

Detailed Syllabus

- **Introduction to Python:** Basics of Python programming language, data types, variables, operators, and control statements.
- **Functions:** Defining and calling functions, parameters, return statements, and built-in functions.
- **Lists:** Creating, accessing, and manipulating lists, list methods, and list comprehension.
- **Strings:** String manipulation, slicing, formatting, and string methods.
- **Conditionals:** If, elif, and else statements, and conditional expressions.
- **Loops:** For and while loops, iterating through sequences, and controlling loops.
- **Dictionaries and Sets:** Creating and manipulating dictionaries and sets, accessing values, and iterating over items.
- **File Input and Output:** Reading and writing text files, file modes, and file handling.
- **Exception Handling:** Try, except, else, and finally statements, and handling errors and exceptions.
- **Object-Oriented Programming:** Introduction to classes and objects, creating classes and objects, inheritance, and encapsulation.
- **Modules and Packages:** Importing and using modules, creating and importing packages, and module search paths.
- **Advanced Topics:** Regular expressions, lambda functions, map, filter, and reduce functions, and decorators. Basic Data Structures: Stacks, queues, linked lists, and trees.
- **Functional Programming:** Higher-order functions, recursion, and closures.
- **Input Validation:** Validating user input, error handling, and sanitizing input data.
- **Regular Expressions:** Introduction to regular expressions, pattern matching, and search methods.
- **Data Science Libraries:** Introduction to popular data science libraries such as NumPy, Pandas, and Matplotlib.
- **Web Scraping:** Introduction to web scraping, HTTP requests, and HTML parsing.
- **Database Access:** Connecting to databases, querying and updating data, and using SQLite.
- **Networking:** Basic concepts of networking, sockets, and communicating over networks.
- **GUI Programming:** Introduction to GUI programming with Tkinter or other Python GUI libraries.
- **Web Development:** Introduction to web development with Flask or Django frameworks.