

Power Transmission & Distribution Systems: Design, Operation & Optimization

COURSE OVERVIEW

This course delivers a comprehensive exploration of modern power transmission and distribution (T&D) systems, focusing on the principles of design, efficient operation, and system optimization. The course content focuses on practical approaches to reducing losses, improving grid stability, integrating renewable energy and ensuring operational safety while addressing the challenges of modern electricity demands. Participants will gain extensive knowledge of power system components, network configurations, load flow analysis, fault diagnosis and reliability enhancement.

WHO SHOULD ATTEND?

The course is designed for electrical engineers, utility managers, technical supervisors, operations and maintenance personnel and energy professionals involved in planning, designing, managing or optimizing power transmission and distribution networks. It is also highly beneficial for regulators, consultants and project managers who need a deeper understanding of T&D systems for decision making, project execution, and performance improvement.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Understand the fundamentals and advanced concepts of power transmission and distribution systems.
- Apply modern techniques to design, operate, and optimize T&D networks for efficiency and reliability.
- Analyze system performance using load flow and fault studies.
- Implement strategies to reduce technical and non-technical losses.
- Evaluate the impact of renewable energy integration and smart grid technologies on T&D systems.
- Develop asset management and maintenance strategies to enhance system resilience and longevity.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- Analyzing load demand, diversity, and growth factors for reliable system design.
- Design principles for transmission lines, substations, and distribution networks ensuring continuity and efficiency.
- Implementing redundancy and reliability planning using N+1 and 2N configurations.
- Operational strategies for balancing load, minimizing losses, and voltage regulation.
- Integration of monitoring and control systems for real-time performance optimization.
- Compliance with safety standards, codes, and sustainable environmental practices in system design and operation.

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