GTC International Consulting Limited
Riverbank House
1 Putney Bridge Approach
Fulham, London, SW6 3BQ
T: +44(0)2037055710
E:enquiries@thegtcgroup.com
W: www.thegtcgroup.com

AI and Predictive Analytics in Power System Operations

COURSE OVERVIEW

This course offers a detailed study of AI-driven models and predictive analytics for energy systems. Participants will learn how to forecast system behavior, optimize grid operations, improve asset performance, and prevent failures proactively. The curriculum covers machine learning algorithms, neural networks, and big data tools applied to energy challenges. Through theory and case studies, delegates will develop skills to implement AI strategies, integrate smart sensors and IoT platforms, and create predictive models that enhance reliability, sustainability, and cost efficiency in the energy sector.

WHO SHOULD ATTEND?

This course is designed for power system engineers, data analysts, operations managers, reliability engineers, AI practitioners, digital transformation officers, and energy technology innovators who want to apply data analytics and machine learning tools to power system management. It is equally valuable for utility professionals, regulatory bodies, academic researchers, and consultants seeking to modernize power operations through digital intelligence and predictive analytics.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Apply machine learning techniques for load forecasting and demand prediction.
- Develop predictive maintenance models for electrical assets using real-time data.
- Use data analytics tools to identify and diagnose anomalies in grid performance.
- Implement intelligent fault detection and self-healing network strategies.
- Analyze large datasets from SCADA, PMU, and smart meter systems for operational insights.
- Evaluate cybersecurity and ethical considerations in AI-based grid management.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- How AI, machine learning, and predictive analytics are transforming power system operations.
- The workflow of predictive modeling, from data collection to performance evaluation.
- Techniques for load and generation forecasting using advanced AI algorithms.
- The implementation of condition-based and predictive maintenance for key electrical equipment.
- How to detect and mitigate faults proactively through data-driven pattern recognition.
- The integration of AI and IoT platforms for real-time operational intelligence.
- The use of digital twins and neural networks in simulating and optimizing power systems.

All our courses are dual-certificate courses. At the end of the training, the delegates will receive two certificates.
1. A GTC end-of-course certificate.
2. Continuing Professional Development (CPD) Certificate of completion with earned credits awarded.