AI-Powered Energy Systems 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

AI-Powered Energy Systems Training Course is designed to equip learners with cutting-edge knowledge in artificial intelligence, smart grids, renewable energy optimization, and energy analytics. As the global energy sector undergoes rapid digital transformation, integrating machine learning, IoT-enabled energy systems, predictive analytics, and automation has become essential for improving efficiency, sustainability, and resilience. This course bridges the gap between traditional energy engineering and modern AI-driven solutions, empowering professionals to lead innovation in clean energy technologies, smart infrastructure, and digital energy ecosystems.

With the rise of Industry 4.0, decarbonization strategies, energy transition, and net-zero goals, organizations demand professionals skilled in AI-driven energy forecasting, intelligent grid management, and data-driven decision-making. This program provides hands-on exposure to real-world case studies, advanced tools, and simulation platforms, enabling learners to design, implement, and manage AI-powered energy systems across diverse industries. By the end of the course, participants will be prepared to contribute to sustainable energy innovation, smart city development, and future-ready energy solutions

Programme Curriculum

AI-Powered Energy Systems Training Course

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Course Duration

5 days

Course Objectives

1. Understand AI applications in energy systems and smart grids
2. Develop skills in machine learning for energy forecasting
3. Apply predictive analytics for energy demand optimization
4. Design AI-driven renewable energy systems
5. Implement IoT-based energy monitoring solutions
6. Analyze big data in energy management systems
7. Optimize energy efficiency using AI algorithms
8. Build intelligent grid automation models
9. Integrate AI with solar, wind, and hybrid energy systems
10. Use deep learning for fault detection in energy networks
11. Develop real-time energy analytics dashboards
12. Apply AI for carbon footprint reduction and sustainability
13. Understand cybersecurity in AI-powered energy systems

Target Audience

1. Energy engineers and power system professionals
2. Data scientists and AI engineers
3. Renewable energy specialists
4. Electrical and electronics engineers
5. Smart city planners and infrastructure developers
6. Government and policy professionals in energy sector
7. Researchers and academic professionals
8. Technology consultants and sustainability experts

Course Modules

Module 1: Introduction to AI in Energy Systems

- Overview of **AI in energy sector**
- Evolution of **smart energy technologies**
- Key trends in **digital energy transformation**
- Role of **AI in sustainability**
- Case Study: AI adoption in smart grids

Module 2: Fundamentals of Energy Systems

- Traditional vs **modern energy systems**
- Energy generation, transmission, distribution
- Challenges in **energy efficiency**
- Renewable vs non-renewable systems
- Case Study: Transition to renewable grids

Module 3: Machine Learning Basics

- Supervised vs unsupervised learning
- Data preprocessing techniques
- Model evaluation metrics
- ML tools for energy applications
- Case Study: Load prediction using ML

Module 4: AI for Energy Forecasting

- Demand forecasting techniques
- Time-series analysis
- AI-based predictive models
- Weather impact on energy demand
- Case Study: Forecasting electricity demand using AI

Module 5: Smart Grids and AI

- Smart grid architecture
- AI-enabled grid optimization
- Real-time monitoring systems
- Demand-response strategies
- Case Study: Smart grid automation

Module 6: Renewable Energy Optimization

- Solar and wind energy systems
- AI for performance optimization
- Hybrid energy systems
- Energy storage integration
- Case Study: AI optimizing solar farms

Module 7: IoT in Energy Systems

- IoT architecture in energy
- Smart meters and sensors
- Data collection and communication
- Edge computing in energy
- Case Study: IoT-enabled energy monitoring

Module 8: Big Data Analytics in Energy

- Data sources in energy systems
- Big data tools and platforms
- Data visualization techniques
- Energy consumption insights

- Case Study: Big data for grid optimization

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

Start Date	End Date	Location	Price
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

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

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