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Data Science & Analytics Artificial Intelligence

Module 1: Python Programming Foundation

- Python Fundamentals & Data Types
- Control Structures & Functions
- Modules & Packages (OS, DateTime, RegEx)
- File Handling & Exception Management
- Object-Oriented Programming
- Advanced Python (Iterators, Generators)
- Web Frameworks: Flask, FastAPI

Module 2: Database Management Systems

- SQL Fundamentals & DDL Commands
- DML Commands & SQL Clauses
- Advanced SQL & Window Functions
- Database Constraints & Relationships
- All Types of SQL Joins
- NoSQL Database: MongoDB
- Database Operations & Management

Module 3: Data Science Libraries & Tools

- NumPy: Arrays, Operations, Linear Algebra
- Pandas: DataFrames, Data Operations
- Visualization: Matplotlib, Seaborn, Plotly
- Statistical Analysis & Processing
- File Handling (CSV, Excel formats)
- Data Transformation & Manipulation
- SciPy, Scikit-learn, NLTK Integration

Module 4: Power BI & Business Intelligence

- BI Fundamentals & Data Warehouse
- Power BI Setup & Configuration
- Power Query Editor & Data Modeling
- DAX Functions & Advanced Calculations
- Interactive Visualizations & Reports
- Security & Row-level Access Control
- Power BI Services & Deployment



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Module 5: Machine Learning Algorithms

- Supervised: Linear/Logistic Regression
- KNN, Decision Trees, Random Forest
- SVM, Naive Bayes, Boosting Algorithms
- Unsupervised: K-Means, PCA
- Data Preprocessing & Feature Engineering
- Hypothesis Testing & Statistical Methods
- Model Evaluation & Performance Metrics

Module 7: Natural Language Processing

- NLP Fundamentals & Text Analysis
- Text Preprocessing & Tokenization
- Feature Engineering: TF-IDF, Word2Vec
- Sentiment Analysis & Classification
- Language Detection & Translation
- Topic Modeling & Text Clustering
- Advanced NLP Applications

Module 9: Prompt Engineering

- Prompt Design Fundamentals
- Few-Shot & Zero-Shot Prompting
- Chain-of-Thought Techniques
- Self-Consistency Methods
- Dynamic Prompting with LangChain
- Optimization Strategies
- Best Practices & Guidelines

Module 6: Deep Learning & Neural Networks

- Neural Network Fundamentals
- Forward/Backward Propagation
- Optimization Algorithms (Adam, RMSprop)
- Activation Functions & Loss Functions
- CNN Architecture & Image Processing
- Regularization & Overfitting Prevention
- Advanced Network Architectures

Module 8: Generative AI & LLMs

- Generative AI Fundamentals
- Transformer Architecture Deep Dive
- Self-Attention & Multi-Head Attention
- BERT, GPT, T5 Model Variants
- Fine-tuning: LoRA, QLoRA Techniques
- Model Evaluation & Performance
- Multi-modal Models & RLHF

Module 10: Retrieval-Augmented Generation

- RAG Pipeline Architecture
- Query Embedding & Hybrid Search
- Chunking Techniques & Strategies
- Vector Databases: ChromaDB, Pinecone
- Re-Rankers & Result Optimization
- Hallucination Prevention
- Privacy & Security Considerations



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Module 11: Agentic AI Systems

- Autonomous AI System Design
- Decision-making Capabilities
- Feedback Loops & Self-Learning
- ReAct Framework Implementation
- Multi-Agent AI Systems
- CrewAI & Task Delegation
- LangGraph Workflow Design

Module 12: AWS for Generative AI

- AWS S3 for Model Storage
- SageMaker for LLM Development
- AWS Bedrock Foundation Models
- Lambda for Serverless Inference
- AWS Textract Document Processing
- Cloud Infrastructure Setup
- Cost Optimization & Scalability

Why Choose Our Training Programs?

- ★ Hands-on learning with real-world projects
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- ★ AWS training for cloud & deployment
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- ★ Communication & soft skills development
- ★ Mock interviews for job readiness

Interview Guide

- ★ Resume preparation
- ★ Profile creation on job portals
- ★ Email writing
- ★ HR discussion
- ★ Details of joining
- ★ Formalities first day and last day in office
- ★ Daily job activities
- ★ Interview tips & tricks

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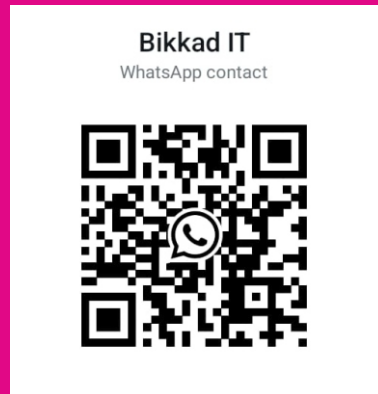
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Real time industrial projects on:

- Machine learning
- Natural language processing
- Deep learning
- Generative AI
- Agentic AI

**DURATION
6
MONTHS**

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