation, Algorithms, Programming Languages, compilation, testing & debugging and documentation. Introduction to Python, objects, expressions, variables, IDE. Day 2 session was also taken by Mr. Parveen Kumar. He covered Python Introduction, Technical Strength of Python, Introduction to Python Interpreter and program execution, Using Comments, Literals, Constants, Python's Built-in Data types, Numbers (Integers, Floats, Complex Numbers, Real, Sets) and operators. Day 3 session was taken by Mr. Sushil Kumar, he covered the Expressions and Python Statements and started the conditional statements. Day 4 session was again taken by Mr. Sushil Kumar, he covered the Control Flow Statement (for and while). Day 5 session was covered by Dr. Neelam Dabas, the topics covered by her was strings. Day 7 was holiday and Day 8 session was taken by Dr. Neelam Dabas, she continued with the built in functions of strings and introduced the concept of list in python. Day 9 session was taken by Dr. Neelam Dabas

and she continued with the List concepts and its built-in functions. Day 10, 11 and 12 sessions were taken by Dr. Pranav Dass. The topics covered Tuples, Dictionary; User-defined Functions and built-in functions of tuples and dictionary. Day 12 and Day 14 sessions were taken by Dr. Leena Singh. She covered the object-oriented programming with Python.

This add-on course was followed by a test of the registered students. MCQs-based test was held on 17<sup>th</sup> August, 2023 on Google Classroom. The students had to submit the paper within the stipulated time.

### **Add on Course Learning Outcomes**

This course was designed as the course in programming to develop problem-solving skills. The course was focused on modularity, reusability, code documentation, and debugging skills. After successful completion of the course, students are able to:

1. Describe the components of a computer and the notion of an algorithm.
2. Apply suitable programming constructs and data structures to solve a problem.
3. Develop, document, and debug modular Python programs.