

Python for AI & Machine Learning Foundations

Start from Python fundamentals and finish with your first end-to-end machine learning project - built, documented and ready for GitHub.



8 weeks

COURSE DURATION

70 hours

GUIDED LEARNING

2 projects

PORTFOLIO

ABOUT THE ACADEMY

Practical learning. Work you can demonstrate.

Brightnest AI Academy brings live instruction, guided practice and career preparation together for individuals and teams.

23

FOCUSED COURSES

6

FLAGSHIP PROGRAMMES

Noida

ACADEMY LOCATION

Our approach

1

Learn

Understand concepts through live instruction and current examples.

2

Build

Apply learning through labs, assignments and guided projects.

3

Explain

Document decisions, results, trade-offs and limitations.

4

Prepare

Connect completed work with CVs, interviews and workplace conversations.

PEOPLE BEHIND THE ACADEMY

Meet Ranjeet Kumar



ACADEMY ADVISER

Ranjeet Kumar

Innovation & Growth Leader

15+ years

Experience in data, artificial intelligence and machine learning leadership.

Areas of expertise

- Data science and machine learning solution leadership
- AI product strategy and scalable data platforms
- Technology team leadership and mentorship
- Practical AI and data adoption for business transformation

Education

Master of Information Systems, Anna University, Chennai
Bachelor of Computer Science Engineering



COURSE OVERVIEW

Build a practical foundation

Build Python, data, and core AI foundations as a beginner. Progress from Python Setup and Developer Workflow to AI Foundations Capstone through guided labs, assessed projects, and portfolio evidence.

Beginner Python knowledge becomes valuable when learners can clean data, write reusable code, build a first model, and explain the result.

Who this course is for

Aspiring AI/ML learners, students, analysts moving into Python and technical professionals starting AI.

Before you begin

No prior programming experience is required. Basic computer literacy and a willingness to practise coding are recommended.

Explore this brochure

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LEARNING OUTCOMES

What you will be able to do

01

Create a clean Python project with venv, Git repository, notebook, CLI script and README.

02

Build a data-cleaning CLI that validates inputs, handles errors and exports clean records.

03

Solve data transformation challenges using efficient Python collections and generators.

04

Refactor a procedural analytics script into a tested reusable Python package.

05

Clean and profile a messy customer dataset and produce an analysis-ready feature table.

06

Train and evaluate baseline classification and regression models with pipelines.

07

Build a beginner AI solution such as churn, demand or lead-scoring prediction and present results.

From practice to portfolio

Working code, clear documentation and evidence of testing or evaluation.



COURSE CURRICULUM

Curriculum | Modules 1-2

8 modules · 70 guided learning hours · 8 weeks

01 Python Setup and Developer Workflow

6 hours

TOPICS

Python 3 syntax · VS Code/Jupyter setup · Virtual environments · Packages · Git basics · Notebooks versus scripts · Debugging workflow · Coding conventions

PRACTICAL WORK

Create a clean Python project with venv, Git repository, notebook, CLI script and README.

Tools: Python 3, VS Code, Jupyter, Git, GitHub

Assessment: Hands-on setup check and quiz

Portfolio evidence: Public starter repository with documented environment

02 Core Python Programming

8 hours

TOPICS

Variables · Operators · Strings · Control flow · Loops · Functions · Scope · Exceptions · File handling · Comprehensions · Reusable utility functions

PRACTICAL WORK

Build a data-cleaning CLI that validates inputs, handles errors and exports clean records.

Tools: Python

Assessment: Coding exercises and lab review

Portfolio evidence: CLI data utility



COURSE CURRICULUM

Curriculum | Modules 3-4

8 modules · 70 guided learning hours · 8 weeks

03 Data Structures and Pythonic Problem Solving

8 hours

TOPICS

Lists · Tuples · Dictionaries · Sets · Iterators · Generators · Sorting · Lambda functions · Complexity intuition · Clean-code patterns

PRACTICAL WORK

Solve data transformation challenges using efficient Python collections and generators.

Tools: Python

Assessment: Timed coding checkpoint

Portfolio evidence: Problem-solving notebook

04 Object-Oriented Python and Packaging

8 hours

TOPICS

Classes · Objects · Inheritance · Composition · Dataclasses · Modules · Packages · Type hints · Docstrings · Logging · Unit-testable design

PRACTICAL WORK

Refactor a procedural analytics script into a tested reusable Python package.

Tools: Python, pytest

Assessment: Code review and unit tests

Portfolio evidence: Reusable Python package



COURSE CURRICULUM

Curriculum | Modules 5-6

8 modules · 70 guided learning hours · 8 weeks

05 NumPy, pandas and Data Preparation

10 hours

TOPICS

Arrays · Vectorisation · DataFrames · Indexing · Joins · Groupby · Missing values · Dates · Text cleanup · Reshaping · Feature-ready datasets

PRACTICAL WORK

Clean and profile a messy customer dataset and produce an analysis-ready feature table.

Tools: NumPy, pandas, Jupyter

Assessment: Data-wrangling lab

Portfolio evidence: Data preparation notebook

06 Math and Statistics for AI

8 hours

TOPICS

Vectors and matrices · Dot products · Distributions · Mean/variance · Probability · Correlation · Sampling · Train/test intuition · Optimization and gradient intuition

PRACTICAL WORK

Implement matrix operations and statistical diagnostics used in ML preprocessing.

Tools: NumPy, SciPy

Assessment: Concept quiz and notebook

Portfolio evidence: AI math reference notebook



COURSE CURRICULUM

Curriculum | Modules 7-8

8 modules · 70 guided learning hours · 8 weeks

07 Machine Learning Workflow Foundations

10 hours

TOPICS

Problem framing · Features and labels · Regression versus classification · scikit-learn workflow · Preprocessing · Baseline models · Metrics · Overfitting · Reproducibility

PRACTICAL WORK

Train and evaluate baseline classification and regression models with pipelines.

Tools: scikit-learn, pandas

Assessment: Mini ML project

Portfolio evidence: First end-to-end ML notebook

08 AI Foundations Capstone

12 hours

TOPICS

End-to-end workflow from raw data to model-ready dataset · Model selection · Evaluation · Documentation · Responsible-use notes · GitHub presentation

PRACTICAL WORK

Build a beginner AI solution such as churn, demand or lead-scoring prediction and present results.

Tools: Python, pandas, scikit-learn, GitHub

Assessment: Capstone rubric and presentation

Portfolio evidence: Portfolio-ready AI foundations project

APPLIED PORTFOLIO

Projects you will build

Two portfolio projects, supported by practical work throughout the modules.

PORTFOLIO PROJECT 1

Customer Churn Starter AI

Clean customer data, engineer basic features, train a baseline classifier and explain results.

DELIVERABLES

Data cleaning notebook · Model notebook · README · Metric summary · 5-minute demo

PORTFOLIO PROJECT 2

Demand Forecasting Foundations

Prepare historical sales data and build a baseline predictive model with error analysis.

DELIVERABLES

Feature table · Model comparison · Error analysis · Business recommendations

Capstone focus: an end-to-end AI workflow, evaluation, documentation, responsible-use notes and GitHub presentation.

LEARNING EXPERIENCE

Learn, practise and present

- Live instructor-led sessions that connect concepts to real workplace decisions.
- Guided labs and workshops in every module.
- Assignments, checkpoints and practical feedback.
- Portfolio documentation, demonstrations and capstone review.
- Access to recordings and LMS resources according to the published batch policy.
- Career preparation based on completed work and target roles.

Tools you will work with

Python 3 · VS Code · Jupyter · Git · GitHub · pytest · NumPy · pandas · SciPy · scikit-learn

Career relevance

Build skills for further Python and AI learning, AI/ML training, and data or AI internship preparation. Your portfolio will help you explain the problem, implementation, evaluation and key decisions behind your work.

CAREER PREPARATION

Build confidence for interviews

A structured process to connect your learning with your next career step.

01**Role clarity**

Identify roles that fit your background, interests and current skills.

02**Profile readiness**

Review your CV, LinkedIn, GitHub and project summaries.

03**Project proof**

Prepare to demonstrate completed work and explain your decisions.

04**Interview practice**

Practise technical questions, project walkthroughs and interviews.

05**Opportunity updates**

Receive relevant job openings and employer requirements, subject to availability and learner readiness.

Career support helps you prepare. Employment outcomes depend on experience, project quality, interview readiness and market conditions.

LEARNER JOURNEYS

Companies where our learners have been hired

Across the Brightnest AI Academy learner community



Learner employment history across the academy; not a placement guarantee for this course. Names and logos identify employers; they do not imply endorsement or a hiring partnership.

BEFORE YOU ENROL

Your questions, answered

Is the Python for AI course suitable for beginners?

This is a foundation-level course. No prior programming experience is required. Basic computer literacy and a willingness to practise coding are recommended.

What will I build during the course?

You will complete guided labs in every module and build two portfolio projects: Customer Churn Starter AI and Demand Forecasting Foundations. Deliverables include working files or code, documentation, testing or evaluation evidence, and a final presentation.

How long does the course take?

The course includes approximately 70 guided learning hours across 8 modules, delivered over 8 weeks.

Will I receive mentor and career support?

The course includes live instruction, lab support, assignment feedback, project reviews and career preparation covering portfolio development, CV writing, LinkedIn profile improvement, and interview guidance.

Speak with admissions

Discuss the cohort trainer, class times, delivery mode and payment options before you enrol.

FEES & ADMISSIONS

Plan your next step

COURSE FEE

INR 35,000 + GST

EMI and easy instalments available

Duration	8 weeks
Level	Foundation
Learning format	Live mentor-led learning
Batch starts	Expected Saturday / Sunday starts

Check the live Batches page for the next expected weekend. Confirm the exact date, class times and availability with admissions.

Book a free demo class >

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