MERCURY

Data Science with AI Machine Learning Essentials

Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

MERCURY

Data Science with AI Machine Learning Essentials

Introduction

The Data Science with AI Machine Learning Essentials course provides an understanding of modern data science practices, combined with applications of artificial intelligence and machine learning. It explores how organizations transform raw data into strategic insights through predictive analytics, intelligent automation, and data-driven decision-making. Participants examine essential concepts related to data analysis, machine learning models, AI-powered business solutions, and practical data interpretation methods. The program explains how data science workflows support digital transformation, operational efficiency, customer intelligence, and innovation strategies across industries. Through structured theoretical learning, participants strengthen their understanding of machine learning algorithms, data visualization, supervised and unsupervised learning, and AI integration within business environments. It delivers practical knowledge aligned with current industry demands for professionals seeking expertise in data science, artificial intelligence, business analytics, and machine learning fundamentals.

Targeted Groups

This Data Science with AI Machine Learning Essentials training targets professionals seeking knowledge and skills:

- Business analysts seeking AI-driven analytics knowledge.
- Data professionals developing machine learning expertise.
- IT specialists exploring artificial intelligence applications.
- Digital transformation managers are improving data strategies.
- Marketing professionals analyze customer behavior data.
- Operations managers are improving predictive decision-making.
- Researchers handling large-scale data interpretation tasks.
- Project managers overseeing AI implementation initiatives.
- Financial analysts use intelligent forecasting methods.
- Technology professionals entering data science careers.

Course Objectives

Participants will achieve the following objectives by completing the Data Science with AI Machine Learning Essentials course:

- Understand core principles of data science and AI systems.
- Identify business applications of machine learning technologies.
- Explain supervised and unsupervised learning concepts.
- Analyze structured and unstructured business data effectively.
- Interpret predictive analytics and forecasting models.
- Recognize data preparation and feature engineering processes.
- Evaluate machine learning algorithms for business scenarios.
- Understand AI ethics, bias, and responsible AI practices.
- Examine data visualization techniques for decision support.
- Explore intelligent automation within digital transformation projects.
- Understand regression, classification, and clustering techniques.

Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

- Analyze customer insights using AI-powered analytics tools.
- Recognize cloud-based machine learning environments and workflows.
- Improve strategic thinking using data-driven methodologies.
- Understand performance evaluation methods for AI models.

Targeted Competencies

Participants will gain the following competencies during the Data Science with AI Machine Learning Essentials program:

- Data interpretation and analytical thinking skills.
- Understanding machine learning workflow structures.
- AI-driven problem-solving capabilities.
- Predictive analytics evaluation techniques.
- Business intelligence and reporting knowledge.
- Data visualization and dashboard interpretation skills.
- Understanding supervised learning applications.
- Understanding unsupervised learning applications.
- Knowledge of AI ethics and governance practices.
- Data preparation and transformation competencies.
- Statistical reasoning for business analytics.
- Intelligent automation assessment capabilities.
- Strategic decision-making using analytical insights.
- Understanding AI integration within operational processes.
- Evaluation of machine learning model performance.

Studying Scenarios

In this Data Science with AI Machine Learning Essentials training, participants develop skills through the following scenarios:

- Through predictive analytics, a retail company analyzes customer purchasing behavior.
- Using AI-driven data models, a healthcare organization evaluates patient trends.
- By applying machine learning techniques, a financial institution improves forecasting accuracy.
- To optimize campaigns, a marketing department interprets customer segmentation data.
- Across operational workflows, an operations team examines opportunities for intelligent automation.
- For strategic reporting purposes, a business unit evaluates data visualization dashboards.
- With advanced AI models, a technology company improves the efficiency of decision-making.

Course Content

Unit 1: Fundamentals of Data Science and Artificial Intelligence

- Introduction to data science and modern analytics.
- Evolution of artificial intelligence in business environments.
- Understanding machine learning fundamentals and terminology.
- Types of data used in analytical environments.
- Structured, semi-structured, and unstructured data concepts.
- Data science lifecycle and workflow processes.
- Roles and responsibilities within data science teams.

Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

- Business value of AI-powered decision-making systems.
- Introduction to predictive analytics and intelligent technologies.

Unit 2: Data Collection, Preparation, and Processing

- Understanding data collection methods and sources.
- Data cleaning and preprocessing fundamentals.
- Managing incomplete and inconsistent datasets.
- Data transformation and normalization techniques.
- Feature engineering concepts for machine learning models.
- Introduction to data wrangling and preparation workflows.
- Exploratory data analysis and interpretation methods.
- Data quality management and governance practices.
- Ethical handling of sensitive business information.

Unit 3: Machine Learning Essentials and Predictive Analytics

- Introduction to supervised learning methodologies.
- Understanding classification algorithms and applications.
- Regression analysis for predictive business insights.
- Introduction to unsupervised learning techniques.
- Clustering models and customer segmentation analysis.
- Recommendation systems and AI-powered personalization.
- Predictive analytics for operational forecasting.
- Model training, testing, and validation concepts.
- Understanding overfitting and underfitting challenges.

Unit 4: AI Applications and Business Intelligence Strategies

- AI applications across multiple industries and sectors.
- Intelligent automation and workflow optimization concepts.
- Business intelligence and strategic reporting systems.
- Data visualization for executive decision-making.
- Dashboard interpretation and KPI monitoring methods.
- AI-driven customer experience improvement strategies.
- Natural language processing fundamentals and use cases.
- AI integration within digital transformation initiatives.
- Evaluating business performance using analytical insights.

Unit 5: AI Governance, Model Evaluation, and Future Trends

- Understanding responsible AI and ethical considerations.
- Identifying bias within machine learning models.
- Data privacy and compliance considerations in AI systems.
- Measuring machine learning model performance.
- Accuracy, precision, recall, and evaluation metrics.
- AI governance frameworks for organizational environments.
- Cloud computing and scalable AI infrastructure concepts.
- Emerging trends in data science and artificial intelligence.
- Future career pathways in the AI and machine learning fields.

Final Insights & Key Takeaways

Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

The Data Science with AI Machine Learning Essentials course strengthens participants' understanding of modern data science methodologies, AI technologies, and machine learning applications used across business environments. Participants develop the analytical knowledge and strategic awareness required to support intelligent decision-making, predictive analytics initiatives, and AI-driven digital transformation projects.