

AI & DATA SCIENCE PROFESSIONAL PROGRAM

Overview

Build practical, industry-ready skills in Artificial Intelligence, Data Science, Machine Learning, Deep Learning, and Generative AI through a 3-months, hands-on program. With an 80% practical, 20% theoretical approach, participants will work with real datasets, industry tools, practical projects, and an end-to-end capstone project guided by an experienced industry professional.

Course Modules

Week 1 — AI & Data Science Fundamentals

- ➔ AI, Data Science, Machine Learning & Deep Learning
- Industry applications and use cases
- Data Science lifecycle
- Google Colab / Jupyter Notebook

Practical: Explore a real-world dataset and AI workflow

Week 2 — Python for Data Science

- ➔ Python fundamentals for data analysis
- NumPy & Pandas
- Data Frames and dataset handling
- Data manipulation and analysis

Practical: Analyse datasets using Python

Week 3 — Data Cleaning & Preprocessing

- ➔ Missing values, duplicates & outliers
- Categorical data encoding
- Feature scaling
- Data preparation for Machine Learning

Practical: Clean and prepare a real-world dataset

Week 4 — Exploratory Data Analysis & Visualization

- ➔ • EDA fundamentals
- Matplotlib & Seaborn
- Correlation, trends & patterns
- Data storytelling through visualization

Project: Complete EDA using a real dataset

Week 5 — Machine Learning Fundamentals

- ➔ • Supervised vs. Unsupervised Learning
- Features, labels & datasets
- Training and testing
- Machine Learning workflow

Practical: Build and evaluate a basic ML model

Week 6 — Regression

- ➔ • Linear & Multiple Regression
- Model evaluation
- Prediction techniques

Project: House Price Prediction

Week 7 — Classification

- ➔ • Logistic Regression
- KNN & Decision Trees
- Classification metrics

Project: Build and evaluate a classification model

Week 8 — Model Optimization

- ➔ • Random Forest & SVM
- Overfitting & Underfitting
- Cross-validation
- Feature selection
- Hyperparameter tuning

Practical: Compare and improve ML models

Week 9 — Unsupervised Learning

- ➔ • Clustering fundamentals
- K-Means
- Dimensionality Reduction

Project: Customer Segmentation

Week 10 — Deep Learning & Generative AI

- ➔ • Neural Network fundamentals
- Deep Learning concepts
- Generative AI & LLM fundamentals
- Modern AI applications

Practical: Explore neural networks and Generative AI use cases

Week 11 — AI Applications & Responsible AI

- ➔ • NLP fundamentals & text preprocessing
- TF-IDF
- AI API integration
- AI bias, hallucinations & responsible AI

Project: Build a practical AI application

Week 12 — Capstone Project

- ➔ End-to-End AI & Data Science Project

Apply the complete workflow:

Data → Preprocessing → EDA → Feature Engineering → Model Development
Evaluation → Insights → Presentation

Final Deliverable:

A practical AI/Data Science project demonstrating the skills developed throughout the program.

Training Methodology:

- Industry-oriented learning through:
- 80% Hands-on Practical Training
- 20% Theory and Conceptual Learning
- Real-world datasets and examples
- Live demonstrations
- Guided coding exercises
- Individual and group practical assignments
- Industry-oriented projects
- Model development and evaluation
- Capstone project development and presentation

Learning Outcomes

By the end of the program, participants will be able to:

- Use Python for data analysis and manipulation.
- Clean, preprocess, and visualize real-world datasets.
- Build and evaluate Machine Learning models.
- Apply Deep Learning and NLP fundamentals.
- Understand and use Generative AI and LLMs.
- Develop practical AI applications and API integrations.
- Apply responsible AI principles and interpret model results.
- Complete an end-to-end AI & Data Science capstone project.

COURSE DETAILS:

CLASS DAYS: SATURDAY & SUNDAY

CLASS TIMINGS: 3:30 PM – 5:30 PM

TOTAL CREDIT HOURS: 32 HOURS

FEE STRUCTURE:

MONTHLY FEE: PKR 10,000

EARLY BIRD DISCOUNT GIVEN