



COURSE OVERVIEW AI0109 AI for Energy Transition

Course Title

AI for Energy Transition

Course Date/Venue

August 03-07, 2026/A Maya 1 Meeting Room,
Grand Millennium Al Wahda Hotel, Abu Dhabi,
UAE

Course Reference

AI0109

Course Duration/Credits

Five days/2.75 CEUs/27.5 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 equips participants with the knowledge and skills to apply artificial intelligence (AI) technologies in supporting the energy transition. It focuses on AI applications across the oil & gas, renewable energy, utilities and industrial sectors, emphasizing decarbonization, energy efficiency, predictive analytics, emissions reduction, smart operations and sustainable decision-making.



The course incorporates relevant case studies, operational scenarios and practical workshops aligned with sustainability vision and digital transformation initiatives including AI-enabled operational excellence and lower-carbon energy solutions.



Further, the course will also discuss the global energy transition, sustainability trends and the fundamentals of artificial intelligence; the AI technologies for the energy industry, energy data management and AI applications across the energy value chain; the predictive maintenance using AI, AI for process optimization and AI for energy efficiency; and the AI in smart industrial operations, AI for safety and risk management and AI for carbon emissions management.



During this interactive course, participants will learn the AI in renewable energy, smart energy systems and AI for carbon capture and storage (CCS); the AI and environmental monitoring, digital twins for energy operations and generative AI for energy professionals; the asset integrity management and intelligent supply chain management; the responsible AI, AI governance, AI project planning and measuring AI business value; and the future energy technologies and building an AI-driven organization.

Course Objectives/Outcomes & Benefits for the Participants

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

- Apply and gain an in-depth knowledge on AI for energy transition
- Discuss global energy transition, sustainability trends and the fundamentals of artificial intelligence
- Interpret AI technologies for the energy industry and apply energy data management and AI applications across the energy value chain
- Carryout predictive maintenance using AI, AI for process optimization and AI for energy efficiency
- Apply AI in smart industrial operations, AI for safety and risk management and AI for carbon emissions management
- Employ AI in renewable energy, smart energy systems and AI for carbon capture and storage (CCS)
- Implement AI and environmental monitoring as well as interpret digital twins for energy operations and generative AI for energy professionals
- Carryout asset integrity management and intelligent supply chain management
- Discuss responsible AI and AI governance and apply AI project planning and measuring AI business value
- Interpret AI and future energy technologies and building an AI-driven organization

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 AI for energy transition for energy and oil/gas professionals, sustainability and energy transition experts, data and digital transformation professionals, engineering and technical roles, management and strategic roles, IT and systems professionals, consultants and researchers and other technical staff.

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

Haward's 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**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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 **2.75 CEUs** (Continuing Education Units) or **27.5 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.

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:



(1) Mr. Pan Kosmidis, MSc, BSc, is a **Senior IT Specialist** with almost **25** years of experience in the areas of Programming with **Python & Java Specialization**, Development Environment Setup for **Python & Java**, **Python Syntax** & Data Types, **Python** Control Structures, Sentiment Analysis using **Python**, Machine Learning with **Python**, Geoprocessing Scripts Using **Python**, Face Detection with OpenCV in **Python**, **Programming**, **Data** Structures, Artificial Intelligence (**AI**), **Systems Modeling**, **Web Dev**, **Databases**, **Mobile Dev**, **Data Analytics** for Business Leaders, **Data Quality** Management, **IT Data** Architecture, **Data** Management & Analysis using **Excel®**, **Advanced Data** Analysis, **Microsoft Data** Analysis, **Microsoft Enterprise** Systems, **Microsoft Servers**, **Microsoft Hyper-V**, **Microsoft Exchange**, **Microsoft 365 Cloud** Services (Exchange Online, Teams, OneDrive), **Microsoft Azure & Hybrid Active Directory** Environments, **AI** Fundamentals, Effective & Interactive **Dashboards**, **Predictive Analytics** Concepts, Apply **AI** Algorithms, **AI-Driven** Predictive Maintenance, Data Storytelling with **AI Insights**, Integrating Real-Time **Data Ingestion**, and **Software Tools** such as **Python**, **Java**, **JavaScript/TypeScript**, **C#/.NET**, **PHP/Laravel**, **Node.js**, **HTML/CSS**, **SQL (RDBMS & NoSQL)**, **Redis**, **RabbitMQ**, **Kafka**, **Event Store**, **Docker**, **CI/CD**, **Git** and **Methodologies & Architecture** such as **Agile** (Scrum, Kanban), **DDD**, **CQRS**, **Clean Architecture**, **Event Sourcing**, **SOLID**, **RESTful APIs** and **CI/CD Pipelines**. Further, he is also well-versed in **Business Management**, **Financial Marketing**, **Contract Negotiation**, **Crisis Management**, **Training Programme Design & Delivery**, **Project Management**, **Business & Team Leadership**, **Financial Analysis**, **Investment & Risk Management**, **Technical & Fundamental Analysis**, **Mentoring** and **Consultancy**.

During his career life, Mr. Kosmidis has gained his practical and field experience through his various significant positions and dedication as the **Business Development Operations Director**, **Enterprise Architect**, **IT Consultant**, **Educational Consultant & Instructor**, **Investment Analyst & Trader**, **University Lecturer**, **DevOps Engineer**, **Security & Crisis Management Instructor**, **IT Specialist**, **Software Developer** and **Senior Instructor/Trainer/Lecturer** from various companies and universities.

Mr. Kosmidis is currently taking up his **Master's** degree in **Data Analytics** and **Financial Technology** and he holds a **Bachelor's** degree with (Honours) in **Computer Science** and a **Bachelor's** degree in **Business Administration & Economics**. Further, he is a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, workshops, conferences and seminars internationally.



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(2) **Mr. Peter Christian** is an **International Expert** in **Safety, Health, Environmental and Quality** with over **30 years** of practical and industrial experience in **NEBOSH International General Certificate in Occupational Health & Safety, CSR & Sustainability Principles, Sustainability & Environmental Awareness, Carbon Measurement & Management, Lifting & Rigging Equipment HAZOP, HAZWOPER, HAZMAT, HAZCOM, PHA (Process Hazard Analysis), FMEA, HAZID, ISO 14001, OHSAS 18001, ISO 9001, Process Safety Management (PSM), Safety, Health, Environmental & Quality Management (SHEQ), Behavioral Safety Management, Industrial Hygiene, Human Factors Engineering, Risk Assessment, Fire Fighting, Rope Rescue Operations, Emergency Response within process industries.** He is currently the **President of NKWE** and spearheads the companies major projects and business ventures, where he specializes in the areas of **SHEQ solutions, ISO, Quality Control and OSHA systems.** Previously, he has had much on-hand experience in the initiation and management of projects (technical as well organizational development) including involvement in **design of process plants; the commissioning & decommissioning of process plants; the operational and financial responsibility for large process operations; risk management; operational and maintenance management, crisis and emergency management, accident investigation, risk assessment, hazard identification and emergency preparedness & response (oil spillage and gas explosions).**

Much earlier in his career, Mr. Christian was a **HAZOP Team Leader** for numerous **HAZOP** studies and he has further managed the **Health, Safety & Environmental and Quality** requirements of a large process company. This included responsibilities as an auditor for compliance against **SHEQ standards, ISO standards** and the **Fatal Risk Control Protocols.** He then facilitated the development and implementation of the above standards as a group and at site level as part of the SHEQ council. Moreover, he established, trained and led a Rope rescue team and a high level emergency care clinic and ambulance service for many years. He still abseils recreationally and leads adventure groups during abseiling activities and serves as a rescue team member for mountain and water emergencies.

During his career life, Mr. Christian has gained his practical and field experience through his various significant positions as the **Plant Manager, Project Metallurgist, Metallurgist, HSE Team Leader, SHEC Superintendent, Mentor, Instructor/Trainer, Acting Technical Manager, Process Plant Superintendent, Acting Project Leader, Acting Plant Superintendent, Appointed Health & Safety & Environmental Superintendent, Production Technician, Acting Senior Shiftsman, Foreman and Learner – Official Extraction Metallurgy** from various companies such as the **NKWE Consulting, SAMANCOR, Middleburg Mine Services (Pty) Ltd., Koomfontein Mines, Emelo Mine Services, Gencor Group and South African Defence Force.**

Mr. Christian has a **Postgraduate Studies in Advanced Executive Programme** and a **National Higher Diploma (NHD)** & a **National Diploma in Extraction Metallurgy.** He is also a **Certified/Registered Tutor in NEBOSH International General Certificate, Certified Auditor in OHSAS 18001, ISO 14001 & ISO 9001, a Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer by the Institute of Leadership & Management (ILM), a Six Sigma Black Belt Coach** and holds a Certificate in Facilitate Learning Using a Variety of Given Methodologies **NQF Level 5 (EDTP-SETA)** as a **Certified Facilitator.** He has further delivered innumerable courses, trainings, workshops and conferences globally.

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.

Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

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.

Accommodation

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

Course Program

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

Day 1: Monday, 03rd of August 2026

0800 – 0830	Registration & Coffee
0830 – 0845	Welcome & Introduction
0845 – 0900	PRE-TEST
0900 – 0930	Global Energy Transition & Sustainability Trends Global Climate Change Challenges • Net Zero & Decarbonization Pathways • UAE Energy Strategy & Sustainability Initiatives • AI's Role in Achieving Energy Transition Objectives
0930 – 0945	Break
0945 – 1030	Fundamentals of Artificial Intelligence Artificial Intelligence Concepts • Machine Learning Fundamentals • Deep Learning Overview • Generative AI Applications
1030 – 1100	AI Technologies for the Energy Industry Data Analytics Platforms • Computer Vision Applications • Digital Twins • Intelligent Automation Technologies
1100 – 1200	Energy Data Management Industrial Data Sources • Data Collection Methods • Data Quality & Governance • Preparing Datasets for AI
1200 – 1215	Break

1215 – 1300	AI Applications Across the Energy Value Chain Exploration & Production • Refining & Processing • Pipeline Operations • Utilities & Renewable Energy
1300 – 1350	Practical Workshop: Identifying AI Opportunities Identifying Operational Challenges • Mapping AI Use Cases • Prioritizing Improvement Opportunities • Group Discussion on ADNOC Operational Scenarios
1350 – 1400	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1400	Lunch & End of Day One

Day 2: Tuesday, 04th of August 2026

0800 – 0930	Predictive Maintenance Using AI Equipment Health Monitoring • Failure Prediction Models • Remaining Useful Life Estimation • Maintenance Optimization
0930 – 0945	Break
0945 – 1030	AI for Process Optimization Process Performance Monitoring • Production Optimization • Intelligent Process Control • Operational Efficiency Improvement
1030 – 1100	AI for Energy Efficiency Energy Consumption Analysis • Utility Optimization • Energy Benchmarking • Reducing Operational Energy Losses
1100 – 1200	AI in Smart Industrial Operations Intelligent Control Rooms • Autonomous Operations • Operator Decision Support • Digital Operations Centers
1200 – 1215	Break
1215 – 1300	AI for Safety & Risk Management Hazard Prediction • AI-Assisted HSE Monitoring • Computer Vision for Safety Compliance • Incident Prevention Analytics
1300 – 1350	Practical Workshop: AI-Based Operational Improvement Equipment Performance Analysis • Energy Optimization Exercise • Operational Dashboard Interpretation • Group Case Study
1350 – 1400	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1400	Lunch & End of Day Two

Day 3: Wednesday, 05th of August 2026

0800 – 0930	AI for Carbon Emissions Management Carbon Footprint Analysis • Emissions Monitoring Systems • Emission Forecasting • Carbon Reduction Optimization
0930 – 0945	Break
0945 – 1030	AI in Renewable Energy Solar Energy Forecasting • Wind Power Optimization • Renewable Asset Monitoring • Renewable Performance Analytics
1030 – 1100	Smart Energy Systems Smart Grids • Distributed Energy Resources • Load Forecasting • Demand Response Optimization

1100 – 1200	AI for Carbon Capture & Storage (CCS) CCS Process Optimization • Reservoir Monitoring • Leakage Detection • Performance Prediction
1200 – 1215	Break
1215 – 1300	AI & Environmental Monitoring Air Quality Monitoring • Water Quality Analytics • Environmental Compliance • Biodiversity Monitoring Technologies
1300 – 1350	Practical Workshop: Decarbonization Project Emission Reduction Planning • Renewable Integration Exercise • Sustainability KPI Analysis • AI Solution Evaluation
1350 – 1400	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1400	Lunch & End of Day Three

Day 4: Thursday, 06th of August 2026

0800 – 0930	Digital Twins for Energy Operations Digital Twin Architecture • Real-Time Simulation • Asset Optimization • Operational Decision Support
0930 – 0945	Break
0945 – 1030	Generative AI for Energy Professionals Large Language Models • Knowledge Management • Report Generation • Technical Documentation Automation
1030 – 1100	AI for Asset Integrity Management Corrosion Prediction • Pipeline Monitoring • Structural Health Assessment • Integrity Risk Management
1100 – 1200	AI & Intelligent Supply Chain Management Inventory Optimization • Logistics Planning • Supplier Risk Prediction • Procurement Analytics
1200 – 1215	Break
1215 – 1300	Responsible AI & AI Governance Ethical AI Principles • AI Governance Frameworks • Cybersecurity Considerations • Regulatory Compliance
1300 – 1350	Practical Workshop: AI Solution Design Designing AI Implementation Strategies • Selecting Appropriate AI Tools • Evaluating Operational Benefits • Team Presentations
1350 – 1400	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1400	Lunch & End of Day Four

Day 5: Friday, 07th of August 2026

0730 – 0830	AI Project Planning Business Case Development • AI Project Lifecycle • Resource Planning • Change Management
0830 – 0930	Measuring AI Business Value Return on Investment (ROI) • Operational KPIs • Sustainability KPIs • Performance Monitoring

0930 – 0945	<i>Break</i>
0945 – 1030	<i>AI & Future Energy Technologies</i> <i>Autonomous Energy Systems • AI-Powered Hydrogen Economy • AI in Battery Energy Storage • Future Smart Energy Ecosystems</i>
1030 – 1100	<i>Building an AI-Driven Organization</i> <i>AI Culture Development • Workforce Transformation • AI Competency Development • Leadership for Digital Transformation</i>
1100 – 1200	<i>AI & Energy Transition Case Studies</i> <i>AI-Enabled Operational Excellence • AI for Emissions Reduction • AI-Driven Asset Optimization • Lessons Learned & Industry Best Practices</i>
1200 – 1215	<i>Break</i>
1215 – 1315	<i>Final Integrated Practical Workshop</i> <i>End-to-End AI Implementation Exercise • Energy Transition Strategy Development • Team Presentations • Instructor Feedback & Action Planning</i>
1315 – 1330	<i>Course Conclusion</i> <i>Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course</i>
1330 – 1345	<i>POST-TEST</i>
1345 – 1400	<i>Presentation of Course Certificates</i>
1400	<i>Lunch & End of Course</i>

Learning Outcomes

By the end of the course, participants will be able to:

- Understand AI technologies supporting the global energy transition.
- Apply AI concepts to improve operational efficiency, reliability, and sustainability
- Utilize AI for predictive maintenance, energy optimization, and emissions reduction
- Evaluate AI applications in renewable energy, carbon management, and smart energy systems
- Develop AI implementation strategies aligned with sustainability objectives
- Measure AI project performance using operational and sustainability KPIs
- Apply responsible AI governance principles within energy operations
- Identify practical AI opportunities that support digital transformation and lower-carbon energy initiatives



Practical Sessions

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



Course Coordinator

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