COURSE OVERVIEW TM0264
AI in the Oil & Gas Industry

Course Title
AI in the Oil & Gas Industry

Course Date/Venue
Session 1: June 22-26, 2025/Tamra Meeting Room, Al Bandar Rotana Creek, Dubai UAE
Session 2: October 06-10, 2025/Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
TM0264

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

This course is designed to provide participants with a detailed and up-to-date overview of Artificial Intelligence in the Oil & Gas Industry. It covers the importance of big data in oil and gas and the AI for real-time data analysis; the AI in upstream, midstream, and downstream operations, and machine learning for oil and gas operations; the AI in reservoir characterization and exploration and seismic data interpretation; the AI for drilling optimization, wellbore stability, fracture prediction, production optimization and enhanced oil recovery (EOR); and the predictive analytics for oil and gas production and AI in predictive maintenance for oil and gas assets.

During this interactive course, participants will learn the AI for pipeline monitoring and leak detection; the equipment health monitoring and oil and gas safety and risk management; the AI in environmental sustainability and emissions reduction, oil and gas supply chain optimization, transportation and fleet management; the AI for refinery process optimization, petrochemical industry, quality control, market analysis and trading in oil and gas; the AI trends and innovations in oil and gas, AI-powered robotics and automation in oil and gas; the predictive maintenance using AI and IoT including AI-based autonomous oilfield management; and the AI for optimizing operational efficiency, AI-powered cost reduction strategies, AI for reducing energy consumption and AI-based waste management in refineries.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain a comprehensive knowledge on process excellence in energy artificial intelligence in the oil & gas industry
- Discuss artificial intelligence (Al) and its role in oil and gas
- Explain the importance of big data in oil and gas and apply Al for real-time data analysis, drive decision-making and optimization
- Carryout Al in upstream, midstream, and downstream operations, and machine learning for oil and gas operations
- Carryout Al in reservoir characterization and exploration, seismic data interpretation, Al for drilling optimization, wellbore stability and fracture prediction and production optimization and enhanced oil recovery (EOR)
- Employ predictive analytics for oil and gas production and Al in predictive maintenance for oil and gas assets
- Apply Al for pipeline monitoring and leak detection, equipment health monitoring and oil and gas safety and risk management
- Implement Al in environmental sustainability and emissions reduction, oil and gas supply chain optimization, transportation and fleet management
- Carryout Al for refinery process optimization, petrochemical industry and quality control and market analysis and trading in oil and gas
- Discuss Al trends and innovations in oil and gas and apply Al-powered robotics and automation in oil and gas
- Carryout predictive maintenance using Al and loT including Al-based autonomous oilfield management
- Apply Al for optimizing operational efficiency, Al-powered cost reduction strategies, Al for reducing energy consumption and Al-based waste management in refineries

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of artificial intelligence in the oil & gas industry for operations managers, supply chain and logistics managers, risk management & safety professionals, oil & gas engineers, data scientists & analysts, IT professionals and system developers, geoscientists and seismic analysts, maintenance engineers and technicians, energy analysts & consultants' business & strategy professionals, executives and senior leadership, environmental and sustainability professionals, vendors & suppliers.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET- USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Mr. Konstantin Zorbalas, MSc, BSc, is a **Senior Petroleum Engineer & Management Consultant** with over **30 years** of **offshore** and **onshore** experience in the **Oil** & **Gas**, **Refinery** & **Petroleum** industries. His wide expertise includes **Water Chemistry for Thermal Power Station, Feasibility Studies, Water Desalination Technologies**, **Water Reservoirs**, **Water Storage Tanks**, **Water Treatment**, Extended Activated Sludge Treatment, **Water Analysis**, **Water Treatment** Technology, **Water Loss** Reduction, **Leaking** Pipelines & Installation, Strategic **Human Resources** Management, **Change** Management, **Negotiation** Skills, **Pipes & Fittings** Supply, Excavation, **Domestic Water Meters** Supply & Installation, **Wells & Water Networks** Rehabilitation, **MBBR**, **Hydraulic Design**, **Hydraulic Network** System, **Water Pipeline** System, **Water Distribution** System, **Watershed** Management, **Water Quality** Analysis, **Leak Repairs**, **Water System** Design & Installation, Surface **Water Hydrology**, **Water & Wastewater** Projects, **Water Desalination** Technologies, **Water Distribution & Pump** Station, Best **Water Equipment** Selection & Inspection, **Hydraulic Modelling** for Water Network Design, **Water Utility Industry**, **Water Desalination** Technologies & New Development, **Water Hydrology**, **Water Conveyors**, **Water Networks** Rehabilitation, **Water Fittings** Regulations & Standards, **Fittings & Valves**, **Couplings & Pressure** Testing, **Water Distribution** Systems, **Water Networking**, **Hydraulic Modelling** Systems and **Pumping Stations**. Further, he is also well-versed in Management courses **Strategic Planning**, **Risk** Analysis & Risk Management, **Business Performance** Management & Improvement, Building Environment of **Trust & Commitment**, **Win-Win Negotiation** Strategies, **Quality Improvement & Resource** Optimization, Managing Dynamic Work Environments, Organizational Development, **Career** Management, Situation & Behaviour Analysis, **Motivation** Skills, **Inventory** Management and **Financial** Administration, **Project & Contracts** Management Skills, **Project Time** Management, **Project Cost** Management, **Contract** Management, **Tender** Development, **Contract** Standards & Laws, **Dispute Resolution** & **Risk** Identification, **Value Engineering**, **Negotiation** Strategies & Techniques, **Creative Thinking & Problem-Solving** Techniques, **Emotional Intelligence**, **Presentation** Skills. He is currently the **Senior Petroleum Engineer & Consultant** of **Abu Dhabi National Oil Company** (**ADNOC**) Group of companies wherein he is involved in the mega-mature fields in the Arabian Gulf, predominantly carbonate reservoirs; designing the acid stimulation treatments with post-drilling rigless operations; utilizing CT with tractors and DTS systems; and he is responsible for gas production and preparing for reservoir engineering and simulation studies, well testing activities, field and reservoir monitoring, production logging and optimization and well completion design.

During his career life, Mr. Zorbalas worked as a **Senior Production Engineer**, **Well Completion Specialist**, **Production Manager**, **Project Manager**, **Technical Manager**, **Trainer**, **Technical Supervisor** & **Contracts Manager**, **Production Engineer**, **Water Engineer**, **Production Supervisor**, **Production Technologist**, **Technical Specialist**, **Business Development Analyst**, **Field Production Engineer** and **Field Engineer**. He worked for many **world-class oil/gas companies** such as **ZADCO**, **ADMA-OPCO**, **Oilfield International Ltd**, **Burlington Resources** (later acquired by **Conoco Phillips**), **MOBIL E&P**, **Saudi Aramco**, **Pluspetrol E&P SA**, **Wintershall**, **Taylor Energy**, **Schlumberger**, **Rowan Drilling** and **Yukos EP** where he was in-charge of the **design and technical analysis** of a gas plant with capacity **1.8 billion m3/yr gas**. His achievements include **boosting oil production 17.2% per year** since 1999 using **ESP** and **Gas Lift systems**.

Mr. Zorbalas has **Master's** and **Bachelor's** degree in **Petroleum Engineering** from the **Mississippi State University**, **USA**. Further, he is an **SPE Certified Petroleum Engineer**, **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), an active member of the Society of Petroleum Engineers (**SPE**) and has numerous scientific and technical publications and delivered innumerable training courses, seminars and workshops worldwide.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Fee

US$ 5,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Understanding AI & Its Role in Oil & Gas*** *What is Artificial Intelligence (AI)? • Evolution of AI in Oil & Gas • AI versus Traditional Methods in Oil & Gas Operations • Key AI Technologies (Machine Learning, Deep Learning, NLP, Computer Vision)*
0930 – 0945	*Break*
0945 – 1045	***AI-Powered Data Analytics for Oil & Gas*** *Importance of Big Data in Oil & Gas • AI for Real-Time Data Analysis • AI-Driven Decision-Making & Optimization • Case Studies of AI Analytics in Oil & Gas*
1045 – 1130	***AI in Upstream, Midstream, & Downstream Operations*** *AI Applications in Upstream Exploration & Drilling • AI for Optimizing Midstream Logistics & Transportation • AI in Downstream Refining & Petrochemicals • Case Studies of AI Implementation Across the Value Chain*
1130 – 1230	***Machine Learning for Oil & Gas Operations*** *Introduction to Machine Learning (ML) in Oil & Gas • Supervised versus Unsupervised Learning for Oilfield Data • ML Models for Predicting Reservoir Behavior • AI for Real-Time Drilling Optimization*
1230 – 1245	*Break*
1245 – 1330	***AI in Reservoir Characterization & Exploration*** *AI-Driven Seismic Data Interpretation • Using AI for Well Log & Petrophysical Analysis • Machine Learning for Reservoir Modeling & Simulation • AI-Powered Reservoir Production Forecasting*

1330 – 1420	***Hands-On: AI-Based Data Analytics for Oil & Gas*** *Collecting & Preprocessing Oil & Gas Data • Applying AI Models to Predict Production Trends • Real-Time Data Visualization Using AI Tools • Generating AI-Driven Reports for Decision-Making*
1420 - 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today & Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***AI for Seismic Data Interpretation & Exploration*** *AI-Powered Seismic Image Processing • AI-Based Stratigraphic Interpretation • Automating Fault & Fracture Detection • Predictive Modeling for Hydrocarbon Potential*
0830 - 0930	***AI for Drilling Optimization*** *Machine Learning for Real-Time Drilling Parameter Optimization • AI-Based Predictive Maintenance for Drill Bits & Equipment • AI-Driven Anomaly Detection During Drilling Operations • Case Studies of AI Improving Drilling Efficiency*
0930 – 0945	*Break*
0945 – 1100	***AI in Wellbore Stability & Fracture Prediction*** *AI for Well Integrity Analysis • Predicting Well Collapse & Fractures Using AI • AI-Assisted Geomechanical Modeling • AI for Early Warning Systems in Drilling Operations*
1100 - 1230	***AI for Production Optimization & Enhanced Oil Recovery (EOR)*** *AI-Driven Reservoir Production Forecasting • AI-Based Optimization of Secondary & Tertiary Recovery Methods • Real-Time AI Monitoring of Production Wells • Machine Learning for Gas Lift & ESP Optimization*
1230 - 1245	*Break*
1245 - 1330	***Predictive Analytics for Oil & Gas Production*** *AI for Forecasting Production Rates • AI for Optimizing Well Stimulation Operations • Machine Learning for Production Flow Rate Analysis • AI for Identifying Declining Wells & Remedial Actions*
1330 – 1420	***Hands-On: AI in Well & Reservoir Management*** *Using AI for Well Log Interpretation • Implementing AI Models for Fracture Prediction • Real-Time AI Analytics for Production Monitoring • AI-Based Decision-Making for Enhanced Recovery Methods*
1420 - 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today & Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***AI in Predictive Maintenance for Oil & Gas Assets*** *Importance of Predictive Maintenance • AI-Driven Predictive Failure Detection • AI for Condition-Based Maintenance (CBM) • AI Case Studies in Oil & Gas Asset Maintenance*
0830 - 0930	***AI for Pipeline Monitoring & Leak Detection*** *AI-Based Real-Time Pipeline Health Monitoring • Using Drones & AI for Pipeline Inspections • Machine Learning for Early Leak Detection • AI Solutions for Corrosion Prediction & Prevention*
0930 – 0945	*Break*
0945 – 1100	***AI in Equipment Health Monitoring*** *Real-Time Equipment Failure Prediction • AI-Driven Maintenance Scheduling • Reducing Downtime Using AI Insights • AI-Based Asset Tracking & Performance Analysis*
1100 - 1230	***AI for Oil & Gas Safety & Risk Management*** *AI for Accident Prevention & Risk Mitigation • AI-Driven HSE Monitoring Systems • AI-Powered Real-Time Hazard Detection • AI Case Studies in Improving Workplace Safety*
1230 - 1245	*Break*
1245 - 1330	***AI in Environmental Sustainability & Emissions Reduction*** *AI for CO_2 Emissions Tracking & Reduction • AI-Driven Methane Leak Detection • AI-Powered Carbon Capture & Storage (CCS) Optimization • AI for Regulatory Compliance & Sustainability Reporting*
1330 – 1420	***Hands-On: AI in Predictive Maintenance & HSE*** *AI-Based Anomaly Detection in Pipeline Data • AI-Powered Predictive Maintenance Models • Using AI to Analyze HSE Incidents • Developing an AI Dashboard for Asset Health Monitoring*
1420 - 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today & Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0830	***AI in Oil & Gas Supply Chain Optimization*** *AI-Driven Demand Forecasting in Oil & Gas • AI-Based Supply Chain Risk Analysis • AI for Warehouse & Inventory Management • AI Case Studies in Logistics Optimization*
0830 - 0930	***AI in Transportation & Fleet Management*** *AI-Driven Fleet Route Optimization • AI-Based Fuel Efficiency Prediction • Predictive Maintenance for Transportation Assets • AI for Real-Time Traffic & Weather Monitoring*
0930 – 0945	*Break*
0945 – 1100	***AI for Refinery Process Optimization*** *AI-Driven Process Control in Refineries • AI-Powered Real-Time Monitoring of Refining Units • AI-Based Anomaly Detection in Refinery Operations • AI Case Studies in Refinery Efficiency Improvement*

1100 - 1230	***AI in Petrochemical Industry & Quality Control*** *AI-Based Chemical Process Optimization • AI-Powered Quality Assurance & Defect Detection • AI-Driven Real-Time Lab Data Analysis • AI for Reducing Energy Consumption in Petrochemical Plants*
1230 - 1245	*Break*
1245 - 1330	***AI for Market Analysis & Trading in Oil & Gas*** *AI-Driven Price Prediction in Oil Markets • AI-Based Risk Assessment in Commodity Trading • AI-Powered Market Trend Analysis • AI Applications in Hedging & Investment Strategies*
1330 – 1420	***Hands-On: AI for Supply Chain & Refinery Optimization*** *Using AI for Demand Forecasting in Oil & Gas • Implementing AI Models for Supply Chain Efficiency • AI-Driven Refinery Performance Analysis • Developing AI-Driven Dashboards for Operational Decision-Making*
1420 - 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today & Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

Day 5

0730 – 0830	***AI Trends & Innovations in Oil & Gas*** *AI for Autonomous Drilling Rigs • AI-Powered Digital Twins in Oil & Gas • AI & Blockchain for Oil & Gas Transactions • The Future of AI-Powered Energy Exploration*
0830 - 0930	***AI-Powered Robotics & Automation in Oil & Gas*** *AI-Driven Robotic Drilling Systems • AI for Offshore & Underwater Robotic Inspections • AI-Powered Automated Pipeline Maintenance • AI-Driven Automation of Drilling Platforms*
0930 – 0945	*Break*
0945 – 1100	***AI & IoT Integration for Smart Oilfields*** *AI-Driven IoT Sensors for Remote Monitoring • AI-Powered Real-Time Oilfield Data Analytics • Predictive Maintenance Using AI & IoT • AI-Based Autonomous Oilfield Management*
1100 - 1230	***AI for Reducing Operational Costs in Oil & Gas*** *AI for Optimizing Operational Efficiency • AI-Powered Cost Reduction Strategies • AI for Reducing Energy Consumption • AI-Based Waste Management in Refineries*
1230 - 1245	*Break*
1245 – 1345	***Final Hands-On: AI-Powered End-to-End Oil & Gas Model*** *Developing an AI-Powered Well Performance Dashboard • AI-Driven Predictive Maintenance Implementation • AI-Powered Supply Chain Optimization Model • AI-Based Refinery Process Control Solution*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises: -

Course Coordinator

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