

APPLICATION OF ARTIFICIAL INTELLIGENCE (AI) FOR THE OIL & GAS INDUSTRY

““Harnessing AI to Optimize Exploration, Production, Safety, and Decision-Making in Oil & Gas Operations””

Schedule

Date	Venue	Fees (Face-to-Face)
16 – 20 Mar 2026	London, UK	USD 3495 per delegate

► Available delivery methods: Face-to-Face & Online Training

Introduction

The oil and gas industry is evolving rapidly in response to global pressures around efficiency, sustainability, and innovation. Artificial Intelligence (AI) offers transformative opportunities—from enhancing subsurface exploration to optimizing asset performance and predicting equipment failures. Yet to fully leverage AI, professionals must understand both its capabilities and practical limitations in oilfield applications.

This intensive 5-day course provides a comprehensive overview of AI tools and their strategic implementation across upstream, midstream, and downstream operations. Participants will explore use cases in drilling, production, maintenance, logistics, and safety while developing a roadmap for AI integration.

Objectives

- By the end of this course, participants will be able to:
- Understand core AI concepts and technologies relevant to oil and gas
 - Identify operational areas where AI can deliver measurable improvements
 - Evaluate AI tools for predictive maintenance, reservoir analysis, and process optimization
 - Design data-driven strategies aligned with business goals and field realities
 - Build cross-functional collaboration for successful AI adoption

Why Attend

- Gain a practical understanding of AI applications tailored for oil & gas
- Learn how to move from pilot to full-scale AI implementation
- Explore real-world case studies and technology demonstrations
- Understand how to prepare your data, systems, and teams for AI integration
- Leave with a roadmap for initiating or scaling AI projects

Target Audience

This program is designed for:

- Engineers and operations professionals (upstream, midstream, downstream)
- Data scientists and digital transformation leaders in energy firms
- Asset and facility managers
- Maintenance and reliability professionals
- Strategy, innovation, and IT decision-makers in the oil & gas sector

Individual Benefits

Key competencies that will be developed include:

- AI concept fluency and technical awareness
- Use case identification and feasibility analysis
- Predictive analytics and machine learning application
- AI project planning and cross-functional communication
- Data governance and integration planning

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved asset utilization and cost savings through automation
- Enhanced operational decision-making via predictive insights
- Faster and more accurate fault detection and maintenance response
- Better alignment of digital investment with operational goals
- A data-ready and innovation-focused workforce

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings – Core AI technologies: machine learning, NLP, computer vision
- Case Studies – AI in seismic analysis, well optimization, pipeline monitoring
- Workshops – Data pipeline design, AI opportunity mapping, model selection
- Peer Exchange – Cross-functional collaboration and risk mitigation
- Tools – Use case templates, AI maturity models, and ROI calculators

Course Outline

Training Hours: 07:30 AM - 03:30 PM Daily Format: 3-4 Learning Modules | Coffee Breaks: 09:30 & 11:15 | Lunch Break: 01:00 - 02:00

Day 1: Foundations of AI in Energy

- Module 1: Introduction to AI for Oil & Gas (07:30 - 09:30) • Overview of AI, machine learning, deep learning • Where and how AI fits into the energy value chain • Debunking myths and setting realistic expectations
- Module 2: Data in the Oil & Gas Sector (09:45 - 11:15) • Characteristics of oil & gas data (structured, time-series, unstructured) • Data collection, storage, and preparation challenges • Data quality and integration with legacy systems
- Module 3: Workshop - Data Use Case Identification (11:30 - 01:00) • Mapping current processes where AI can add value

Day 2: AI Applications in Exploration & Production

- Module 4: AI in Seismic and Subsurface Data (07:30 - 09:30) • Pattern recognition, interpretation, and automation • Enhancing accuracy in exploration decisions
- Module 5: Drilling Optimization and Process Automation (09:45 - 11:15) • Real-time drilling data analytics • Automated decision-making in well operations
- Module 6: Workshop - E&P AI Use Case Mapping (11:30 - 01:00) • Analyze real drilling datasets for pattern detection

Day 3: AI in Maintenance, Integrity & Logistics

- Module 7: Predictive Maintenance and Condition Monitoring (07:30 - 09:30) • Machine learning models for failure prediction • Smart sensors and IoT integration
- Module 8: Asset Integrity & Pipeline Monitoring (09:45 - 11:15) • Computer vision and anomaly detection • Leak and corrosion prediction
- Module 9: Workshop - Building a Predictive Maintenance Plan (11:30 - 01:00) • Failure mode analysis and model input design

Day 4: AI in Midstream/Downstream Operations

- Module 10: AI in Refining and Supply Chain (07:30 - 09:30) • Process control optimization and yield prediction • Logistics, inventory, and demand forecasting
- Module 11: AI in HSE and Risk Monitoring (09:45 - 11:15) • Video analytics for safety compliance • Incident prediction and behavioral modeling
- Module 12: Workshop - AI ROI and Feasibility Analysis (11:30 - 01:00) • Cost-benefit review and stakeholder planning

Day 5: Integration, Change Management & Strategy

- Module 13: AI Implementation Challenges (07:30 - 09:30) • Technical, cultural, and organizational barriers • Talent development and cross-functional engagement
- Module 14: Building Your AI Roadmap (09:45 - 11:15) • Steps from pilot to enterprise adoption • Governance, compliance, and scalability
- Module 15: Final Project - AI Strategy Presentation (11:30 - 01:00) • Team-based use case presentation and critique

Certification

Participants will receive a Certificate of Completion in Application of Artificial Intelligence (AI) for the Oil & Gas Industry, confirming their readiness to initiate, evaluate, or lead AI-driven transformation projects within their energy organizations.

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