

Python Full Syllabus and Course Overview

Importance of Python in Real Life and Industry

Python is one of the most versatile and powerful programming languages used in various industries. It is widely adopted in web development, data analysis, machine learning, automation, and more. With its easy-to-read syntax and a vast array of libraries and frameworks, Python has become a popular choice for developers and companies alike. Whether it's automating tasks, developing applications, or analyzing data, Python is indispensable for modern software development.

1. Introduction to Python

- Basics of Python Programming
- Python Syntax and Semantics
- Variables, Data Types, and Operators

2. Control Flow

- Conditional Statements (if, elif, else)
- Loops (for, while)
- Exception Handling
- Functions and Recursion

3. Data Structures

- Lists, Tuples, Sets, and Dictionaries
- List Comprehensions
- String Operations
- Sorting and Searching Algorithms

4. Object-Oriented Programming (OOP)

- Classes and Objects
- Inheritance, Encapsulation, Polymorphism
- Magic Methods
- OOP Best Practices

5. Modules and Packages

- Importing Modules
- Creating and Using Packages
- Virtual Environments
- Commonly Used Python Libraries (e.g., NumPy, Pandas, Matplotlib)

6. File Handling

- Reading and Writing Files
- Working with CSV and JSON Files
- File I/O Operations
- Error Handling with Files

7. Working with APIs

- Introduction to APIs
- Consuming REST APIs using Python
- Sending Requests and Handling Responses
- Authentication and API Security

8. Introduction to Web Development with Python

- Overview of Flask and Django
- Setting up a Web Server
- Creating Basic Web Applications
- Web Scraping using Python (BeautifulSoup, Scrapy)

9. Data Science and Machine Learning with Python

- Introduction to Data Science
- Data Analysis with Pandas and NumPy
- Data Visualization with Matplotlib and Seaborn
- Introduction to Machine Learning with scikit-learn