CompTIA DataAI

Course Duration: 5 Days
Exam Reference: (DYO-001)

Course Overview

This course prepares learners for the CompTIA DataAI certification exam. It focuses on advanced data science and artificial intelligence practices within enterprise environments. Learners will explore data architecture, machine learning model development, deployment pipelines, MLOps practices, AI governance, and responsible AI implementation.

The course combines conceptual instruction with applied, hands-on exercises designed to simulate real-world AI and data engineering workflows.

Prerequisites

Participants should have:

- 3–5 years of hands-on experience in data analytics, data science, or related roles
- Strong knowledge of Python programming
- Understanding of statistics and probability
- Experience with relational and/or NoSQL databases
- Familiarity with cloud platforms and basic DevOps concepts

Course Objectives

- Upon successful completion of this course, learners will be able to:
- Design and implement scalable enterprise data architectures.
- Perform advanced exploratory data analysis and feature engineering.
- Develop, evaluate, and optimize machine learning models.

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- Implement deep learning and emerging AI techniques.

- Deploy AI/ML models using modern MLOps practices.

- Monitor, maintain, and retrain production AI systems.

- Apply AI governance, risk management, and ethical AI principles.

- Prepare for and successfully attempt the CompTIA DataAI certification exam.

Course Outline

Module 1: Data Architecture & Engineering

- Enterprise data architecture (data lakes, warehouses, lakehouses)
- Distributed storage and compute frameworks
- Data ingestion and transformation (ETL/ELT)
- Batch and stream processing
- Data governance and lifecycle management

Module 2: Data Analysis & Statistical Methods

- Exploratory data analysis (EDA)
- Data cleaning and preprocessing techniques
- Feature engineering and selection
- Statistical inference and hypothesis testing
- Model evaluation metrics

Module 3: Machine Learning Implementation

- Supervised learning algorithms
- Unsupervised learning techniques
- Model tuning and cross-validation
- Ensemble methods
- Model performance optimization

Module 4: Deep Learning & AI Systems

- Neural network fundamentals
- Deep learning architectures
- Generative AI concepts
- AI system integration within enterprise environments

Module 5: Model Deployment & MLOps

- Model packaging and deployment strategies
- Containerization and API deployment
- CI/CD for machine learning
- Model monitoring and drift detection
- Version control and reproducibility

Module 6: AI Governance, Risk & Security

- Responsible and ethical AI principles
- Bias detection and mitigation
- AI regulatory considerations
- Security threats to AI systems
- Risk management frameworks