

Python for Data Science

Course Content

Lesson 1 - Introduction to Python Programming

- Python syntax and semantics
- Working in Jupyter notebooks
- Python IDEs and environments

Lesson 2 - Data Types and Data Structures

- Strings, lists, tuples, dictionaries
- Mutable vs immutable types
- Data structure manipulation

Lesson 3 - Control Flow and Functions

- Conditional statements and loops
- Writing reusable functions
- Lambda functions and list comprehensions

Lesson 4 - Working with Libraries: NumPy, Pandas

- Array manipulation with NumPy
- DataFrames and Series in Pandas
- Indexing and slicing data

Lesson 5 - File Handling and Data I/O

- Reading and writing CSV, JSON
- Introduction to file paths
- Exception handling in I/O

Lesson 6 - Data Cleaning and Preprocessing

- Handling missing values
- Data type conversions
- Outlier detection and treatment

Lesson 7 - Introduction to APIs and Web Scraping

- REST APIs with Python
- Basics of BeautifulSoup and requests
- Ethical considerations

Lesson 8 - Basic Data Visualization in Python

- Matplotlib essentials
- Seaborn for statistical plots
- Styling and customizing plots

Lesson 9 - Exploratory Data Analysis with Python

- Descriptive statistics
- Data summaries and correlations
- Hypothesis generation

Lesson 10 - Mini Project in Python for Data Science

- Data loading
- Analysis and visualization
- Report writing

Capstone Project

- Integrate end-to-end data ingestion, cleaning, analysis, and visualization.