Digital Energy Transformation Strategies Training Course

Professional Development Training Course Outline

Category	Renewable Energy	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Digital Energy Transformation Strategies Training Course equips energy professionals and organizational leaders with the knowledge and practical frameworks required to navigate the rapidly evolving digital energy ecosystem. As the sector moves toward smart grids, renewable energy integration, artificial intelligence (AI), Internet of Things (IoT), digital twins, cloud computing, advanced analytics, energy storage, distributed energy resources (DERs), electric mobility, and intelligent automation, organizations need transformation strategies that connect technology investment with measurable business, operational, sustainability, and resilience outcomes. Digitalization is increasingly recognized as an enabler across the entire energy value chain, from generation and transmission to distribution, supply, buildings, industry, and consumption.

This course provides a strategic and practical roadmap for developing data-driven, AI-enabled, cyber-resilient, customer-centric, and low-carbon energy systems. Participants explore how to build digital transformation roadmaps, modernize legacy infrastructure, deploy AI-powered predictive maintenance, develop digital twins, optimize renewable assets and energy storage, implement DER management and demand-side flexibility, strengthen operational technology cybersecurity, and use advanced analytics for real-time decision-making. Current research and industry developments increasingly position digital twins and AI as important tools for predictive maintenance, grid optimization, resilience, and renewable-energy management.

Programme Curriculum

Digital Energy Transformation Strategies Training Course

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Course Objectives

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

1. Develop digital energy transformation strategies aligned with organizational objectives, energy-transition priorities, and net-zero ambitions.
2. Analyze the role of AI, Generative AI, machine learning, and automation in modern energy operations.
3. Design smart grid and grid-modernization strategies for more intelligent, flexible, and resilient energy networks.
4. Evaluate digital twin architectures for energy assets, networks, facilities, and operational decision-making.
5. Apply IoT, edge computing, cloud platforms, and real-time data analytics to energy-management challenges.
6. Develop strategies for integrating renewable energy, battery energy storage systems (BESS), and distributed energy resources (DERs).
7. Apply predictive maintenance and asset-performance management to improve reliability and reduce unplanned downtime.
8. Develop energy data governance, interoperability, and digital-platform strategies for scalable transformation.
9. Strengthen OT/IT cybersecurity, cyber resilience, risk management, and critical-infrastructure protection.
10. Evaluate demand response, energy flexibility, virtual power plants (VPPs), and intelligent energy-management opportunities.
11. Build business cases using ROI, total cost of ownership (TCO), value creation, and digital maturity assessment.
12. Create implementation roadmaps incorporating change management, workforce digital skills, innovation, and technology adoption.
13. Develop an actionable Digital Energy Transformation Roadmap incorporating AI, smart infrastructure, sustainability, resilience, and measurable KPIs.

Target Audience

1. Energy and utility executives
2. Power generation, transmission, and distribution professionals managing modernization programs.
3. Renewable energy and clean-energy managers
4. Digital transformation, IT, OT, and technology leaders within energy organizations.
5. Asset management, maintenance, reliability, and operations professionals.
6. Energy consultants, engineers, project managers, and business analysts.
7. Sustainability, ESG, decarbonization, and net-zero professionals.
8. Government officials, regulators, policymakers, investors, and energy-sector decision-makers.

Course Modules

Module 1: Digital Energy Transformation Fundamentals

- Energy-sector digital transformation drivers, opportunities, and challenges
- From traditional utilities to intelligent, connected energy ecosystems
- Digital maturity models and transformation-readiness assessment
- Data-driven decision-making and digital operating models
- Building an enterprise-level Digital Energy Transformation Strategy
- Case Study: Utility Digital Transformation

Module 2: AI, Generative AI & Intelligent Energy Systems

- Applications of Artificial Intelligence and Machine Learning in energy
- Generative AI and Large Language Models (LLMs) for energy workflows
- AI-powered forecasting, optimization, anomaly detection, and decision support
- Intelligent automation and emerging agentic AI applications
- AI governance, explainability, data quality, and responsible AI
- Case Study: AI-Enabled Grid Optimization

Module 3: Smart Grids & Grid Modernization

- Smart grid architecture and intelligent grid operations
- Advanced Distribution Management Systems (ADMS) and grid automation
- Advanced Metering Infrastructure (AMI) and real-time monitoring
- Grid flexibility, resilience, reliability, and congestion management
- Digital strategies for accommodating electrification and growing power demand
- Case Study: Smart Distribution Network

Module 4: Digital Twins, IoT & Predictive Maintenance

- Digital Twin concepts, architectures, and energy applications
- IoT sensors, connected assets, edge computing, and real-time telemetry
- Predictive maintenance and asset-health monitoring
- Digital twins for power plants, grids, renewable assets, and storage
- Simulation, scenario planning, optimization, and lifecycle management
- Case Study: Digital Twin for Renewable Assets

Module 5: Renewable Energy, Energy Storage & DER Transformation

- Digital integration of solar, wind, hydro, and hybrid renewable systems

- Battery Energy Storage Systems (BESS) and intelligent energy management
- Distributed Energy Resources (DERs) and DER Management Systems
- Virtual Power Plants (VPPs) and distributed flexibility
- Renewable forecasting, curtailment optimization, and grid integration
- Case Study: AI-Enabled Renewable Microgrid

Module 6: Energy Data, Cloud, Analytics & Digital Platforms

- Building a scalable energy data architecture
- Cloud, edge, hybrid-cloud, and real-time analytics
- Data governance, quality, ownership, interoperability, and standards
- Energy dashboards, advanced analytics, and executive decision intelligence
- Creating integrated digital energy platforms
- Case Study: Enterprise Energy Data Platform

Module 7: Cybersecurity, Resilience & Digital Risk

- Energy cybersecurity and critical-infrastructure protection
- IT/OT convergence and operational technology security
- Cyber risk assessment and security-by-design principles
- Identity, access management, network segmentation, and continuous monitoring
- Building cyber-resilient energy infrastructure
- Case Study: Cyber-Resilient Smart Grid

Module 8: Digital Strategy Execution, Innovation & Net-Zero

- Digital transformation roadmaps, governance, and implementation
- Net-zero, decarbonization, energy efficiency, and sustainability
- Digital business models and energy-as-a-service opportunities
- Change management, digital workforce development, and organizational culture
- Transformation KPIs, ROI, benefits realization, and continuous improvement
- Case Study: Net-Zero Digital Energy Roadmap

Training Methodology

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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