Grid Digitalization 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

Grid Digitalization Strategies Training Course provides a practical and forward-looking understanding of how modern power systems can use digital transformation, smart grid technologies, artificial intelligence (AI), Internet of Things (IoT), advanced analytics, automation, cloud computing, edge computing, digital twins, cybersecurity, and data-driven decision-making to create more resilient, flexible, efficient, and customer-centric electricity networks. The course explores how utilities and energy organizations can modernize legacy infrastructure through Advanced Metering Infrastructure (AMI), SCADA modernization, Distribution Management Systems (DMS), Energy Management Systems (EMS), Geographic Information Systems (GIS), DERMS, digital substations, predictive maintenance, real-time monitoring, and intelligent grid automation.

Participants will develop the strategic and technical capabilities required to design and implement effective grid digitalization roadmaps while addressing interoperability, data governance, operational technology (OT) cybersecurity, regulatory requirements, investment priorities, and organizational change. Through practical exercises and industry case studies, learners will examine how digital technologies support renewable energy integration, distributed energy resources (DERs), electric vehicle (EV) adoption, demand response, grid resilience, predictive operations, outage management, and decarbonization. By the end of the training, participants will be equipped to evaluate digital maturity, prioritize transformation initiatives, build business cases, and develop actionable strategies for the next-generation intelligent power grid.

Programme Curriculum

Grid Digitalization Strategies Training Course

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Course Duration

5 days

Course Objectives

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

1. Understand the strategic foundations of power-grid digital transformation and smart-grid modernization.
2. Assess utility digital maturity and identify high-value transformation opportunities.
3. Develop a practical grid digitalization roadmap aligned with business and regulatory priorities.
4. Apply AI, machine learning, and advanced analytics to grid planning and operations.
5. Evaluate IoT, edge computing, sensors, and real-time monitoring for grid visibility.
6. Understand AMI, smart meters, DMS, EMS, SCADA, GIS, and DERMS integration strategies.
7. Design approaches for digital substations and intelligent grid automation.
8. Apply predictive maintenance and asset-performance management techniques.
9. Strengthen OT/IT cybersecurity, cyber resilience, and critical-infrastructure protection.
10. Evaluate digital solutions for renewable energy, DER, battery storage, and EV integration.
11. Use digital twins and simulation to improve grid planning and operational decisions.
12. Build business cases using ROI, cost-benefit analysis, KPIs, and value-realization frameworks.
13. Develop organizational strategies for change management, digital governance, workforce transformation, and continuous innovation.

Target Audience

1. Utility executives and senior energy managers
2. Power-grid planning and operations professionals
3. Smart-grid and digital-transformation specialists
4. Electrical, power-system, and protection engineers
5. SCADA, EMS, DMS, AMI, and OT/IT professionals
6. Energy regulators, policymakers, and government officials
7. Renewable energy, DER, EV, and energy-storage professionals
8. Technology consultants, project managers, and digital-strategy leaders

Course Modules

Module 1: Grid Digitalization & Smart Grid Transformation

- Digital transformation drivers across transmission and distribution networks
- Smart-grid architecture, digital maturity, and transformation frameworks
- OT/IT convergence and data-centric utility operating models
- Digitalization challenges in legacy grid infrastructure
- Case Study: Utility smart-grid transformation and digital maturity assessment

Module 2: Digital Grid Architecture & Advanced Technologies

- IoT, edge computing, cloud platforms, APIs, and advanced communications
- Digital substations and intelligent electronic devices
- SCADA, EMS, DMS, GIS, and DERMS ecosystem integration
- Interoperability, standards, data architecture, and system integration
- Case Study: Designing a connected digital distribution-grid architecture

Module 3: AI, Data Analytics & Digital Intelligence

- Artificial intelligence and machine learning applications in grid operations
- Predictive analytics for demand, faults, assets, and power quality
- Real-time data platforms and data-driven decision intelligence
- Generative AI opportunities and limitations in energy operations
- Case Study: AI-enabled predictive maintenance and outage-risk forecasting

Module 4: Advanced Metering & Customer Digitalization

- Advanced Metering Infrastructure (AMI) and smart-meter ecosystems
- Real-time consumption data and customer analytics
- Demand response, dynamic pricing, and prosumer engagement
- Digital customer platforms and energy-management services
- Case Study: Smart-meter deployment and data-driven demand management

Module 5: DER, Renewables, EVs & Grid Flexibility

- Integrating distributed energy resources, solar PV, wind, and battery storage
- DERMS and distributed-grid visibility
- Electric vehicle (EV) charging and vehicle-to-grid strategies
- Demand flexibility, virtual power plants, and grid balancing
- Case Study: Managing high renewable and EV penetration on a distribution network

Module 6: Digital Twins, Automation & Predictive Maintenance

- Digital twin concepts for assets, substations, and network planning
- Condition monitoring and predictive asset management
- Intelligent automation and autonomous grid operations
- Simulation, scenario analysis, and operational optimization
- Case Study: Digital twin deployment for substation asset-performance management

Module 7: Grid Cybersecurity, Resilience & Data Governance

- OT cybersecurity and critical-energy-infrastructure protection
- Cyber risk assessment and security-by-design principles

- Identity, access, encryption, monitoring, and incident response
- Data governance, privacy, interoperability, and regulatory compliance
- Case Study: Building cyber resilience for a digitally connected utility

Module 8: Digital Strategy, Investment & Implementation Roadmap

- Developing a grid digitalization strategy and transformation roadmap
- Prioritizing initiatives using value, risk, complexity, and readiness
- Business cases, ROI, KPIs, benefits realization, and investment planning
- Digital governance, workforce skills, change management, and innovation
- Case Study: Creating a five-year digital-grid transformation roadmap for a utility

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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