XCELERATE TRAINING INSTITUTE

your learning & development partner

ELECTRICAL ENGINEERING

Electrical Engineering Skills for Non-Electrical Engineers

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

Upcoming dates

Dates	Venue	Format	Fee
4 – 8 Jan 2027	Live online	Online (live)	**€1,200**
8 – 12 Feb 2027	Amsterdam	Classroom	**€4,800**
12 – 16 Jul 2027	Live online	Online (live)	**€1,200**

Register or ask a question

Online: staging.x8ti.com/course/electrical-engineering-skills-for-non-electr…

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Electrical Engineering Skills for Non-Electrical Engineers

Introduction

Understanding electrical engineering is crucial for effectively using and operating electrical energy and equipment. Unlike oil or air, electricity is not naturally available but generated from primary energy sources like coal, natural gas, or nuclear reactions. While it's a secondary source, its critical role requires separate consideration of its supply and demand. For many non-electrical engineers, comprehending how electricity works and specifying electrical equipment can be challenging. This course provides essential electrical engineering knowledge and operational principles of common electrical devices for non-electrical engineers.

Learning Objectives

Upon completing this course by Xcelerate Training Institute, participants will:

- Grasp fundamental principles of electrical engineering.
- Learn key electrical laws.
- Understand single-phase vs. three-phase systems.
- Recognize essential electrical safety concepts.
- Understand the impact and significance of harmonics.
- Apply electrical engineering knowledge to business and practical applications.
- Learn safety procedures for electrical installations.

Training Methodology

This collaborative course includes:

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

Benefits for Your Organisation

Organizations benefit from:

- An all-inclusive overview of electrical engineering for non-electrical engineers.
- Support for technical committees and boards in creating and updating standards.
- Assistance in writing, editing, and processing electrical engineering standards.
- Facilitated discussions with government organizations on relevant regulations.

Benefits for You

Participants will gain:

- Updated knowledge on electrical power system planning.
- Tailor-made academic training in electrical engineering for non-electrical engineers.

- Training, assessment, and certification by experts.
- Skills to identify and report issues with electrical systems.
- Ability to perform test activities and site procedures related to electrical engineering systems.

Who Should Attend

This course is suitable for:

- Non-electrical engineers
- Individuals managing or interacting with electrical engineers
- Individuals assessing electrical engineering projects
- Energy managers
- Engineering managers
- Plant engineers
- Maintenance engineers
- Facilities managers
- Energy consultants

Course Outline

Introduction

- Definitions and basic concepts of electricity and electrical engineering
- Static electricity, conductors, insulators, and electron flow
- Electric circuits, voltage, current, and resistance
- DC circuit analysis and basic electronic devices

Fundamentals

- AC fundamentals, power factor, and electrical power bill computation

Electrical Fundamentals

- Capacitors, inductors, and alternating current
- Faraday's Law, magnetic field, and machinery principles

Transformers

- Characteristics, types, and construction of transformers
- Circuit analysis and voltage regulation
- Transformer efficiency and tap changers

Motors & Inverters

- Induction motor construction and operation
- Torque-speed characteristics and AC machine power flow

Uninterruptible Power System (UPS) & Industrial Batteries

- UPS operation, voltage regulation, and maintenance
- Battery selection, sizing, and maintenance

Direct Current (DC)

- Properties, uses, and applications of DC

Alternating Current (AC)

- Properties, uses, and applications of AC

AC vs. DC

- Differences and similarities, RMS voltage, current, and power

Ohm’s Law

- Relationship between voltage, current, and resistance
- Power calculations and circuit wiring

Electrical Safety

- Importance of safety, physiological effects, and safe practices

Series and Parallel Circuits

- Analysis of series and parallel circuits, power calculations

Batteries

- Types, capacity, and maintenance of batteries

Voltage Drop Calculations

- Calculations in DC and AC circuits, cable size selection

Magnetism and Electromagnetism

- Permanent magnets, electromagnetism, and electromagnetic induction

Electricity Distribution

- Global standards and distribution criteria

Safety

- Human response, outdoor and indoor safety, grounding, and lockout/tagout procedures

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Registration Form

Electrical Engineering Skills for Non-Electrical Engineers

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

Duration: 5 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: .....

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