

Artificial Intelligence

A comprehensive diploma program in Artificial Intelligence covering Python programming, mathematics for AI, data analysis, SQL, supervised and unsupervised machine learning, deep learning, computer vision, NLP, and AI model deployment.

Duration 12 Months	Training Mode Offline Classroom Training	Certification Industry Certificate	Practical Labs 100% Hands-on
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Tools & Tech: Python • NumPy • Pandas • Scikit-Learn • TensorFlow • PyTorch • OpenCV • SQL

Detailed Course Curriculum & Modules

MODULE 01 Introduction to Artificial Intelligence - Introduction to Artificial Intelligence - AI vs Machine Learning vs Deep Learning - History of AI - Types of AI - Applications of AI - AI Workflow - Real-world AI Products - Career Opportunities	MODULE 02 Python Programming - Python Fundamentals - Variables - Data Types - Operators - Loops - Functions - Lists - Dictionaries - File Handling - Exception Handling - OOP in Python
MODULE 03 Mathematics for AI - Linear Algebra - Vectors - Matrices - Probability - Bayes Theorem - Statistics - Mean - Variance - Correlation	MODULE 04 NumPy & Pandas - NumPy Arrays - Array Operations - Pandas DataFrames - Data Cleaning - Missing Values - Filtering - Aggregation
MODULE 05 Data Visualization - Matplotlib - Seaborn - Plotly - Bar Charts - Line Charts - Scatter Plots - Heatmaps	MODULE 06 SQL for AI - SQL Basics - SELECT - WHERE - GROUP BY - HAVING - Joins - Views
MODULE 07 Machine Learning Fundamentals - Types of ML - Datasets - Feature Engineering - Training & Testing - ML Pipeline	MODULE 08 Supervised Learning - Linear Regression - Logistic Regression - Decision Trees - Random Forest - SVM - KNN - Naive Bayes
MODULE 09 Unsupervised Learning - K-Means - DBSCAN - Hierarchical Clustering - PCA - Recommendation Basics	MODULE 10 Model Evaluation - Accuracy - Precision - Recall - F1 Score - ROC - Cross Validation - Overfitting - Hyperparameter Tuning

MODULE 11 | Deep Learning

- Neural Networks
- Activation Functions
- Backpropagation
- TensorFlow
- Keras
- PyTorch

MODULE 12 | Computer Vision

- OpenCV
- Image Classification
- Object Detection
- OCR
- YOLO

MODULE 13 | Natural Language Processing

- Tokenization
- TF-IDF
- Word Embeddings
- Sentiment Analysis
- NER

MODULE 14 | Transformers

- Attention
- BERT
- GPT
- Llama
- Mistral
- Gemma
- Qwen

MODULE 15 | Generative AI

- LLMs
- Text Generation
- Code Generation
- Image Generation
- Tokens
- Context Window

MODULE 16 | Prompt Engineering

- System Prompts
- Few-shot
- Chain of Thought
- Structured Outputs
- Prompt Templates

MODULE 17 | AI APIs

- OpenAI APIs
- Gemini APIs
- Hugging Face APIs
- Authentication
- Rate Limits

MODULE 18 | Hugging Face Ecosystem

- Hub
- Transformers
- Datasets
- Pipelines
- Spaces

MODULE 19 | LangChain

- Chains
- Memory
- Agents
- Tools
- Output Parsers

MODULE 20 | LlamaIndex

- Indexing
- Retrieval
- Document Loading
- Query Engine

MODULE 21 | Embeddings & Vector Databases

- Embeddings
- FAISS
- ChromaDB
- Pinecone
- Qdrant

MODULE 22 | Retrieval-Augmented Generation (RAG)

- Document Loading
- Chunking
- Retrieval
- Context Injection
- Knowledge Base

MODULE 23 | AI Agents

- Agent Architecture
- Function Calling
- Memory
- Automation
- Multi-Agent Systems

MODULE 24 | AI Application Development

- AI Chatbots
- Document AI
- Resume Analyzer
- Content Generator
- AI SaaS

MODULE 25 | AI Deployment

- FastAPI
- Docker
- Cloud Deployment
- Monitoring
- Logging

MODULE 26 | AI Cloud Platforms

- AWS
- Azure
- Google Cloud
- Vertex AI
- SageMaker
- RunPod

MODULE 27 | AI Security & Ethics

- Responsible AI
- Bias
- Hallucinations
- Prompt Injection
- Privacy

MODULE 28 | Major AI Projects

- AI Chatbot
- Chat with PDF
- AI Resume Analyzer
- AI Research Assistant
- Customer Support Bot
- Final AI Engineering Project
- TECHNOLOGY STACK COVERED
- Python | NumPy | Pandas | Matplotlib | Seaborn | SQL | Scikit-learn | TensorFlow | PyTorch | OpenCV | NLP |
- Transformers | Hugging Face | OpenAI APIs | Gemini APIs | LangChain | LlamaIndex | FAISS | ChromaDB |
- Pinecone | Qdrant | RAG | AI Agents | FastAPI | Docker | Git | GitHub | AWS | Vercel

Practical Projects & Industry Capstones

- Industry Capstone Project
- Real World Case Studies

■ Industry Certification

Authorized certificate verified globally via online portal.

■ 100% Placement Support

Resume review, mock interviews, and recruiter connections.

■ Lab Access & Mentorship

Dedicated workstation lab hours with expert guidance.