Full Python Syllabus

1. Introduction to Python

- History and features of Python
- Installing Python and IDEs
- First Python program
- Python syntax and keywords
- Comments and documentation

2. Python Basics

- Variables and data types
- Type conversion
- Input/output operations
- Operators (Arithmetic, Comparison, Logical, Bitwise)

3. Control Flow

- Conditional statements (if, if-else, if-elif-else)
- Loops (for, while)
- Loop control statements (break, continue, pass)

4. Functions and Modules

- Defining and calling functions
- Function arguments and return values
- Lambda functions
- Variable scope and lifetime
- Importing modules and using built-in functions
- Creating and using custom modules

5. Data Structures

- Strings and string methods
- Lists, Tuples, Sets, Dictionaries
- List comprehensions and dictionary comprehensions

6. File Handling

- Opening and closing files
- Reading and writing files
- Working with file paths
- With statement (context manager)

7. Object-Oriented Programming (OOP)

- Classes and objects
- Constructor (__init__)
- Instance and class variables
- Methods (instance, class, static)
- Inheritance and Polymorphism
- Encapsulation and Abstraction

8. Exception Handling

- Errors and exceptions
- Try, except, else, finally blocks
- Raising exceptions
- Custom exception classes

9. Advanced Topics

- Iterators and generators
- Decorators
- Context managers
- Regular expressions

- Working with dates and times

- Multithreading and multiprocessing (basics)

10. Working with Libraries

- NumPy and Pandas (basics)

- Matplotlib and Seaborn (basics)

- Requests and BeautifulSoup (web scraping basics)

11. Virtual Environments and Packaging

- Creating virtual environments

- Installing and managing packages using pip

- Creating and publishing packages

12. Introduction to Web Development with Flask

- Setting up Flask

- Creating routes and templates

- Form handling and validation

- Connecting with databases (using Flask with MongoDB or SQLAlchemy)