FAIZ COMPUTER INSTITUTE

PYTHON SYLLABUS

1. Python Basics

- Overview of Python and its applications
- Installing Python and setting up the environment (IDLE, VS Code, Jupyter Notebook)
- Running Python scripts

2. Basic Syntax and Data Types

- Variables and constants
- Data types: strings, integers, floats, booleans
- Basic operations: arithmetic, comparison, logical operators

3. Control Structures

- Conditional statements (if, else, elif)
- Loops (for, while)
- Nested loops and conditional statements

4. Strings

- String methods and operations
- String formatting (f-strings, format() method)
- Slicing and indexing

5. Lists and Tuples

- Creating and manipulating lists
- List methods (append, pop, sort, reverse)
- Introduction to tuples and their usage

6. Dictionaries and Sets

- Creating and using dictionaries
- Dictionary methods (keys, values, items)
- Sets and their operations (union, intersection, difference)

7. Functions

- Defining functions
- Parameters, arguments, and return values

- Lambda functions

8. File Handling

- Reading and writing files (open, read, write, with statement)
- Working with CSV files

9. Modules and Packages

- Importing modules (math, random, os, etc.)
- Installing external libraries using pip
- Creating your own modules

10. Error and Exception Handling

- Understanding exceptions
- Try-except blocks
- Raising and handling custom exceptions

11. Comprehensions

- List comprehensions
- Dictionary comprehensions
- Set comprehensions

12. Working with Libraries

- NumPy: Arrays, basic operations, indexing, and slicing
- Pandas: DataFrames, Series, reading/writing CSV files, basic data manipulation
- Matplotlib/Seaborn: Data visualization basics

13. Regular Expressions

- Basics of regex
- Matching patterns using the re module
- Practical examples with regex

14. Iterators and Generators

- Understanding iterators
- Creating generators using yield
- Practical use cases

15. Advanced Concepts

- Decorators and closures
- Context managers (with statement)
- Multithreading and multiprocessing basics

16. Data Structures and Algorithms in Python (Optional)

- Basic algorithms: sorting and searching
- Data structures: stacks, queues, linked lists

17. Final Projects

- Build a to-do list application with file handling
- Develop a weather app using an API
- Create a personal expense tracker using Pandas
- Data visualization project using Matplotlib/Seaborn
- Web scraping with BeautifulSoup or Scrapy