MERCURY

Leading Digital and AI Transformation in the Oil and Gas Industry

9 – 13 May 2027
Manama (Bahrain)



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Introduction

In today's rapidly evolving energy landscape, oil and gas organizations must embrace digital and artificial intelligence AI transformation to remain competitive, resilient, and sustainable. The Leading Digital and AI Transformation in the Oil and Gas Industry course equips professionals with the strategic vision, leadership capabilities, and technical understanding required to navigate complex transformation initiatives across upstream, midstream, and downstream operations. It examines how digitalization and AI technologies enhance operational efficiency, asset reliability, safety performance, and data-driven decision-making within the oil and gas sector.

Participants will explore how AI-driven solutions support exploration and production optimization, predictive maintenance, supply chain visibility, emissions monitoring, and customer-centric energy services. Through structured frameworks, industry-focused case studies, and scenario-based learning, the Leading Digital and AI Transformation in the Oil and Gas Industry program develops both strategic and operational readiness. Ultimately, the program empowers leaders to redesign oil and gas organizations for a future shaped by intelligent technologies, digital energy systems, and sustainable transformation.

Targeted Groups

This Leading Digital and AI Transformation in the Oil and Gas Industry training targets professionals seeking knowledge and skills:

- Senior executives and business leaders are driving digital growth in oil and gas companies.
- Department managers responsible for digital transformation initiatives in exploration, production, refining, or distribution.
- IT and digital transformation professionals are adapting legacy oil and gas systems to AI-enabled platforms.
- Operations and asset managers focusing on automation and predictive analytics.
- HR and talent development managers enabling cultural and workforce transformation.
- Innovation and technology officers leading scalable AI adoption.
- Project and program managers align digital initiatives with energy transformation goals.
- Consultants supporting digitalization and AI deployment in oil and gas organizations.
- Policy makers and regulators are exploring AI-driven energy strategies.
- Entrepreneurs and energy startups transitioning into digital-first operating models.
- Mid-career professionals preparing for leadership roles in digital oil and gas transformation.

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Course Objectives

By completing the Leading Digital and AI Transformation in the Oil and Gas Industry course, participants will be able to:

- Understand the principles of digital transformation and AI integration in oil and gas operations.
- Analyze organizational and operational challenges in adopting advanced digital technologies.
- Identify opportunities to leverage AI across exploration, production, maintenance, and energy trading.
- Evaluate digital maturity models applicable to oil and gas organizations.
- Design transformation roadmaps aligned with corporate, operational, and sustainability goals.
- Develop leadership capabilities to guide multidisciplinary teams through technological change.
- Apply ethical, safety, and governance frameworks in AI-driven energy initiatives.
- Measure operational, financial, and safety performance outcomes of digital transformation.
- Formulate policies for responsible and sustainable AI adoption in the energy sector.
- Communicate digital transformation strategies effectively to technical and non-technical stakeholders.
- Apply data analytics to improve asset performance, efficiency, and reliability.
- Foster a culture of innovation, digital readiness, and continuous improvement.
- Assess global trends in digital energy transformation and AI adoption.
- Create actionable plans for digital business model innovation in the oil and gas industry.
- Develop resilience strategies against technological, operational, and market disruptions.

Targeted Competencies

Participants completing the Leading Digital and AI Transformation in the Oil and Gas Industry program will develop the following competencies:

- Strategic digital transformation planning for oil and gas enterprises.
- AI adoption and deployment across upstream, midstream, and downstream operations.
- Data-driven decision-making in asset-intensive environments.
- Ethical, safe, and responsible AI governance in energy applications.
- Leadership and decision-making in digitally enabled oil and gas organizations.
- Change management and workforce transformation techniques.
- Innovation and digital business model design in the energy sector.
- Stakeholder engagement across technical, operational, and regulatory domains.
- Risk assessment and mitigation in digital oil and gas transitions.
- Performance measurement and optimization of transformation initiatives.

Studying Scenarios

In the Leading Digital and AI Transformation in the Oil and Gas Industry training, participants develop skills through the following scenarios:

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- Integrating AI-based predictive maintenance to minimize equipment downtime.
- Transitioning an upstream operator to a digital-first exploration model.
- Deploying AI solutions across global production assets in a multinational energy company.
- Implementing digital governance and data management frameworks in a national oil company.
- Managing workforce resistance to automation and AI-driven change.
- Using AI analytics to improve demand forecasting and inventory control in downstream operations.
- Addressing ethical, safety, and regulatory challenges in AI implementation.
- Scaling digital oilfield operations through automation and advanced analytics.
- Applying AI to improve energy efficiency and reduce emissions in refinery operations.
- Enhancing safety and reliability in gas processing facilities using AI technologies.

Course Content

Unit 1: Foundations of Digital and AI Transformation in Oil and Gas

- Define digital transformation within oil and gas organizational contexts.
- Understand the role of AI in energy business model innovation.
- Explore the evolution of digital oilfields and smart energy ecosystems.
- Identify the drivers and barriers to digital transformation in the oil and gas industry.
- Recognize data as a strategic asset in exploration, production, and refining.
- Assess global digital transformation trends in the energy sector.
- Study successful digital oil and gas transformation case studies.
- Analyze the integration of AI, cloud computing, IoT, and industrial systems.
- Understand digital maturity frameworks for oil and gas organizations.

Unit 2: Leadership and Strategy in AI-Driven Oil and Gas Transformation

- Redefine leadership roles in digitally enabled oil and gas organizations.
- Develop strategic visions for AI-driven energy enterprises.
- Align digital transformation initiatives with corporate and operational strategies.
- Apply structured frameworks for managing change in asset-intensive environments.
- Build leadership resilience amid market volatility and technological disruption.
- Lead cross-functional teams across engineering, IT, and operations.
- Engage internal and external stakeholders in AI-driven energy strategies.
- Assess leadership competencies required for digital oil and gas innovation.
- Foster organizational cultures aligned with safety, innovation, and transformation.

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Unit 3: AI Integration and Operational Transformation in Oil and Gas

- Implement AI in operational and strategic decision-making processes.
- Explore machine learning applications in exploration, drilling, and production.
- Leverage automation for asset optimization and operational efficiency.
- Integrate AI into safety management and incident prevention systems.
- Apply AI in supply chain, logistics, and energy trading operations.
- Examine ethical, safety, and environmental implications of AI deployment.
- Address regulatory, cybersecurity, and compliance considerations.
- Use advanced analytics to improve reliability and cost efficiency.
- Protect critical infrastructure in AI-enabled oil and gas systems.

Unit 4: Innovation, Culture, and Human Capital in Energy Transformation

- Cultivate a digital-first mindset within oil and gas organizations.
- Redesign organizational culture to support AI and automation adoption.
- Promote innovation through digital leadership and collaboration.
- Encourage workforce engagement in transformation initiatives.
- Redefine roles, competencies, and responsibilities in digital oil and gas enterprises.
- Develop digital and analytical skills across technical teams.
- Apply continuous learning frameworks to build long-term capability.
- Manage resistance to change in safety-critical environments.
- Enhance collaboration using digital platforms and industrial tools.

Unit 5: Future Trends, Risks, and Sustainable Digital Transformation

- Explore emerging AI and digital trends shaping the future of energy.
- Assess risks associated with large-scale digital oil and gas projects.
- Build sustainable AI governance and compliance frameworks.
- Analyze ethical and environmental challenges of AI in global energy markets.
- Develop policies supporting inclusive and responsible digital energy growth.
- Examine geopolitical and regulatory influences on digital transformation.
- Anticipate disruptions from next-generation energy technologies.
- Build organizational resilience for uncertain digital futures.
- Create long-term digital and AI roadmaps for oil and gas enterprises.

Final Insights & Key Takeaways

The Leading Digital and AI Transformation in the Oil and Gas Industry course provides a comprehensive framework to guide energy organizations through complex, disruptive change. Participants gain the strategic insight, leadership capabilities, and practical tools needed to lead digital and AI-driven initiatives safely, ethically, and sustainably. They will drive impactful digital transformation across oil and gas operations, enhance operational excellence, and position their organizations for long-term success in an increasingly intelligent and data-driven energy industry.