

## Python for AI & Data Science

**Duration:** 2 Months (Mon–Fri, ~80–90 Hours)

**Mode:** Live Online / Classroom

**Tools & Technologies:** Python, Jupyter Notebook, NumPy, Pandas, Matplotlib, Seaborn

### Syllabus

#### Week 1

- Python refresher and environment setup
- Data types, variables, operators, loops, functions
- Overview of Python libraries ecosystem
- Assignment at end of week

#### Week 2

- Advanced Python: OOP, file handling, error handling
- Working with modules and packages
- Assignment at end of week

#### Week 3

- NumPy for numerical computing
- Arrays, indexing, broadcasting
- Assignment at end of week

#### Week 4

- Pandas for data manipulation
- DataFrames, joins, groupby, aggregations
- Assignment at end of week
- Mock Interview 1

#### Week 5

- Matplotlib & Seaborn for data visualization
- Histograms, scatter plots, heatmaps
- Assignment at end of week

#### Week 6

- Data wrangling & cleaning techniques
- Handling missing values, duplicates, outliers
- Assignment at end of week

**Week 7**

- Exploratory Data Analysis project
- EDA on real-world dataset
- Assignment at end of week

**Week 8**

- Applied statistics for AI
- Final project presentation
- Mock Interview 2
- Assignment at end of week

**Learning Outcomes**

- Master Python programming for AI/ML
- Use NumPy and Pandas for large datasets
- Clean, preprocess, and visualize data
- Apply statistics in AI projects
- Complete an EDA project and present results