

Course No. 1273

AI in Oil & Gas Training Course

AI FOR INDUSTRY
ARTIFICIAL INTELLIGENCE & APPLICATIONS

DURATION

5 Days

LOCATION

Madrid, Spain

DELIVERY

Classroom

DATES

19 – 23 Oct 2026



Scheduled Event Details

CITY	Madrid, Spain
DATE	19 – 23 Oct 2026
DELIVERY TYPE	Classroom
COURSE FEE	€6,000

Course Overview

The AI in Oil & Gas Training Course is an advanced professional program designed to equip executives, managers, engineers, operations professionals, maintenance and reliability specialists, data professionals, technology leaders, and decision-makers with the knowledge and practical capabilities required to understand and apply Artificial Intelligence across the oil and gas industry. As oil and gas organizations manage increasingly complex operations and growing volumes of data from wells, reservoirs, equipment, facilities, pipelines, and production systems, AI has become an important capability for supporting technical and operational decisions, improving efficiency, strengthening reliability, and managing operational risks.

The course explores practical applications of Artificial Intelligence, Machine Learning, Predictive Analytics, Generative AI, Computer Vision, Industrial Internet of Things, and intelligent automation across exploration, drilling, reservoir management, production, processing, refining, transportation, storage, maintenance, and asset management. Participants will examine how AI can support production forecasting, well performance optimization, reservoir data analysis, predictive maintenance, equipment failure detection, process optimization, equipment monitoring, energy efficiency, and operational risk management.

A central focus of the program is transforming operational and engineering data into actionable insights. Participants will learn how to work with well data, reservoir data, production data, equipment data, sensor data, pipeline data, facility data, control-system data, and enterprise information to assess data quality, identify patterns, detect anomalies, and prioritize high-value AI use cases. The course also examines the role of AI in smart fields, digital twins, Industrial IoT, edge computing, real-time analytics, and intelligent industrial automation.

The program also addresses the strategic and technical considerations involved in implementing AI within oil and gas environments, including data governance, industrial cybersecurity, AI risk

management, system integration, privacy, human oversight, organizational readiness, and change management. Through practical workshops, industry scenarios, case studies, and implementation exercises, participants will learn how to prioritize AI initiatives and align them with production improvement, asset reliability, maintenance optimization, operational safety, cost management, and digital transformation objectives.

Objectives

- Analyze oil and gas processes to identify high-value opportunities for Artificial Intelligence implementation.
- Develop a comprehensive understanding of AI, Machine Learning, Predictive Analytics, and Generative AI applications across the oil and gas industry.
- Evaluate well, reservoir, production, equipment, sensor, and operational data for AI-supported analysis.
- Apply Predictive Analytics concepts to production forecasting, equipment performance, failure prediction, and operational risk management.
- Design AI-enabled approaches for improving well performance, production efficiency, and industrial processes.
- Improve maintenance and asset reliability through predictive maintenance and equipment data analytics.
- Evaluate AI applications across exploration, reservoir management, drilling, production, processing, transportation, and storage.
- Strengthen operational safety and risk management through AI-enabled monitoring, anomaly detection, and predictive analysis.
- Apply data governance, industrial cybersecurity, AI governance, and responsible AI principles within oil and gas environments.
- Assess the technological and organizational readiness required to implement AI across oil and gas facilities.
- Align AI initiatives with production, efficiency, reliability, maintenance, safety, asset management, and digital transformation objectives.
- Develop a practical AI implementation roadmap for a defined oil and gas environment, supported by measurable performance indicators.

Who Should Attend

The AI in Oil & Gas Training Course is designed for executives, operations managers, production managers, field managers, maintenance managers, engineering managers, asset managers, project managers, digital transformation managers, and IT managers, as well as petroleum engineers, production engineers, reservoir engineers, drilling engineers, process engineers, mechanical engineers, electrical engineers, instrumentation and control engineers, maintenance and reliability professionals, data analysts, data scientists, and AI specialists.

The course is particularly relevant for professionals working across oil and gas companies, field operators, onshore and offshore facilities, processing plants, refineries, petrochemical facilities, pipelines, transportation systems, storage facilities, and energy-related industrial operations. It is also suitable for professionals working with Industrial Control Systems, SCADA, DCS, PLC, Industrial IoT, asset management, maintenance, reliability, process optimization, safety, and operational technology.

The program is also valuable for decision-makers, innovation leaders, digital transformation professionals, enterprise architects, continuous improvement specialists, reliability professionals, risk managers, safety leaders, and data professionals who need to understand how AI can be integrated with existing engineering and operational systems and transformed into practical initiatives that improve production, reliability, safety, asset performance, and operational efficiency.

Learning Outcomes

- By the end of the AI in Oil & Gas Training Course, participants will be able to:
- Explain the strategic role of Artificial Intelligence in modernizing oil and gas operations and developing smart fields and facilities.
- Identify and prioritize AI use cases across exploration, drilling, reservoir management, production, maintenance, operations, and asset management.
- Analyze well, equipment, sensor, production, and operational data to identify patterns, bottlenecks, anomalies, and performance opportunities.
- Apply Predictive Analytics concepts to production forecasting, equipment performance, operational risk, and failure prediction.
- Evaluate AI applications for reservoir analysis, well performance optimization, and production improvement.

- Design AI-enabled approaches for predictive maintenance and asset reliability improvement.
- Evaluate the use of Computer Vision and AI-enabled monitoring for inspection, equipment condition assessment, and operational safety.
- Analyze the role of Industrial IoT, edge computing, and digital twins in developing intelligent oil and gas operations.
- Apply data governance, industrial cybersecurity, AI governance, and AI risk management principles.
- Assess the organizational and technological readiness required for implementing AI initiatives in oil and gas facilities.
- Develop performance indicators for measuring the impact of AI on production, maintenance, reliability, safety, asset performance, and efficiency.
- Prepare a practical AI implementation roadmap aligned with organizational operational and strategic objectives.

Course Outline

DAY 01

Foundations of AI in the Oil & Gas Industry

- Artificial Intelligence and its strategic role in the future of the oil and gas industry
- Fundamentals of AI, Machine Learning, Predictive Analytics, and Generative AI
- Oil and gas data ecosystems and sources of operational and engineering data
- AI applications across exploration, drilling, production, processing, transportation, and storage

PRACTICAL APPLICATION

Assessing digital readiness and identifying AI opportunities within an oil and gas facility or operation

DAY 02

AI for Exploration, Reservoirs, Drilling, and Production

- AI applications in exploration data and geophysical analysis
- Advanced analytics for reservoir modeling and well performance analysis
- Production forecasting and optimization of well and production performance

DAY 02 — CONTINUED

- AI applications in drilling operations and operational decision-making

PRACTICAL APPLICATION

Developing an AI use case for improving well performance or a production process

DAY 03

AI for Maintenance, Asset Management, and Industrial Operations

- Predictive maintenance and analysis of equipment and asset data
- Failure detection and anomaly detection using Machine Learning
- AI for industrial process optimization and production efficiency
- Digital twins, Industrial IoT, and edge computing

PRACTICAL APPLICATION

Designing an AI-enabled solution for predictive maintenance or asset performance optimization

DAY 04

AI for Safety, Risk, and Industrial Cybersecurity

- AI applications for operational safety monitoring and risk identification
- Computer Vision for inspection, monitoring, and anomaly detection
- Predictive analytics for operational risk and equipment failure management
- Industrial cybersecurity, data governance, AI governance, and responsible AI

PRACTICAL APPLICATION

Developing an AI risk management and governance framework for an oil and gas environment

DAY 05

AI Strategy and Implementation in Oil & Gas

- Developing an enterprise AI strategy for oil and gas organizations
- Prioritizing AI use cases according to operational value, feasibility, risk, and cost
- Measuring AI impact through production, maintenance, reliability, safety, energy, asset performance, and efficiency KPIs
- Future trends in smart fields, digital twins, Industrial IoT, intelligent automation, and Generative AI

FINAL WORKSHOP

Developing a comprehensive AI implementation roadmap for an oil and gas environment, including prioritized use cases, data requirements, technology architecture and integration, AI governance, industrial cybersecurity, implementation phases, change management, stakeholder engagement, performance indicators, risk management, and an action plan to improve production, reliability, maintenance, safety, asset management, operational efficiency, and digital transformation.

Register or Request More Information

Course page: <https://quest-training.com/courses/ai-in-oil-gas-training-course>

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