XCELERATE TRAINING INSTITUTE
your learning & development partner

ELECTRICAL ENGINEERING

Distributed Electricity Generation and Transmission

DURATION	LANGUAGE	FORMAT
10 days	**English**	**Classroom / Online**

Upcoming dates

Dates	Venue	Format	Fee
12 – 23 ????? 2027	Live online	Online (live)	**€1?800**
18 – 29 ?????? 2027	Live online	Online (live)	**€1?800**
15 – 26 ?????? 2027	Berlin	Classroom	**€7?200**

Register or ask a question

Online: staging.x8ti.com/course/distributed-electricity-generation-and-trans…
+491631686678 · info@x8ti.com

Distributed Electricity Generation and Transmission

Introduction

Distributed electricity generation and transmission, along with network analysis and system planning, are essential for the technical supervision, expansion, and procurement of complex power and energy technology systems. These systems function effectively only when professionals responsible for planning, coordinating, and overseeing team efforts possess the necessary skills to meet cost, schedule, and performance goals. With increasing system complexity and the challenges facing our civilization, it is crucial to implement advanced methods and processes to monitor life-cycle costs and forecast risks effectively.

Learning Objectives

Upon completing this course by Xcelerate Training Institte, participants will be able to:

- Enhance expertise in applying practices over project life cycles in the power and energy domains.
- Focus on the interfaces between people, processes, and products.
- Equip teams with the knowledge necessary to achieve successful solutions.
- Use case studies to assess themes such as system architecting, schedule, performance, risk, cost, reliability, stakeholder management, and procurement strategies.
- Gain knowledge to realize project solutions and leverage Project Management and Systems Engineering roles and responsibilities.

Training Methodology

This collaborative training program includes:

- Lectures
- Seminars & Presentations
- Group Discussions
- Assignments
- Case Studies & Functional Exercises Following the ‘Do-Review-Learn-Apply’ model.

Benefits for Your Organisation

Organizations can benefit from:

- An all-inclusive overview of distributed electricity generation and transmission.
- Increased confidence in handling distributed electricity generation and transmission.
- Practical knowledge that provides a competitive edge.
- Conversation-based sessions for networking and learning from real-world examples.
- Collaborative sessions for practical application in individual roles.

Benefits for You

Participants will gain:

- Ability to carry out risk assessments for distributed electricity generation and transmission.

- Updated knowledge on the latest trends and technologies.
- Tailor-made academic training for technicians and equivalent workforce.
- Training, assessment, and certification by experts.
- Skills to identify, act on, and report issues with distributed electricity generation and transmission.
- Competence in performing test activities and site procedures.
- Knowledge of appropriate PPE tools and methods.
- Enhanced skills for further qualifications in distributed electricity generation and transmission.

Who Should Attend

This course is suitable for:

- Apprentice Electricians
- Journeyman Electricians
- Master Electricians
- Electrical Supervisors/Managers
- Lead Persons
- Area Supervisors
- Project Supervisors
- Project Estimators

Course Outline

Fundamentals of Power and Energy Systems

- Introduction to Energy Generation
- Methods of generating electricity
- Turbine-driven electrochemical generators
- Fuel cells
- Photovoltaics
- Thermoelectric devices
- Nuclear fission and fusion
- Renewable resources (solar, wind, hydro, tidal, and geothermal sources)
- Sustainability and energy efficiency

Transmission and Distribution and Smart Grid

- Power and Energy and the Environment
- Power and Energy Systems Project Management
- Power and Energy Generation
- Transmission and Distribution / Smart Grid
- Principles and Techniques of Wind Energy and Solar Cells
- Power Electronics
- Smart Grids Communications
- Modern power transmission and distribution systems

- Transformer technology
- Transmission grids
- Load management
- Distribution optimization
- Power supply reliability
- Infrastructure systems
- Security and deregulation
- SCADA systems

Energy and the Environment

- Impact of energy generation on the environment
- Global climate change
- Clean energy technologies
- Energy conservation
- Air pollution
- Water resources
- Nuclear waste issues

Introduction to Systems Engineering

- Why Use Systems Engineering?
- Definition of System and Systems Engineering
- Value of Systems Engineering
- Key Systems Engineering Principles
- The V Systems Engineering Model

Power and Energy Systems Engineering

- Systems Engineering applied to power and energy
- Development of modern complex power and energy systems
- Creating new power and energy technologies and systems
- Planning, coordinating, and overseeing interdisciplinary team efforts
- Translating operational needs into technology solutions
- Using tools to meet cost, schedule, and performance goals
- Power and energy generation technology cost modeling
- Example of systems engineering
- Integral power and energy system design

Power and Energy Systems Engineering Technical

- System Conceptual Design
- Using the Architecture
- Feasibility Study/Concept Exploration
- Project Management and Systems Engineering Master Plan
- Concept of Operations (ConOps)
- System Requirements

- System Design
- Systems Architecting
- Software/Hardware Development and Testing
- Integration and Verification
- Initial Deployment
- System Validation
- Operations and Maintenance
- Retirement/Replacement
- System of Systems (SoS) Engineering
- Power and Energy Systems Project Management
- Managing the electric power grid
- Broad spectrum of empirical, theoretical, and policy issues
- Generation facilities and equipment

Systems Engineering Approaches

- Needs and Objectives
- Concept of Operations (CONOPS)
- Definition of the Problem
- Measures of Effectiveness/Measures of Performance
- Needs and Objectives Analysis
- Objectives (Statement of Objectives, Objectives Tree)

Sustainable Energy Production and Usage

- Conventional and sustainable energy production and utilization
- Overview of major energy flows
- Production and end-use
- Power and Energy Systems Analysis
- Rankin cycles from traditional power plants
- Advanced Convection Heat Transfer
- Advanced Thermodynamics
- Impact of Energy Conversion on the Environment
- Combustion and Reacting Flow
- Measurement and Instrumentation
- Fundamentals of thermal and fluid processes in single-phase and multi-phase flows
- Experimental design and planning
- Sources of errors in measurements
- Uncertainty analysis

Reliability Analysis and Engineering

- Principal methods of reliability analysis
- Fault tree and reliability block diagrams
- Failure Mode and Effects Analysis (FMEA)

- Systems engineering approaches
- Significant performance improvements and savings in capital and operating costs
- Mathematical Techniques for Engineers
- Applications of matrices, vectors, tensors, differential equations, integral transforms, and probability methods
- Risk Assessment for Engineers
- Market, Spatial, and Traffic Equilibrium Models

Applying Systems Engineering and Optimization

- Applying systems engineering in your project & organization
- Concepts, definitions, and examples
- Optimality and convexity
- Linear programming
- Single objective optimization: unconstrained methods
- Single objective optimization: constrained methods
- Multi-objective optimization methods
- Post-optimality analysis
- Optimality and duality
- Mixed (continuous) integer/discrete optimization: single objective
- Mixed continuous-discrete optimization: multiple objectives
- Robust optimization
- Multi-disciplinary optimization
- Multi-level post-optimality sensitivity analysis

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Registration Form

Distributed Electricity Generation and Transmission

Preferred dates: ..... Venue or online: .....

Duration: 10 days Language: .....

Please complete and email this form to us, or register online. We confirm your place and send the invoice within one working day.

Delegate information

Full name (Mr / Ms / Dr / Eng): .....

Position: ..... Telephone / mobile: .....

Official email: ..... Personal email: .....

Company information

Company name: .....

Address: .....

City / country: ..... VAT / tax number: .....

Person responsible for training & development

Full name (Mr / Ms / Dr / Eng): .....

Position: ..... Telephone / mobile: .....

Email: .....

Payment

☐ Please invoice me ☐ Please invoice my company

Signature: ..... Date: .....

Call
+491631686678

Email this form
info@x8ti.com

Register online
Open the course page