10 Months

Data Science Pro + Fast API & Docker

Become Job-Ready in

Data Science Pro + Fast API & Docker

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LN AI Academy is dedicated to providing industry-focused training that helps students build real skills for real jobs in Data Science, AI, Machine Learning, and modern development tools.

Our mission is to make high-quality tech education accessible for everyone. With expert mentors, practical projects, and job-oriented modules, we help learners build the confidence and expertise needed to grow in the IT industry. Whether you're starting from scratch or upgrading your skills, LN AI Academy ensures you gain the knowledge required to succeed.

10K+	**250+**	**100%**
Student Trained	**Real-World Projects**	**Placement Assistant**

DATA SCIENCE PRO + FAST API & DOCKER

LEARNING ROADMAP

Step-by-step roadmap based on the provided courses.

STEP 1

ADVANCED EXCEL & VBA

- Advanced Formulas
- Pivot Tables & Charts
- Data Validation
- Excel Dashboard
- VBA & Macros Automation

STEP 2

PYTHON

- Python Basics
- Data Structures
- NumPy & Pandas
- Data Manipulation
- Visualization (Matplotlib/Seaborn)

STEP 3

SQL / MySQL

- SQL Fundamentals
- Joins & Subqueries
- Stored Procedures
- MySQL Essentials
- Data Manipulation

STEP 4

STATISTICS & ANALYSIS

- Descriptive Statistics
- Probability Distributions
- Hypothesis Testing
- Correlation & Regression
- A/B Testing

STEP 5

POWER BI

- Data Connection
- Data Modeling
- DAX Functions
- Interactive Dashboards
- Reports & Publishing

STEP 6

TABLEAU

- Data Connection
- Data Visualization
- Calculations
- Dashboards & Stories
- Publishing & Sharing

STEP 7

MACHINE LEARNING

- Supervised Learning
- Unsupervised Learning
- Model Evaluation
- Feature Engineering
- Scikit-learn Projects

STEP 8

NLP (NATURAL LANGUAGE PROCESSING)

- Text Preprocessing
- Tokenization & Lemmatization
- Text Vectorization
- Sentiment Analysis
- NLP Model Building

STEP 9

COMPUTER VISION

- Image Processing
- Object Detection
- Image Classification
- OpenCV Basics
- Real-world Applications

STEP 10

DEEP LEARNING & NEURAL NETWORKS

- ANN, CNN, RNN Basics
- Activation Functions
- Model Training
- TensorFlow / Keras
- Deep Learning Projects

STEP 11

API DEVELOPMENT (FAST API)

- API Fundamentals
- Fast API Basics
- Request & Response Handling
- Authentication & Validation
- API Testing & Documentation

STEP 12

DOCKER

- Docker Fundamentals,
- Images & Containers
- Docker Compose
- Volumes & Networks
- Deploying Applications

STEP 13 **CAREER READY!**

Build end-to-end Data Science applications and deploy with Fast API & Docker.

B-70, G.F, Sec. 2
(Near Gate 3, Sec. 15 Metro Station), Noida

+91-9958966311

Advanced Excel & VBA

Advanced Excel Course - Overview of the Basics of Excel

- Customizing common options in Excel
- Absolute and relative cells
- Protecting and un-protecting worksheets and cells

Working with Functions

- Writing conditional expressions (using IF)
- Using logical functions (AND, OR, NOT)
- Using lookup and reference functions (VLOOKUP, HLOOKUP, MATCH, INDEX)
- VlookUP with Exact Match, Approximate Match
- Nested VlookUP with Exact Match
- VlookUP with Tables, Dynamic Ranges
- Nested VlookUP with Exact Match
- Using VLookUP to consolidate Data from Multiple Sheets

Advanced Excel Course - Data Validations

- Specifying a valid range of values for a cell
- Specifying a list of valid values for a cell
- Specifying custom validations based on formula for a cell

Advanced Excel Course - Working with Templates

- Designing the structure of a template
- Using templates for standardization of worksheets

Advanced Excel Course - Sorting and Filtering Data

- Sorting tables
- Using multiple-level sorting
- Using custom sorting
- Filtering data for selected view (AutoFilter)
- Using advanced filter options

Advanced Excel Course - Working with Reports

- Creating subtotals
- Multiple-level subtotals
- Creating Pivot tables
- Formatting and customizing Pivot tables
- Using advanced options of Pivot tables
- Pivot charts
- Consolidating data from multiple sheets and files using Pivot tables
- Using external data sources
- Using data consolidation feature to consolidate data
- Show Value As (% of Row, % of Column, Running Total, Compare with Specific Field)
- Viewing Subtotal under Pivot
- Creating Slicers (Version 2010 & Above)

Advanced Excel Course - More Functions

- Date and time functions
- Text functions
- Database functions
- Power Functions (CountIf, CountIFS, SumIF, SumIfS)

Advanced Excel Course - Formatting

- Using auto formatting option for worksheets
- Using conditional formatting option for rows, columns and cells

Advanced Excel Course - Macros

- Relative & Absolute Macros
- Editing Macro's

Advanced Excel Course - WhatIf Analysis

- Data Tables
- Goal Seek
- Scenario Manager

Advanced Excel Course - Charts

- Using Charts
- Formatting Charts
- Using 3D Graphs
- Using Bar and Line Chart together
- Using Secondary Axis in Graphs
- Sharing Charts with PowerPoint / MS Word, Dynamically
- (Data Modified in Excel, Chart would automatically get updated)

Advanced Excel Course - New Features Of Excel

- Sparklines, Inline Charts, data Charts
- Overview of all the new features

Advanced Excel Course - Final Assignment

- The Final Assignment would test contains questions to be solved at the end of the Course

VBA (VISUAL BASIC FOR APPLICATION) & MACROS

Create a Macro

- Swap Values, Run Code from a Module, Macro Recorder, Use Relative References,
- FormulaR1C1, Add a Macro to the Toolbar, Macro Security, Protect Macro

MsgBox

- MsgBox Function, Input Box Function.

Workbook and Worksheet Object:

- Path and Full Name, Close and Open, Loop through Books and Sheets, Sales Calculator, Files in a Directory, Import Sheets, Programming Charts.

Range Object

- Current Region, Dynamic Range, Resize, Entire Rows and Columns, Offset, From Active Cell to Last Entry, Union and Intersect, Test a Selection, Possible Football Matches, Font, Background Colors, Areas Collection, Compare Ranges.

Variables

- Option Explicit, Variable Scope, Life of Variables.

If Then Statement

- Logical Operators, Select Case, Tax Rates, Mod Operator, Prime Number Checker, Find Second Highest Value, Sum by Color, Delete Blank Cells.

Loop

- Loop through Defined Range, Loop through Entire Column, Do Until Loop, Step Keyword, Create a Pattern, Sort Numbers, Randomly Sort Data, Remove Duplicates, Complex Calculations, Knapsack Problem.

Macro Errors

- Debugging, Error Handling, Err Object, Interrupt a Macro, Macro Comments.

String Manipulation

- Separate Strings, Reverse Strings, Convert to Proper Case, Count Words.

Date and Time

- Compare Dates and Times, DateDif Function, Weekdays, Delay a Macro, Year Occurrences, Tasks on Schedule, Sort Birthdays.

Events

- Before DoubleClick Event, Highlight Active Cell, Create a Footer Before Printing, Bills and Coins, Rolling Average Table

Array

- Dynamic Array, Array Function, Month Names, Size of an Array.

Function and Sub

- User Defined Function, Custom Average Function, Volatile Functions, ByRef and ByVal.

Application Object

- Status Bar, Read Data from Text File, Write Data to Text File.

ActiveX Controls

- Text Box, List Box, Combo Box, Check Box, Option Buttons, Spin Button, Loan Calculator.

User form:

- User form and Ranges, Currency Converter, Progress Indicator, Multiple List Box Selections, Multicolumn Combo Box, Dependent Combo Boxes, Loop through Controls, Controls Collection, User form with Multiple Pages, Interactive User form

Python

Introduction To Python

- Why Python
- Application Areas of Python
- Installing Python
- Python Interpreter Architecture +
  - Python Byte Code Compiler
  - Python Virtual Machine(PVM)

Writing and Executing First Python Program

- Using Interactive Mode
- Using Script Mode
  - General Text Editor and Command Window
  - IDLE Editor and IDLE Shell
- Understanding print() function
- How to compile python program explicitly

Python Language Fundamentals

- Character Set
- Keywords
- Comments
- Variables
- Literals
- Operators
- User input
- Datatypes & Conversion

Python Control Statements

- Conditional Statement
- Looping Statements
- Pass, break, continue

String Handling

- What is string
- String representations
- Unicode String
- String Functions, Methods
- String Repetition and concatenation
- String Indexing and Slicing
- String Formatting

Python List

- Creating and Accessing Lists
- Indexing and Slicing Lists
- List Methods
- Nested Lists
- List Comprehension

Python Tuple

- Creating Tuple
- Accessing Tuple
- Immutability of tuple

Python Set

- How to create a set
- Iteration Over Sets Python
- Set Methods Python
- Frozenset

Python Dictionary

- Creating a Dictionary
- Dictionary Methods
- Accessing values from Dictionary
- Updating dictionary
- Iterating dictionary
- Dictionary Comprehension

Python Functions

- Defining a Function
- Calling a Function
- Types of Functions
- Function v/s Method
- Function Arguments
    - Positional arguments , Keyword arguments ,
    - Default arguments , Non default arguments ,
    - Arbitrary arguments ,Keyword Arbitrary arguments Function Return Statement
- Nested Function
- Function as argument
- Function as return statement
- Decorator function
- Closure
- map(),filter() ,reduce(),any() functions
- Anonymous or lambda Function

Modules & Packages

- Why Modules
- Script v/s Module
- Importing Module
- Standard & Third Party Modules
- Why Packages
- Understanding pip utility

File I/O

- Introduction to File Handling
- File modes
- Functions and methods related to File Handling
- Understanding with block

Regular Expressions(Regex)

- Need of regular Expressions
- Re module
- Functions /Methods related to regex
- Meta Characters & Special Sequences

Object Oriented Programming

- Defining a Class & Object Creation
- Inheritance, Encapsulation

- Polymorphism, Abstraction

Exception Handling

- Difference Between Syntax Errors and Exceptions
- Keywords used in Exception Handling
- try , except , finally , raise , assert
- ypes of Except Blocks

GUI Programming

- Introduction to Tkinter Programming
- Tkinter Widgets
  - Tk , Label , Entry , TextBox , Buttons
- Frame , messagebox , filedialogetc
- Layout Managers
- Event handling
- Displaying image

Multi-Threading Programming

- Multi-processing v/s Multi-threading
- Need of threads
- Creating child threads
- Functions /methods related to threads
- Thread synchronization and locking

SQL

Introduction to RDBMS

- Understanding data storage options
- Relational Database (RDBMS) Concept
- Installing MySQL Server database
- MySQL editors
- Difference between SQL & MySQL

MySQL Data Types

- tinyint, smallint, mediumint, int, bigint, float, double, decimal
- Text types
- char, varchar, tinytext, text, mediumtext, longtext
- Date/Time types
- date, time, datetime, timestamp, year

MySQL Operators

- Arithmetic operators (+ ,-, *, /)
- Logical operators (and, or, not)
- Conditional operators (>,<,<>,=,like, between, in, is etc.)

MySQL CRUD operations

- C-creating rows
- R-Retrieving (Selecting) rows
- U-Updating rows
- D-Deleting rows

MySQL Constraints

- Not null, unique key
- Primary key, composite key

- Foreign key
- Default & check

MySQL Union & Joins

- Union,union all,except,intersect
- Inner Join,Natural Join
- Left Join,Right Join
- Full Join,Cross Join
- Self Join

MySQL View

- creating view
- updating view
- fetching data from view

MySQL Built-in Functions

- String functions
- Aggregate functions
- Date & time functions
- Window functions

Subquery & CTE

- Understanding SQL subqueries, their rules
- Statements and operators with which subqueries can be used
- Using the set clause to modify subqueries
- Understanding different types of subqueries, such as where, select, insert, update, delete, etc.
- Methods to create and view subqueries
- Common table expression (CTE)

Stored Procedures & Functions

- Why define user defined functions
- Limitations with functions
- Understanding stored procedures and their key benefits
- Working with stored procedures
- Studying user-defined functions

Event Handling using Triggers

- Understanding triggers
- Procedure versus trigger
- Why define logic inside trigger
- Types of triggers
- Old and New modifiers in trigger

Other Concepts

- Query optimization using index
- Savepoint
- Rollback
- Importing/exporting database

Python Database Connectivity

- Understanding driver/connector
- Creating database connection
- Understanding Cursor
- Executing queries

- Parameterized queries

Statistics & Analysis

Introduction to Statistics

- Types of statistics
- Use of statistics
- Measures of Central Tendency
- Arithmetic Mean
- Harmonic Mean
- Geometric Mean
- Mode
- Quartile
- Standard Deviation
- Data Distributions
- Normal Distribution
- Uniform Distribution
- Right & Left Skewed Distribution
- Hypothesis Testing
- Normality Test
- Central Limit Theorem
- Mean Test
- T-test
- Z-test
- ANOVA test
- Chi Square Test
- Correlation and Covariance

Numpy Library

- Difference between list and numpy array
- Array and Matrix operations
- Array indexing and slicing

Pandas Library

- Labeled and structured data
- Series and DataFrame Objects
- From excel
- From csv
- From html table
- at & iat
- loc & iloc
- head() & tail()
- Exploratory Data Analysis (EDA)
- Data Manipulation & Cleaning
- Combining data frames
- Adding/removing rows & columns
- Sorting data
- Handling missing values
- Handling duplicate values
- Handling Data Error
- Label Encoding
- One Hot Encoding
- Handling Date and Time

Web Scraping

- Introduction to html & it's tags and attributes
- Requests & beautiful soup libraries
- Understanding methods to parse data
- Static versus dynamic data in web scraping

Data Visualization (matplotlib , seaborn & plotly libs)

- Scatter plot,lineplot,bar plot
- Histogram,pie chart
- Jointplot,pairplot,Heatmap
- Outlier detection using boxplot

Power BI

INTRODUCTION TO POWER BI

- Introduction to Business Intelligence (BI)
- Various BI tools
- Introduction to Power BI
- Why Power BI
- Power BI Components
- Installation of Power BI Desktop

DATA TRANSFORMATION – SHAPING & COMBINING DATA

- Shaping data using Power Query Editor
- Formatting data
- Transformation of data
- Understanding of Data types
- Naming conventions & best practices to consider
- Working with Parameters
- Merge Query
- Append Query
- Group by of data (aggregation of data)
- Duplicate & Reference tables
- Fill
- Pivot & Un-pivot of data
- Custom columns
- Conditional columns
- Replace data from the tables
- Split columns values
- Move columns & sorting of data
- Detect data type, count rows & reverse rows
- Promote rows as column headers

DATA MODELING & DAX

- Introduction of relationships
- Creating relationships
- Cardinality
- Cross filter direction
- Use of inactive relationships
- Introduction of DAX
- Why DAX is used
- DAX syntax
- DAX functions
- Context in DAX
- Calculated columns using DAX

- Measures using DAX
- Calculated tables using DAX
- Learning about table, information, logical, text, iterator,
- Time intelligence functions (YTD, QTD, MTD)
- Cumulative values, calculated tables, and ranking and rank over groups
- Date and time functions
- Power Query View

DATA VISUALIZATION

- Understanding Power View and Power Map
- Data visualization techniques
- Page layout & Formatting
- Power BI Desktop visualization
- Formatting and customizing visuals
- Column chart, Pie chart, Donut chart,
- Scatter chart, Funnel chart
- Include & exclude
- Geographical data visualization using Maps
- Drill down
- Drill through
- Page navigations
- Bookmarks
- Selection pane to show/hide visuals
- Comparing volume and value-based analytics
- Combinations charts (dual axis charts)
- Filter pane
- Slicers
- Use of Hierarchies in drill down analysis
- Sync slicers
- Tooltips & custom tooltips
- Tables & matrix
- Conditional formatting on visuals

POWER BI SERVICE, PUBLISING & SHARING

- Introduction to Power BI Service
- Introduction of workspaces
- Dashboard
- Creating & Configuring Dashboards
- Dashboard theme
- Reports vs Dashboards
- Sharing reports & dashboards

Tableau

Overall curriculum of Tableau

- Tableau Introduction
- Comparing Tableau with Power bi
- Understanding Data Source
- Dimension & Measure
- Tableau Charts
- Tableau Filters
- Tableau Dashboards
- Tableau Objects
- Tableau Story

- Calculated Fields
- LOD expressions
- Tableau Unions
- Tableau Joins
- Tableau Relationships
- Data Cleaning
- Publishing Report to Server

Machine Learning

Introduction To Machine Learning

- Traditional v/s Machine Learning Programming
- Real life examples based on ML
- Steps of ML Programming
- Data Preprocessing revised
- Terminology related to ML

Supervised Learning

- Classification
- Regression

Unsupervised Learning

- Clustering

KNN Classification

- Math behind KNN
- KNN implementation
- Understanding hyper parameters

Performance metrics

- Confusion Matrix
- Accuracy Score
- Recall & Precision
- F-1 Score
- R2 Score

Regression

- Math behind Regression
- Simple Linear Regression
- Multiple Linear Regression
- Polynomial Regression
- Boston Price Prediction
- Cost or Loss Functions
  - Mean absolute error
  - Mean squared error
  - Root mean squared error
  - Least Square Error
- Regularization

Logistic Regression for classification

- Theory of Logistic Regression
- Binary and Multiclass classification
- Implementing titanic dataset
- Implementing iris dataset

- Sigmoid and softmax functions

Feature Selection & Dimensionality Reduction

- ANOVA Test
- Ridge/Lasso
- Decision Tree
- Principal Component Analysis (PCA)

Support Vector Machines

- Theory of SVM
- SVM Implementation
- kernel,gamma,alpha

Decision Tree Classification

- Theory of Decision Tree
- Node Splitting
- Implementation with iris dataset
- Visualizing Tree

Ensemble Learning

- Random Forest
- Bagging and Boosting
- Voting Classifier

Model Selection Techniques

- Cross Validation
- Grid and Random Search for hyper parameter tuning

Clustering

- K-means Clustering
- Hierarchical Clustering
- Elbow technique
- Silhouette coefficient

NLP

Text Analysis

- Install NLTK
- Tokenize words
- Tokenizing sentences
- Stop words customization
- Stemming and Lemmatization
- Feature Extraction
- Sentiment Analysis
- Count Vectorizer
- TfidfVectorizer
- Naive Bayes Algorithms

Recommendation System

- Content based technique
- Collaborative filtering technique
- Evaluating similarity based on correlation
- Classification-based recommendations

Computer Vision

Open CV

- Reading images
- Understanding Gray Scale Image
- Resizing image
- Understanding Haar Classifiers
- Face,eyes,smile,body classification
- How to use webcam in open cv
- Building image data set
- Capturing video
- Face classification in video

Mediapipe

- Simple Hand Tracking
- Finger Counting Logic
- Gestures You Can Detect
  - Thumb up → only thumb open
  - ✌ Victory → index & middle open
  - Palm → all fingers open
  - Fist → all fingers closed

Deep Learning & Neural Networks

Introduction To Artificial Neural Network

- What is Artificial Neural Network (ANN)?
- How Neural Network Works?
- Perceptron
- Multilayer Perceptron
- Feed Forward
- Back propagation

Introduction To Deep Learning

- What is Deep Learning?
- Deep Learning Packages
- Deep Learning Applications
- Building Deep Learning Environment
  - Installing Tensor Flow Locally
  - Understanding Google Colab

Tensor Flow Basics

- What is Tensorflow?
- Variables, Constants
- Scalar, Vector, Matrix
- Operations using tensorflow
- Difference between tensorflow and numpy operations

Optimizers

- What does optimizers do?
- Gradient Descent (full batch and min batch)
- Stochastic Gradient Descent
- Learning rate,epoch

Activation Functions

- What does Activation Functions do?
- Sigmoid Function,
- Hyperbolic Tangent Function (tanh)
- ReLU –Rectified Linear Unit
- Softmax Function
- Vanishing Gradient Problem

Building Artificial Neural Network

- Using scikit implementation
- Using Tensorflow
- Understanding MNIST Dataset
- Initializing weights and biases
- Gradient Tape
- Defining loss/cost Function
- Train the Neural Network
- Minimizing the loss by adjusting weights and biases

Modern Deep Learning Optimizers and Regularization

- SGD with Momentum
- RMSprop
- AdaGrad
- Adam
- Dropout Layers and Regularization
- Batch Normalization

Building Deep Neural Network Using Keras

- What is Keras?
- Keras Sequential Model and Functional API
- Solve a Linear Regression and Classification Problem with Example
- Saving and Loading a Keras Model

Convolutional Neural Networks (CNNs)

- Introduction to CNN
- CNN Architecture
- Convolutional Operations
- Pooling,Stride and Padding Operations
- Data Augmentation
- Building,Training and Evaluating First CNN Model
- Model Performance Optimization
- Auto encoders for CNN
- Transfer Learning and Object Detection Using Pre-trained CNN Models
    - LeNet
    - AlexNet
    - VGG16
    - ResNet50
    - Yolo algorithm

Word Embedding

- What is Word Embedding?
- Word2Vec Embedding
    - CBOW
    - skipgram
- Keras Embedding Layers
- Visualize Word Embedding
- Google Word2Vec Embedding
- GloVe Embedding

Recurrent Neural Networks (RNNs)

- Introduction to RNN
- RNN Architecture
- Types of RNN
- Implementing basic RNN in tensorflow
- Need for LSTM and GRU
- Deep RNN/LSTM/GRU
- Text Classification Using LSTM
- Prediction for Time Series problem
- Bidirectional RNN/LSTM
- Seq-2-Seq Modeling
- Encoder-Decoder Model
- Attention Mechanism

Speech Recognition APIs

- Text To Speech
- Speech To Text
- Automate task using voice
- Voice Search on Web

API Development

Introduction to APIs

- What is API? (REST concept)
- HTTP methods: GET, POST, PUT, DELETE
- Request vs Response

Basic FastAPI Setup

- Installation & project structure
- First API (Hello World)
- Running server with Uvicorn

Request Handling

- Query parameters
- Path parameters
- Request body (JSON)

Response Handling

- JSON response
- Custom response
- Status codes

Automatic Documentation

- Swagger UI (/docs)
- ReDoc (/redoc)
- API testing

Pydantic Models (Very Important)

- Data validation
- Request/response schema
- Type checking

Model Integration

- Load trained model (pickle/joblib)
- Prediction API
- Input → model → output

Async Programming

- async / await concept
- FastAPI performance advantage

File Upload & Handling

- Image/file upload APIs
- Use case: image classification model

Deployment Preparation

- Requirements.txt
- Environment setup
- Production considerations

Docker

Introduction to Docker

- What is containerization?
- Docker vs Virtual Machine
- Why Docker in Data Science?

Docker Installation & Setup

- Install Docker (Windows/Linux)
- Docker Desktop overview
- Basic commands run karna

Docker Images

- What is an image?
- Pull image from Docker Hub
- Create custom image

Docker Containers

- What is a container?
- Run, stop, delete container
- Interactive vs detached mode

Docker File

- Basic structure:
  - FROM
  - WORKDIR
  - COPY
  - RUN
  - CMD

Docker + FastAPI Integration

- Containerize FastAPI app
- Installing Requirements
- API run inside container